

**THEORY BUILDING IN FACILITIES
MANAGEMENT PERFORMANCE
MEASUREMENT: APPLICATION OF SOME
CORE PERFORMANCE MEASUREMENT
AND MANAGEMENT PRINCIPLES**

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To my husband, Sanjaya.

"We choose our joys and sorrows long before we experience them"
- K.Gibran (1926)

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DECLARATION

This thesis is submitted under the University of Salford regulations for the award of a PhD degree by research. Some findings during the research together with details associated with the research process itself have been published in refereed academic journals and in refereed conference proceedings prior to this submission and are detailed in Appendix Five (Part One).

As indicated in the relevant chapters, two of the cases detailed in chapters five and six (CACE FM in chapter five and CABO FM in chapter six) of this doctoral research were formed as part of the “Structured Process Improvement for Construction Environments – Facilities Management (SPICE FM)” research project carried out by the University of Salford. This research project was a separate initiative from the PhD work and commenced after the researcher’s doctoral research had begun. The above two case studies were significantly extended beyond the requirement of the SPICE FM research project in order to capture relevant information for this doctoral study.

The researcher declares that no portion of the work referred to in the thesis has been submitted in support of an application for another degree of qualification of this or any other university or other institute of learning.

ABSTRACT

This thesis contributes to the area of performance measurement in facilities management (FM). The context of the study is FM organisations.

Interest in performance measurement increased dramatically during the 1990's in both management and academic literature. Performance measurement systems developed as a means of monitoring and maintaining organisational control, which is the process of ensuring that an organisation pursues strategies that lead to the achievement of overall goals and objectives. A performance measure can also be defined as a metric used to quantify the efficiency and/or effectiveness of an action.

The role of FM in promoting organisational performance, and thereby in providing competitive advantage is widely acknowledged. Although performance measurement concepts are referred to in the FM literature, they have not been applied with the same rigour as with other academic areas, such as production and manufacturing. Institutions will want support services that offer the best possible standards to meet the users' needs. Better co-ordination between core activities and support services means that institutions can respond faster and more effectively to those demands for services. Herein lies the general theoretical gap, which forms the point of departure for this research.

This thesis aims to outline the many different perspectives of performance measurement in FM organisations. A grounded theory approach has been adopted with the aim of building theory as opposed to testing theory. Case studies were conducted at several FM intensive organisations. The identification of performance measurement tools or mechanisms was one of the aims of the case study phase, as well as providing descriptive accounts of the process. These tools and mechanisms were incorporated into a performance measurement questionnaire and were evaluated against the FM organisations in UK.

The research uncovered performance measurement constructs in FM which could be categorised under the following four broad perspectives: customer, FM internal processes, FM learning and growth and financial FM. At each level, the FM organisation should strive to make performance measurement visible with the aim of creating new performance measurement constructs. Developed theory was further validated against a panel of experts in the field of FM and in a real life case study.

The findings from both the qualitative and quantitative data points to an FM organisational performance measurement process which depends on the existing knowledge base of the FM organisation. The contribution to knowledge in the field may be viewed in terms of a critical examination of the role of performance measurement and the implications these have for the core organisation as the contribution made by FM will ultimately be judged by the organisation's stakeholders over a wide range of performance criteria including both financial and non-financial. FM is seen to be able to contribute to performance in many ways: strategy, control of resources, service efficiency, supply chain management and perhaps, most importantly, providing value for money.

Furthermore, the constructs and concepts developed in this thesis provide both a point of departure for further research and a practical tool with which to assess performance measurement and management with the FM organisation.

Chapter 1

Introduction to the Research

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development : Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

“A measurement process for FM in relation to the core business”
Tranfield and Akhlaghi (1995)

1.1 OVERVIEW

This thesis is concerned with the improvement of facilities management (FM) theory in performance measurement through a study of the application of some core principles of performance measurement and management. In this context, this chapter introduces the concepts and methods applied in this thesis which are discussed in more depth in the ensuing chapters. In particular, the central concepts pertaining to the thesis are discussed, as are the context of the research and the approach to the fieldwork taking into account the limitations of the area of research and of the context in which it takes place.

Further, the present chapter outlines the research background and the fundamental questions that lead to the research need of this thesis and begins by discussing the need for a better understanding concerning the application of performance measurement in the FM environment. An outline of the research method and organisation of the thesis is then reviewed in the final sections.

1.2 THE CONCEPTS

The concept of performance measurement has been the subject of much debate in various academic and management fields in the past two decades, as it has been widely reported that there has been a revolution in performance measurement. This scope of interest renders performance measurement a worthwhile subject. In performance measurement, a combination of past theories and new theories has produced a complex portfolio of different strategies for action. Research indicates that organisations use performance measurement systems as the basis for management to perform better than those that do not (Lingle and Schiemann, 1996). For these benefits to be realised it is necessary for organisations to implement an effective performance measurement system that, “enables informed decisions to be made and actions to be taken because it quantifies the efficiency and effectiveness of past actions through acquisition, collation, sorting, analysis, interpretation, and dissemination of appropriate data” (Neely, 1998). This scope for performance

measurement further provides a number of different perspectives which creates further opportunities for research when approaching the field. Two factors which provide opportunities in the field of performance measurement, and which are discussed in this thesis, are different definitions of performance measurement of organisations per se, and its application in different fields.

Other concerns in the literature centre around several performance measurement constructs including: the process of performance measurement, the levels of performance measurement, types of performance measurement and the links between the core organisational performance and different levels of the organisation. However, the assumption in this thesis is that performance measurement by definition always leads to improved organisational performance. The researcher believes that investigation into the core ideas underlying current performance measurement theories and best practices may open new avenues of opportunity for achieving higher efficiency and effectiveness in the organisation. To this end, performance measurement is regarded as a type of evolutionary process. That is, a process which does not lead to overall organisational performance improvements is not deemed to be performance measurement.

1.2.1 DESCRIPTIVE TO PRESCRIPTIVE RESEARCH

The most important categorisation of the concepts of performance measurement in this thesis is the difference between academic writings on the one hand and practitioner writings on the other. Whereas the former aims to provide descriptive accounts of, for example, types of performance measurement, the latter attempts to operationalise these concepts into management tools, providing prescriptive models, which are referred to as performance management tools. The descriptive school is criticised for its lack of managerial relevance whilst the prescriptive school fails to conduct rigorous, good quality research, often basing theories on consulting experience or anecdotal evidence.

The approach adopted in this thesis begins at the descriptive end of the spectrum, moving towards the prescriptive end as data is collected and FM organisational

performance measurement tools and mechanisms uncovered. In this way, the thesis aims to provide both a contribution to theory and to practice.

1.3 CONTEXT

Traditionally FM has been seen very simply as the management of buildings and building services. Barrett (1995) defines FM as; “An integrated approach to maintaining, improving and adapting the buildings of an organisation in order to create an environment that strongly supports the primary objectives of that organisation”. Centre for Facilities Management (1992a) defines FM as; “The process by which an organisation delivers and sustains support services in a quality environment to meet strategic needs”. The growing trend is to view FM as the management of non-core company assets and activities to support and increase the efficiency of the core business of the organisation. Therefore, its goal has now become organisational effectiveness, that is helping the organisation to allocate its resources in a way that allows it to flourish in competitive and dynamic markets.

A review of FM literature over recent years indicates a trend towards strategic initiatives. The four generations of FM indicate that the trends over the last decade have been towards an increasing integration between different functions in the FM organisation. Process focus, resource management and strategic initiatives, have been reflected in the FM organisation. Topics such as benchmarking, process capability assessment and performance have come to the fore in recent years.

Furthermore, an FM organisation provides a good setting for the study of performance measurement, as performance measurement techniques are still in their formative stages in the FM context. Measurement of FM performance is one of “three essential issues for the effective implementation of a facilities strategy” explains Alexander (1994a). The contribution that services make to the success of organisations is being increasingly recognised in the literature (Alexander, 1996a; Barrett, 1995; Then, 1996; Doyle, 1992). These refer to the increasing importance of service to supplement the product-based firms. The FM budget of an organisation can often require thirty to forty per cent of the outlay, second only in cost to payroll (Williams, 1994). Therefore, good performance in FM is essential.

Alexander (1996b) further states, “Facilities are an organisation’s second largest expense and can account for as much as fifteen per cent of turnover” and “ they are also the largest item on the balance sheet, typically over twenty per cent of all fixed assets”. This suggests great scope for efficiency gains in FM. This observation is given tacit support by the findings of a recent survey (British Institute of Facilities Management, 2000) which revealed that quality was rated by facilities managers as being the most important criterion for the evaluation of bids to provide facilities support services.

This new awareness has brought about a much needed management focus on measures to ensure the facilities portfolio is matched as closely as possible to operational requirements and facilities and asset occupancy costs. The perceived role of facilities in business and its effective management is increasingly seen as a strategic dimension in business planning. The assessment of performance in FM is therefore of great interest. This research therefore is an attempt to clarify the nature of performance measurement in FM.

There do exist, however, some areas of consensus within these different perspectives of the use of performance measurement as a method of improving FM organisational performance. Most authors clearly distinguish between FM performance and overall organisational performance, but the nature of the relationship between the two levels is far from clear. Hence, this thesis tries to address some of these concerns.

1.4 LITERATURE GAP – GENERAL NEED FOR THE MEASUREMENT OF FACILITIES MANAGEMENT PERFORMANCE

From the literature review, initial pilot study and initial fact finding survey to be presented in chapter two, several gaps in the theory emerge, providing some potential research areas. In general, researchers and writers in the FM field have yet to investigate the concepts of performance measurement which are well developed in other fields nor do they take into account the complexities of performance measurement at the FM organisational level. Specifically, performance measurement,

which is related to FM organisations, opens up potential areas for research around the co-existence of the importance of FM within organisations.

1.5 RESEARCH METHOD OUTLINE

As the performance measurement constructs in FM are often ambiguous, the use of quantitative research methods only (example, sample surveys) were undesirable in the first instance. The case study method was the preferred route. Although the findings from the research are based primarily on qualitative data, the case study research also provided further validity and clarity to the emergent constructs which were eventually incorporated into a survey questionnaire. The role of the quantitative data throughout this research is to support the qualitative findings.

The problems associated with the qualitative research approach are centred on the inability in social science to develop generalisable models of the organisation, in this case, the FM organisation. As performance measurement is a context dependent construct, the search for particular structures, types or models of performance measurement in the FM organisation was repudiated. Instead, the research begins with the descriptive approach, identifying the characteristics of performance measurement in FM organisations and the activities undertaken by the case study organisations, which are aimed at improving performance measurement theory in FM. The latter of these aims constitutes prescriptive findings which have particular managerial relevance.

In this context, the research outlined in this thesis began with an in-depth examination of performance measurement applications in the FM organisation. The case studies were conducted at the level of the FM organisation as a whole. The findings of the research are presented at two levels:

- The descriptive level which constitutes the contribution of theory of this thesis and;
- The prescriptive level which constitutes performance measurement tools and mechanisms providing part of the managerial relevance.

The case studies were analysed in two phases;

- The first phase uncovered the performance measurement tools and other activities, which the case study organisations undertook to improve the process of performance measurement in FM; and
- The second phase constituted the theory-building phase.

After the first phase, the performance measurement activities were incorporated into a survey questionnaire in order to test the relationships between the constructs and the aforementioned performance measures. The analysis of this quantitative part of the research contributed to the second phase of the qualitative analysis by indicating formal relationships between constructs that would not have been found through qualitative analysis.

The study of performance measurement in the FM organisation presents a reasonable unit of analysis which can be used to assess performance at a more subjective level. Performance measures at this level such as operational efficiency and cost effectiveness were used to uncover performance measurement theory at the case study organisations. In this context, the starting point for the case study research was the FM organisation as a whole.

1.6 CONTRIBUTION TO KNOWLEDGE

The review of the literature on FM, the concept of performance measurement and performance measurement in FM organisations in particular, in chapter two shows that the constructs and related concepts are not very well established. Furthermore, the amount of good quality research is limited relating to performance measurement accounts of FM and those publications which do provide evidence usually draw from anecdotal accounts or secondary data. There is a need, therefore, to build upon the concepts, which already exist whilst keeping an open mind to new and emerging theories. As the lack of clarity of the areas of performance measurement in FM organisations is at a general, rather than at a specific level, the research adopts an exploratory strategy. The concept of performance measurement is also widespread and a broad topic on which to focus research. Therefore, this research looks at the concept as a whole within the context of FM organisation rather than focusing on specific parts of existing theory. Therefore, more specifically, this thesis focuses on the measurement of performance in the FM environment.

1.7 ORGANISATION OF THE THESIS

The thesis is organised to encapsulate the themes introduced in the preceding sections and to present the findings of each phase of the research in a logical manner. Summary sections are used throughout the thesis to clarify complex discussions. The following sections pertain to chapters in the thesis and provide a brief description of the content of each chapter.

CHAPTER TWO – THEORETICAL BACKGROUND

Part one of this chapter outlines the main themes and trends of FM organisations using the four generations of FM model. Part two represents the theoretical background and foundation of the thesis, which includes concepts of performance measurement. Part three examines the development of these concepts specifically within the context of the FM organisation. The summary provided at the end of this chapter outlines the main gaps in the literature which are then used to build the research objectives outlined in chapter four.

CHAPTER THREE – THEORETICAL FRAMEWORK

Having placed performance measurement developments in context, this chapter presents the structure and content of some core ideas behind current performance measurement theories. It sets a basic theoretical framework for the thesis which is later used to analyse the case studies in developing theory in performance measurement in FM in subsequent chapters.

CHAPTER FOUR – EPISTEMOLOGY AND METHODOLOGY

Part one of this chapter outlines the limiting factors of the research. That is, the philosophical, methodological, subject specific and contextual issues which have an impact on the research design and which have been taken into account when designing the research strategy. Part two outlines the research objectives and the research methods, the former of which have been derived from the review of literature in chapter two. Research methods were derived from the limiting factors

outlined in part one of this chapter, also by taking into consideration the pilot study research and initial survey, detailed in chapter two. The data design, collection and analysis of the qualitative and quantitative research are then described.

CHAPTER FIVE – CENTRAL CASE STUDY

This chapter presents the central case study of the thesis, that is, the case that represents best practice (in terms of enhancing performance measurement in the FM organisation) amongst all the cases. A brief outline of the data collection methods is given prior to the description of the case, which includes background information, and concepts relating to the way in which the organisation manages FM and its performance. A summary is provided at the end of the chapter which, as well as providing the basis for the theory development in chapter eight, compares the trends in the central case (CACE FM) with the trends identified in the review of the four generations FM model in chapter two.

CHAPTER SIX – SUPPORTING CASES

Chapter six represents the case studies, which support the central case and contribute to the theory development of the thesis. Cases from seven different FM organisations are presented, identified as CAMA FM, CABO FM, CASA FM, CASU FM, CALA FM, CALO FM and CAAB FM. For each organisation, the organisational level information is presented before the FM information in order to provide relevant background details. Due to the nature and confidentiality of the information provided by the case organisations, actual names were not used in the case descriptions or in any other part of the thesis.

Again, the summary at the end of this chapter reviews the trends outlined in each FM organisation as compared with those identified in the four generations model in chapter two as well as indicating how each case contributes to the theory development in chapter eight.

CHAPTER SEVEN – SURVEY FINDINGS

The analysis of the survey questionnaire is presented in this chapter. Some preliminary explanations and interpretations of the data relating to performance measurement concepts as outlined in chapter three are given. The aim of the quantitative research in this thesis is to support the qualitative findings outlined in chapter eight.

CHAPTER EIGHT – INTERPRETATION AND THEORY DEVELOPMENT

The interpretation of qualitative and quantitative data is presented in this chapter. Part one is based primarily on the qualitative findings from chapters five to six and are centred around the development of performance measurement theory in the FM context. Summaries from chapters two and three are given at the beginning of each section to outline the theoretical basis upon which the theory development is based. Part two is based on prospects of the theory development and it discusses the common issues derived from theory development. In part three of this chapter, a comparison with the existing literature of the developed theory is given.

CHAPTER NINE – USE OF THEORY TO CREATE PERFORMANCE MEASUREMENT TOOLS IN FACILITIES MANAGEMENT

The prescriptive findings from the research are presented in this chapter and describe an exploratory study aimed at bringing overarching insights for studies involving the implementation of the theory developed in chapter eight into practice. The focus of this study was on the creation of a “FM learning organisation” designed to change traditional practices. It combines the use of concepts identified in the theoretical framework in chapter three and as well as the theory developed in chapter eight. This case study further experimented with performance measurement strategies in FM developed in chapter eight in order to understand the transfer of theory into practice.

CHAPTER TEN – CONCLUSIONS

The conclusions of this thesis include a summary of the conclusions of each chapter, and the contributions of the research to both theory and to practice. The limitations of the qualitative and quantitative research are considered before a final section on further research is presented, drawing from the data presented in the thesis and also the cases which were excluded but which have the potential for extending the theoretical framework.

The thesis bibliography and appendices are presented after the conclusions chapter.

1.8 SUMMARY OF THE CHAPTER

This chapter has summarised the research background and the fundamental questions that lead to the research need of this thesis. Further, the present chapter outlines the research background and the fundamental questions that lead to the research need, that is, the need to develop performance measurement theories in FM. The researcher understands the above need and explores and attempts to refine some performance measurement principles and theories in FM context, and thereby, focuses on the development of performance measurement theory in FM based on theoretical concepts identified through the best practice performance measurement in general.

In this context, chapter two describes in detail the concept of FM, performance measurement, and its applications in FM leading to the identification of the research need involving the process of using interviews, literature and initial survey and which resulted in the selection of the research need.

Chapter 2

Theoretical Background and Review of Literature

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

“Knowledge is wisdom”
Lord Buddha (560 B.C.)

2.1 OVERVIEW

The previous chapter introduced the concepts and methods applied in this thesis which are discussed in more depth in the ensuing chapters. Subsequently, it presented the principle aspects of the research and the structure of the thesis.

This chapter reviews relevant literature specific to the area of study and related cognate areas and will cover the practice and theories related to the provision and ongoing management of facilities. The scope of FM is defined, in the context of this study, as incorporating issues and matters that directly affect decisions in the provision of facilities to support the core business initiatives. This review of literature attempts to trace the evolving role of FM and its management practices against a background of rapid technological change and changing emphasis in management thinking about how best to manage business support resources in the fulfilment of organisational corporate objectives.

The review of published literature is structured in three parts:

Part one: A historical review of the role of FM within the context of general management theory and an overview of the role of facilities and their ongoing management issues.

Part two: A theoretical overview of the concept of performance measurement is reviewed.

Part three: An overview of performance measurement issues within the context of FM will be discussed.

The main purpose of the literature review is to set the context against which the research problem is derived in the proceeding chapters. It should be pointed out at the outset that the field of study in the management of facilities is a relatively new one, attracting attention from academic and professional institutions only from the

start of 1980s. Since then, a number of compelling factors have forced many organisations to look more seriously at their facilities resource and the way they are managed over time and how they should be provided in the future.

The chapter begins with an introduction to the context of the research: the Facilities Management (FM) organisation. It tries to place the present research into a wider systematic context by discussing FM itself with respect to evolution of management theory. It presents the most important schools of thought within the managerial theory in general from which FM cannot be dissociated. Secondly, it discusses the complexities of generalising findings in management science and the role of FM in any organisation. Finally, the main trends of the FM organisation in recent years are considered, particularly the emergence of a theme of research which uncovers critical success factors and measures for FM performance. The subsequent discussions of the evolution of the FM organisation use the four Generations of FM as a point of departure to uncovering some further, more fundamental changes to the profile of FM since the early 1980's.

PART ONE – MAIN THEMES AND TRENDS OF FACILITIES MANAGEMENT

2.2 RECENT HISTORY OF MANAGEMENT THEORY

Management is nothing new. All the great business builders, from the Medicis of Renaissance Florence to our time today had a clear theory of the business, which informed their actions and decisions (Santos, 1999). A central part of the study of management is the development of management thinking and what might be termed management theory. Management theory is actually a condensed diary of experiences, observations and thinking. It evolves constantly with the continuous stream of new ideas that come from the attempts to transform theory into practice, and vice-versa. Past theories are constantly revisited to obtain insights to solve current problems. It is necessary to view the interrelationships between the development of theory, behaviour in organisations and management practice. When these theories do not fit in a work context, new ideas have to be developed and,

consequently, this process results in a new theory. Thus, it is important to understand the historical evolution of management in order for a solid advance of knowledge in this field to be made.

2.2.1 THE MEANING AND NATURE OF MANAGEMENT

The study of management history is a complex task since the boundaries of the field are not exact and there are many different interpretations of its evolution and content. The word “management” itself does not have a universally accepted standard definition. Management is an activity which has been practiced for as long as man has existed. However, it was not until 1886 that the first proposal to study management as an academic discipline was put forward by Henry Towne (Pearce and Robinson, 1989). Fayol (1949) provided an early definition of “management”, “to manage is to forecast and plan, to organise, to command, to coordinate and to control”. A more recent definition and statement of the importance of management was given by Kast and Rosenzweig (1985). They described management as “mental (thinking, intuiting, feeling) work performance by people in an organisational context which involves: coordinating the human, material and financial resources toward accomplishing organisational goals effectively and efficiently; relating the organisation to the external environment and responding to sociological needs; developing on organisational climate where people can accomplish their individual and collective goals; performing certain definable functions such as goal setting, planning, assembling resources, organising, implementing and controlling; and carrying out various interpersonal, information and divisional roles”.

Management “as a discipline”, is typically understood as a field of learning which is organised, researched and taught in an integrative way, bringing together aspects from various disciplines while at the same time developing its own body of theory (McFarland, 1979). It has to be recognised that the above definitions are extremely broad. What they are saying is that “management” is a process which enables organisations to achieve their objectives by planning, organising and controlling their resources, including gaining the commitment of their employees.

As above described, understanding history can help to understand the actual origins and meanings of the present thinking and actions. Unfortunately, organisations often ignore the importance of understanding the management history since they are more inclined to pay attention to actions occurring in the present. However, to disregard the progress of events and ideas of management throughout history is to risk repeating the same mistakes. In order to help identify main trends in the development of management theory, it is usual to categorise the work of writers into various approaches, based on their views of organisations, their structure and management. This provides a framework in which to direct study and focus attention on the progression of ideas concerned with improving organisational performance. In this context, the next sections review three of the most important theoretical movements of management concepts, as illustrated in Figure 1:

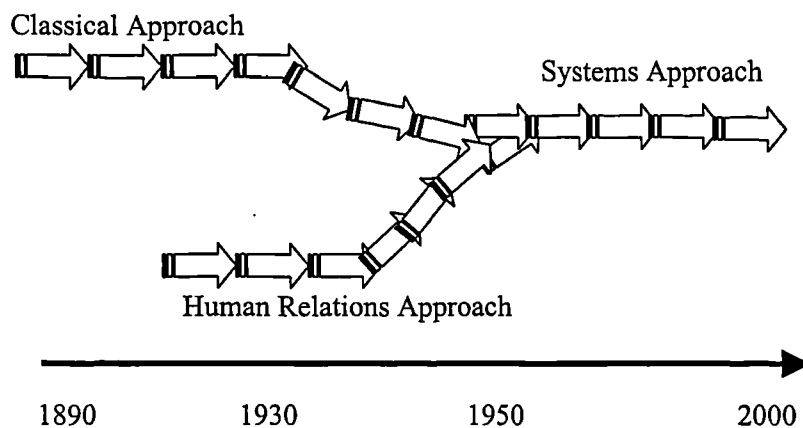


Figure 1: Evolution of management throughout history [Source: Adapted from Santos, 1999)]

2.2.2 CLASSICAL APPROACH

The theorists who contributed towards management thinking included practical managers as well as social scientists. The contribution of practical managers has been to theorise on their own experiences. In practice, these theorists have applied their principles to the structure of organisation rather than to people in organisations. These theorists have been known as “Classical” or “Scientific” managers. Their approach has been described as prescriptive. Classical theories were primarily concerned with the structure and activities of formal official organisations and

emphasised issues such as, division of work, establishment of a hierarchy of authority and span of control. Classical writers were concerned with improving the organisation structure as a means of increasing efficiency. They emphasised the importance of principles for the design of a logical structure of an organisation. These writings were in a normative style and they saw these principles as a set of rules offering general solutions to common problems of organisation and management.

2.2.2.1 SCIENTIFIC MANAGEMENT THEORY

Many of the classical writers during the last decades of the nineteenth century and the first decades of the twentieth were concerned with the improvement of management as a means of increasing productivity as managers started to search for ways to coordinate and control production activities as never before. At this time, the emphasis was on the problem of obtaining increased productivity from individual workers through the technical structuring of the work organisation and the provision of monetary incentives as the motivator for higher levels of output (Mullins, 1996). Early scientific management movement was given impetus under the driving force of Fredrick W. Taylor (cited in Koontz et al, 1984). From his engineering viewpoint, he emphasised that in the same way that there is a best machine for each job, so there is a best working method by which people should undertake their jobs. He considered that all work processes could be analysed into discrete tasks and that by scientific method it was possible to find the one best way to perform each task (Mullins, 1996). Each job was broken down into component parts, each part timed, and the parts rearranged into the most efficient method of working. In order to drive these ideas through to the workforce, workers were to receive pay rises corresponding to the increment in productivity and thus this philosophy saw increase in productivity as the answer to both higher wages and higher profits (McFarland, 1979; Wehrisch & Koontz, 1993; Wren, 1994). Taylor believed that if management acted on his ideas, work would become more satisfying and profitable for all concerned.

2.2.3 HUMAN RELATIONS APPROACH

Despite its rapid dissemination and popularity among managers, the scientific management school created new problems. Workers started to object to the accelerated pace of working, the restricted autonomy, the destruction of craft skills and hierarchies, the lower standard of workmanship and the substitution of man by machines (Wren, 1994). Factory owners throughout the world contributed to the bad reputation of the scientific movement by using its principles without providing complementary rewards, training and managerial support to the workforce (Wehrisch & Koontz, 1993). The result of this situation was that, by the late 1920's, researchers and practitioners started to experiment on, and write more about, industrial psychology and social theories.

These social scientists were mainly academics who researched into human behaviour. The earliest social scientists concentrated their attentions on the motivation and behaviour of individuals and work groups. They have been called the "Human Relations Movement". The human relations movement started with the research of Elton Mayo at the Hawthorne Plant of the Western Electric Company between 1927 and 1932 (Mayo, 1949). Employees had been considered as mechanistic elements in a production system. The study was intended to determine the relationship between the intensity of illumination and the rate of output but the tests failed to show any clear relationship. In fact when engineers decreased the illumination, output continued to rise instead of declining as predicted. Variables other than physical conditions seemed to be affecting output (Wren, 1994). Previous tradition has held that illumination; rest periods, fatigue, work conditions and strong monetary reward were primary factors influencing output and productivity. The Hawthorne experiment began as a study into physical conditions and productivity (Cole, 1996) but it ended as a series of studies into social factors: membership of groups, relationships with supervision etc. Its most significant findings showed that social relations at work were every bit as important as monetary incentives and good physical working conditions. They also demonstrated the powerful influence of groups in determining behaviour at work. Social and psychological factors were now seen as important in determining worker satisfaction.

By modern standards of social research, the Hawthorne studies were relatively unsophisticated in their approach. Nevertheless, they presented a major step forward for the social sciences in their study of work organisations. Human relations writers (Lee & Schniederjans, 1994; Wren, 1994; Kast & Rosenzweig, 1985; Robins, 1988; Cole, 1996) demonstrated that people go to work to satisfy a complexity of needs and not simply for monetary reward. They emphasised the importance of the wider social needs of individuals and gave recognition to the work organisation as a social organisation and the importance of the group, and group values and norms, in influencing individual behaviour at work.

Since the Hawthorne experiment, the volume of research in the field of human resources has increased rapidly. In time, this became a mature theoretical movement, resulting in what is called today the “Human Relations School”. This school of thought brought rapid advances in the sciences dealing with humans and their behaviour in the workplace (McFarland, 1979; Wehrisch & Koontz, 1993).

Unfortunately, the implementation of the Human Relations School in practice had similar problems to those faced by the Scientific Management School. The human relations writers have been criticised for the adoption of a management perspective, their unitary frame of reference and their over-simplified theories (Mullins, 1996). Practitioners simply misunderstood and misapplied research findings, because, among other reasons, they had no systematic understanding of the theory.

Whatever the validity of these criticisms, the Hawthorne experiments undoubtedly marked a significant step forward in providing a further insight into human behaviour at work and the development of management thinking. The Hawthorne experiments are regarded as one of the most important of all social science investigations and are recognised as probably the single most important foundation of the human relations approach to management and the development of organisational behaviour (Mullins, 1996).

Human relations ideas were followed by the so-called neo-human relations school composed mainly of social psychologists. The fundamental idea behind this

approach is that people's needs are the decisive factor in achieving organisational effectiveness. Organisations were seen as complex systems made up of psychological, sociological, technical and economic elements that require intensive investigation. This view emerged as a basis for the modern theory focussed on systems and contingency concepts.

2.2.4 SYSTEMS THEORY AND CONTINGENCY APPROACH

The dominance of first the classical school and second the human relations schools has been overtaken by a more comprehensive approach to the study of management in organisations. The new theories viewed organisations as complex systems of people, tasks and technology as modern theorists have taken a more comprehensive view of people in organisations. They have looked at interaction between people and their environment. This is labelled the "systems and contingency approach" (Mintzberg, 1983).

A system has been defined as: "a set or assemblage of things connected or interdependent so as to form a complex unit" (Mintzberg, 1983). Put it at its simplest, a system is a collection of interrelated parts, which form some whole (Cole, 1996). The systems approach encourages managers to view the organisation both as a whole and as part of a larger environment. The idea is that any part of an organisation's activities affects all other parts. Optner (1975) describes a system as a set of objectives with a given set of relationships between the objects and their attributes.

Systems theory provides a broad analytical framework for understanding organisations. It is used as a tool for unravelling complexity and is appropriate for both behavioural aspects and quantitative, rational approaches of organisations (Dawson, 1986). It is possible to analyse say psychological systems alongside management information systems and integrate the findings into a wider theoretical framework. Systems are defined and described by a number of elements or characteristics. Among those are boundaries, interacting and mutually interdependent parts, feedback and equilibrium. The boundary of a system is an interesting characteristic and tells what is inside or outside the system, and can be arbitrarily assigned when the system is defined (Mullins, 1996). The idea of systems also

implies the interrelationship of its component parts. The concept of interdependence holds that a change in one element of the system leads to changes in other parts of the system. A system has a tendency to achieve a balance among the various forces operating within and upon it (McFarland, 1979). Feedback is a concept in the theory of systems. Feedback is a process by which systems gather information about how they are doing, feeding the information back into the system to guide, direct, and control their operations.

The business organisation is not a closed system where there is no interaction between the system and the environment. It is an open system, where there is a continual interaction with the broader external environment of which it is part, and which take inputs from the environment and through a series of activities transform or convert these inputs into outputs to achieve the various objectives. Within the organisational system, as a whole, each of the different conversion activities may themselves be viewed as separate sub systems with their own input-conversion-output process interrelated to, and interacting with, the other sub-systems (Mullins, 1996). Katz and Kahn (1978) identified five sub-systems, which describe organisational functioning:

- Production or technical;
- Supportive;
- Maintenance;
- Adaptive; and
- Managerial.

However, when these sub-systems are identified, it is the task of management to coordinate the sub-systems and to ensure that the activities of the organisation as a whole are directed towards the accomplishment of its goals and objectives. The systems approach focuses attention on the organisation as a whole, as a socio-technical system, and considers the inter-relationships between the different sub-systems and the importance of environmental influences. Changes in one part, technical or social will affect other parts and thus the whole system.

The systems approach has been criticised (Cole, 1996) for failure to examine the orientation of individual members to the organisation, the different expectations people have of their work or ways in which the environment influences expectations of work.

2.2.4.1 CONTINGENCY APPROACH

The label “contingency approach” was suggested by Lawrence and Lorsch in 1967. There is no clear distinction between the systems approach and the contingency approach to the management of organisations (Cole, 1996). The latter was developed out of the findings of the former. A systems approach highlights the complexity of the interdependent components of organisations within equally complex environments (Mintzberg, 1983). A contingency approach builds on the diagnostic qualities of the systems approach in order to determine the most appropriate organisational design and management style for a given set of circumstances (Lorch & William, 1974). Essentially, the contingency approach suggests that issues of design and style depend on choosing what is the best combination, in the light of prevailing (or forecast) conditions, of the following variables: the external environment; technological factors; and human skills and motivation (Cole, 1996). The contingency approach takes the view that there is no one best universal form of organisation. There are a large number of variables, or situational factors, that influence, organisational performance. Contingency models highlight differences between organisations. Managers can utilise these models to compare the structure and functioning of their organisation.

Both the classical and human relations approaches to organisation and management believed in one best form of structure and tended to concentrate on limited aspects of organisation. The contingency approach takes the view that there is no one best universal structure and that there are a large number of variables, or situational factors, which influence organisational design and performance.

2.2.5 GENERALISATION OF MANAGEMENT THEORIES

Literature review in section 2.2 has clearly shown that evolution of management theory mirrors the changes in the surrounding economical and social environment. Whilst it is true that business and public organisations over the world have benefited from, and are continuing to utilise, techniques which have their origins in the scientific management movement, it is also a fact that, in the West at any rate, a reaction against the basic philosophy of the creed is taking place (Cole, 1996). Whatever else, Taylor did at least give a major impetus to the development of modern management thinking and the later development of organisational behaviour. It seems that Taylor did not so much ignore but was more unaware of the complexity of human behaviour in organisations and the importance of the individual's own feelings, group working, managerial behaviour and the work environment. On balance, the most important outcome of scientific management was that it stimulated ideas and techniques for improving the systematic analysis of work at the workplace.

The theorists of human relations set out to humanise the workplace, and they did, but at the expense of studying the organisation as a whole (Cole, 1996). They did not address themselves sufficiently to several major problems that can arise in particularly every organisation, for example the problem of dealing with the tensions between even the minimum degree of structure and the needs of people. A further difficulty in the human relations approach was its emphasis on the practical application of ideas rather than on the conceptual development of organisational theory.

The advantage of considering any area of management as a system or subsystem is that it enables identification of critical variables and constraints and their interaction with one another. Managers operate in an open system of management, and the people they work with are products of and influenced by their entire cultural environment. Any single management issue, or problem has to be treated in respect of its interacting consequences with other elements.

The generalisation of the above management theories across industries and countries has been the subject of research since the early years of the scientific management school. Cheng (1994) states that a finding in the management science can only have universal applicability if it incorporates characteristics of the social and cultural context in which it was observed as analytical variables in the explanation or prediction of that phenomenon.

Human related findings include the actions of people whether as individuals, or groups, or organisations. Thus, these types of findings are often abstractions that depend on social construction and cultural understanding in order to obtain meaning. Unfortunately, according to Santos (1999), differences in social and cultural characteristics themselves impose barriers to generalisation of human related findings. These differences are manifested, for instance, in particular managerial behaviours such as decision-making styles, approach for learning activities, norms of participation and formality in presentations (Hofstede, 1994; Lessen, 1993).

The way organisations learn, for instance, varies considerably from one culture to another and may affect a principle or concept derived from a human related finding. According to Lessen (1993), for instance, in the more pragmatic cultures, knowledge is typically acquired through experience. In the rationalist cultures, managers may generate bureaucratic paths of decisions throughout the organisation. Managers in more holistic cultures are more likely to be worried about the coherence of the whole system in which someone is working. In humanist environments, the social network is usually the strongest factor in decision making and learning, according to Lessen (1993). Therefore, it has become clear that human related findings usually involve a far more complex number of factors.

Adding to the barriers described above are the doubts about the usefulness of searching for any theoretical generalisation. The study of theory is not always clearly worthwhile for people in practice since the meaning of the word “theory” to them is usually accosted with speculation or with a mental distance from the real world (Koskela, 1996). Hence, Hofstede (1994) argues that the research for a universal, timeless, worldwide management theory is futile since it is a never-ending

quest. Even when it is found that a particular piece of knowledge is universally valid, it may still not be universally relevant (Rosenweig, 1994; Aharoni & Burton, 1994).

One of the most important results of searching for the theoretical meanings of best practices is to expand the creativity of people and drive their corresponding reflection in the practices of their industry. Promoting learning and enhancing creativity are sufficient reasons why both industry and academia should strive for better theories that lead to better practices and vice-versa. The side benefits in terms of continuous learning are often more important than the generalisations themselves.

The fusion of scientific management, human relations and systems and contingency theories are clearly observed in modern management literature in general. Technological knowledge is placed side by side with human considerations. The present thesis itself is best described as being part of this school of thought, since it investigates and puts together many ideas.

2.3 THE FACILITIES MANAGEMENT CASE

The previous section explained the historical evolution of management from which FM cannot be dissociated. It also presented the pitfalls of generalising about management theories. Having put the management field in context, the next section shows the dynamic relationships between facilities management practice and theory.

2.3.1 FACILITIES MANAGEMENT IN CONTEXT

Facilities management (FM) is a hybrid discipline (Akhlaghi, 1996). It is concerned with the interface between people, processes and places in the context of the management of an organisation as a whole. FM is therefore about “strategic brokerage”, a discipline of co-ordination with the purpose of delivering any range of support services in order to ensure the successful running of any core business.

US Library of Congress (1982) defines FM as: “the practice of co-ordinating the physical workplace with the people and work of the organisation; (it) integrates the principles of business administration, architecture, and the behavioural and

engineering sciences”. This definition is however very broad, whilst inadequate, as a direct basis for constructing a working model for FM. Nevertheless it confirms, in general terms the realisation that there are at least three principal aspects to the FM function which may be true in every situation (Barrett, 1995):

- It is a supporting management function to the core business of an organisation;
- It concentrates on the area of interface between physical workplace and people; and
- It requires a multi-skill approach.

The British Institute of Facilities Management (1999) defines FM as “the practice of coordinating the physical workplace with the people and work of an organisation”. This simple and well-focused expression of FM does not, however, stress the contribution that well-managed facilities can make to an organisation. FM, a term that Becker (1990) uses to encompass the activities in planning, designing and managing complex facilities such as offices, hospitals, and schools, differs from architecture and interior design, at least as they have been practiced historically, in the following way: facility management refers to buildings in use, to the planning, design, and management of occupied buildings and their associated building systems, equipment, and furniture to enable and (one hopes) to enhance the organisation’s ability to meet its business or programmatic objectives. FM thus refers to organisational effectiveness.

In 1993, the Royal Institution of Chartered Surveyors (RICS) FM skills panel considered FM to consist of three distinct but interrelated areas:

- The management of support services;
- The management of property; and
- The management of information technology.

Thompson (1991) describes a generic FM department, which he considers as having four primary functions:

- Real estate and building construction;
- Building operations and maintenance;

- Facility planning; and
- General/office services.

Centre for Facilities Management (1992a; 1992b) defines FM as “the process by which an organisation delivers and sustains a quality working environment and delivers quality support services to meet the organisation’s objectives at best cost”. The working environment includes the physical, administrative and social setting for productive activity and the definition includes all the systems and services that support the business operation and suggests that FM is essentially demand driven and should be closely related to strategic planning in an organisation.

Atkin & Brooks (2000) define FM as, “an integrated approach to operating, maintaining, improving and adapting the buildings and infrastructure of an organisation in order to create an environment that strongly supports the primary objectives of that organisation”. Therefore, the aim of FM should be not just to optimise running costs of buildings, but to raise efficiency of the management of space and related assets for people and processes, in order that the mission and goals of the organisation may be achieved at the best combination of efficiency and cost (Spedding and Holmes, 1994).

The review of literature suggests that the key components that impact on FM implementation are a synergistic blend of “hard” and “soft” issues. This concept therefore comprises both production oriented and user relations oriented elements (Varcoe 1992). This perspective is exemplified by the work of Becker (1990), Williams (1996) and Douglas (1996).

The Chartered Institute of Building (CIOB) has taken a particular view of facilities management, which is reflected in Figure 2 (cited in Spedding and Holmes, 1994). Figure 2 highlights the areas of built asset management, strategic property management, organisation (people and processes), valuations and contract procedures. These five main groupings of activity take place within the practice environment of FM, which also relates to the organisation’s business environment, and encompasses all of the particular FM processes.

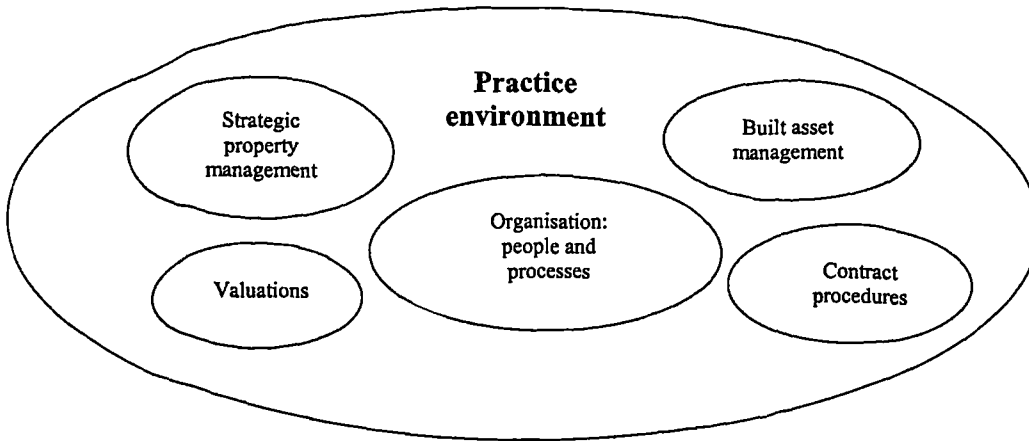


Figure 2: FM overview [Source: Spedding and Holmes (1994)]

Barrett (1992a) further attempts to define these categories in terms of organisational context (Figure 3):

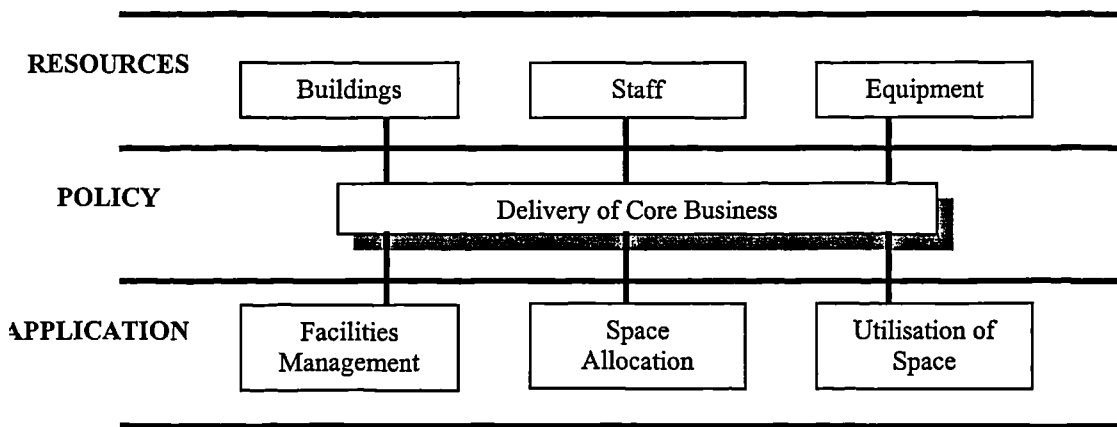


Figure 3: FM in its context [Source: Barrett (1992a)]

However, whichever definition of FM is favoured, it is clear that FM is an umbrella term under which a wide range of property and user related functions may be brought together for the benefit of the organisation and its employees as a whole. Therefore, the aim of the FM should be not just to optimise running costs of buildings, but to raise the efficiency and suitability of the management of support services for people and processes, in order that the mission and goals of the organisation may be achieved at the best combination of efficiency, cost and quality.

The essence of professionalism in FM can also be described as being able to tune into the organisation's objectives and values; being able to organise the provision of the type, quality and level of support required; having the ability to stay sensitive to the needs, attitudes and behaviour of people; and having the knowledge and ability to facilitate information exchange and co-operation (Akhlaghi, 1996).

2.3.2 PRINCIPLES OF FACILITIES MANAGEMENT

FM is fundamentally a management function, as the following definition (Becker, 1990) suggests: “ FM is responsible for co-ordinating all efforts related to planning, designing, and managing buildings and their systems, equipment and furniture to enhance the organisation's ability to compete successfully in a rapidly changing world”. Tuveson (1998) identifies FM as the co-ordination of the physical workplace with the people and work of an organisation. Thus, the role of FM in organisations is to support the achievement of organisational goals (Anderson, 1996).

Pheng (1996) suggests that FM contains four main principles:

- The continuous programmed co-ordination of all efforts, namely planning, designing, construction and management of facilities towards enhancing the working environment of the people and the organisation's ability to meet its business objectives;
- The total integration of a diverse field of disciplines of business, architecture, behavioural and engineering science under one entity in an organisation to oversee all facilities functions previously controlled by independent departments;
- The management of activities proactively rather than the management of facilities reactively; and
- A business concept where FM policies and procedures are guided by organisational goals and objectives as well as available resources.

From a macro perspective, FM is a multidisciplinary, but an integrated function that generally involves more than one department in a large organisation. Therefore, FM – in its widest possible sense – is concerned with the dynamic interaction between an organisation's personnel, process and place (Laird, 1994).

2.3.3 CRITICAL SUCCESS FACTORS OF FACILITIES MANAGEMENT

Many FM researchers have turned their attentions to identifying the “critical success factors” of FM in an attempt to provide insights as to how the FM can contribute towards organisational performance. This is clearly illustrated by the types of papers in the academic and management literature listed in Table 1:

Journal	Author(s)	Title	Year
FACILITIES	Thompson	<i>The essence of facilities management</i>	1990a
	Thompson	<i>The case for corporate guidelines</i>	1990b
	Alexander	<i>A strategy for facilities management</i>	1994a
	Kincaid	<i>Integrated facility management</i>	1994a
	Varcoe	<i>Implications for facility management of the changing business climate</i>	2000
	Grimshaw	<i>Facilities management: the wider implications of managing change</i>	1999
	Nutt	<i>Linking FM practice and research</i>	1999a
	Then	<i>An integrated resource management view of facilities management</i>	1999
	Barrett	<i>Achieving strategic management through strong relationships</i>	2000
CENTRE FOR FACILITIES MANAGEMENT PUBLICATIONS	CFM	<i>An overview of the facilities management industry (Part 1)</i>	1992a
	Alexander	<i>Facilities management as business reengineering</i>	1993a
	Alexander	<i>Facilities management as a quality cycle</i>	1993b
	Alexander	<i>Facilities management: the strategic role</i>	1993c
	Alexander	<i>Developing facilities for competitive advantage</i>	1993d
	Alexander	<i>Facilities management practice</i>	1993e
	McFadzean	<i>Relating FM to organisational performance</i>	1995
	CFM	<i>Thinking about facilities management</i>	1996
Alexander	<i>Facilities management in the new organisation</i>	1993f	
FACILITIES MANAGEMENT WORLD	Kell	<i>An informed future for FM</i>	1996
MANAGING OFFICE TECHNOLOGY	Tuveson	<i>Facility management in the 21st century</i>	1998

Table 1: Critical success factors in FM - Contributing authors

These types of studies are not without precedent as projects such as CREM (Corporate Real Estate Management, cited in Varcoe, 2000) were conducted in the

1990s's in an attempt to throw light on the driving forces behind successful FM (e.g. Thompson, 1990a, 1990b; Alexander, 1993a, 1993b, 1993c, 1993d, 1993e, 1993f, 1994a, 1994b; Kincaid, 1994a; Grimshaw, 1999; Nutt, 1999b, 2000; Varcoe, 2000; Barrett, 2000). The findings from these studies addressed issues such as typical FM activities, the FM marketing interface, access to external influential factors, and FM and its relationship to organisational performance etc. Although many of the critical success factors of FM have not changed since the early studies, the nature of FM, specifically in its relation to the other parts of the organisation (including its contribution to strategy) clearly has.

These changes to the management of facilities over the last two decades are captured in the discussion in the literature regarding “Generations” of FM. This “model” of the evolution of the FM organisation is not meant to prescribe definitive categories or eras of FM organisations, but to serve as a point of departure in identifying characteristics of FM organisations. The evolutionary nature of the four generations of FM illustrates that each stage overcomes some of the difficulties associated with the previous stage.

The following sections discuss the generations of FM as an introductory section and as a useful structure around which to discuss the trends in facilities management in the last twenty years.

2.3.4 GENERATIONS OF FACILITIES MANAGEMENT

As already identified in section 2.3.1, FM is a term which encompasses a wide range of activities involved in the effective management of built assets. It involves the total management of all services that support the core business of the organisation. Alexander (1996a) identifies FM as the process by which an organisation ensures that its buildings, systems and services support core operations and processes as well as contribute to achieving its strategic objectives in changing conditions. FM emerged with the integration of property management, property operations and maintenance and office administration according to Kincaid (1994a). They have in common the fact that they all exist to support the main (core) activities of the organisation.

The role of FM in its contribution to the success of the organisation has had increasing importance since the origins of the concept of FM (Alexander, 1996b). In the 1980's, FM was managed as an isolated activity and considered as an overhead like any other cost in the budgeting process. Today, however, FM is managed as an integrated activity – integrated with the commercial, manufacturing and marketing functions of the high technology enterprise.

2.3.4.1 FACILITIES MANAGEMENT HISTORY

Facilities management was discovered, not invented – it was always there in the stone, awaiting the sculptor's chisel of changing organisational requirements of accommodation to reveal its lineaments (Edwards, 1997). Studies into the efficiency of workplace organisation have been undertaken quite extensively and concepts of value in building and the concepts of construction economics have been progressively refined in the latter parts of the last century (Spedding and Holmes, 1994). The growth of large national and international organisations, together with improved communications, mobility of people, and information technology, means that attention has now begun to focus more on the connections between buildings and people.

Although FM has existed as long as buildings, its recorded history is a nanosecond in time (Becker, 1990) and only in recent years has it received worldwide recognition. The first two decades of FM have nearly ended - it can be considered to have officially begun in the United States with the formation of the International Facility Management Association (Thompson, 1990a). In the United States, 1980 seemed to be the critical demarcation point, the time at which several creeks quickly formed into a fast-flowing stream that then began to grow into a river, with tributaries flowing around the globe. Business entities have come to realise that maintaining a well managed and highly efficient facility is critical to success. The United Kingdom can claim to have officially participated in these two decades of development by way of comment and opinion and through professional development - the Association of Facility Managers was formed in the United Kingdom in 1985 (Edwards, 1997). The Japan Facility Management Association was set up in 1987, and in 1993, International Facility Management Association (IFMA) launched its first South East

Asian Chapter in Hong Kong (Edwards, 1997). It is interesting that in Japan in particular the FM function has been promoted through government agencies, whereas elsewhere the onus has tended to be on individual, independent professional associations to develop FM, and the viewpoint of FM has tended to be coloured in many countries by the existences or otherwise of strong professionals in the property management and architectural fields (Spedding and Holmes, 1994). The Facilities Management Association Australia was founded in 1988. Figure 4 summarises this state of play:

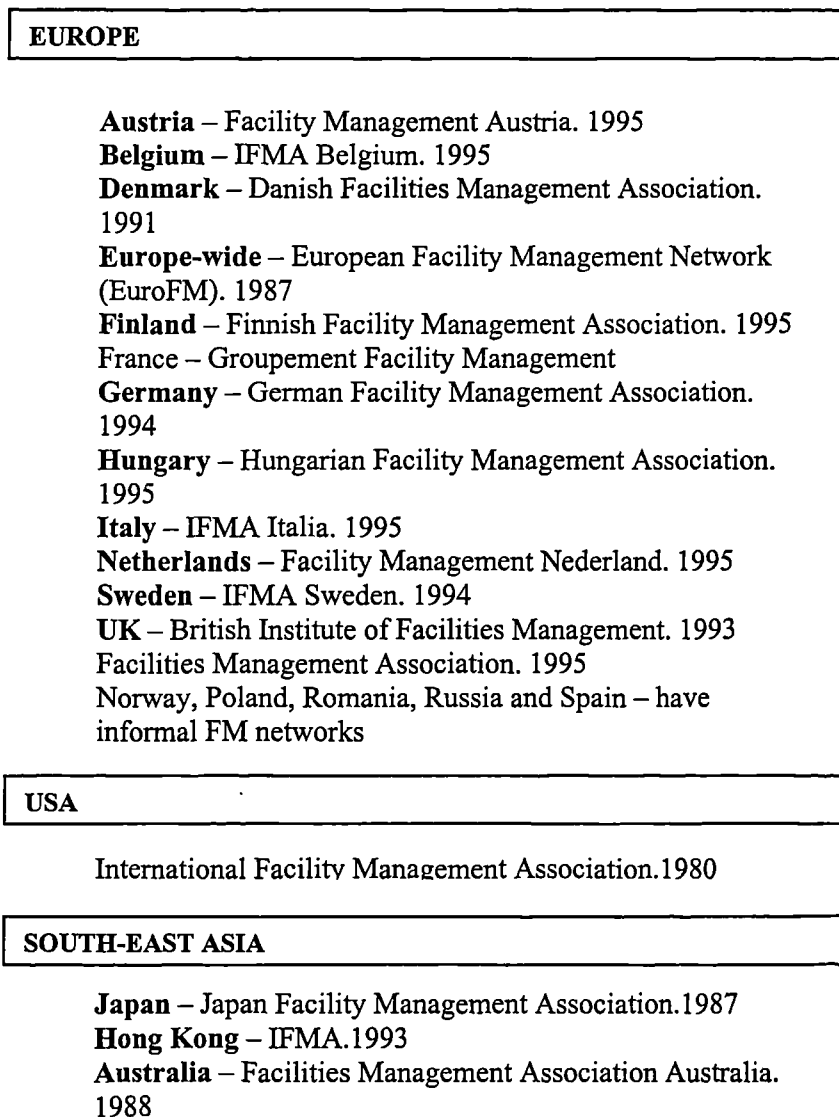


Figure 4: FM professional development [Source: Edwards (1997)]

Five factors coalesced to propel FM from a hidden function entrusted to the sleepy, the slow, and the steady to the increasingly bright-eyed and dynamic facilities managers who can be found in public and private sector organisations today (Becker, 1990) (Figure 5). Further, environmental consciousness and health concerns also have had a major impact on the importance of and need for facilities professionals in organisations.

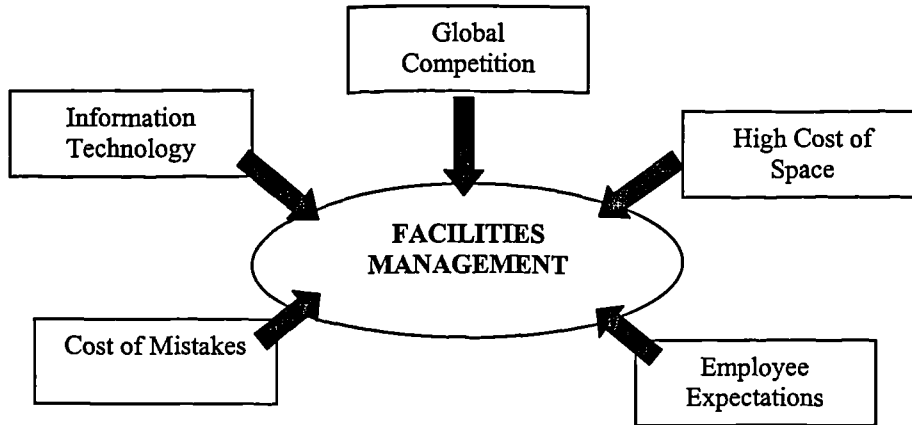


Figure 5: Five factors stimulating the growth of FM [Source : Becker (1990)]

FM in the UK and the Netherlands is most developed in the private sector, particularly in the electronics, insurance and financial services sectors (Edwards, 1997). The public sector generally lags behind, but initiatives to make the public sector more responsive and cost accountable will reduce the gap in the future.

2.3.4.2 GENERATIONS

The generations of FM solicit characteristics of organisations operating in different eras and/or at different stages in their evolution (that is, some organisations still possess characteristics of first generation FM). Then (1996) identifies the factors that contributed to the changes observed in the FM function during the past and Then (1999), in discussing the changing focus on FM practice, provides further clarification of each stage. Table 2 shown below, highlights some of the factors in the FM generations and the major features of the FM organisation at each stage:

First generation	Second generation	Third generation	Fourth generation
<ul style="list-style-type: none"> ▪ Concerns services associated costs ▪ Basic stance towards FM 	<ul style="list-style-type: none"> ▪ Growing awareness to manage physical resource ▪ Choice of FM provision 	<ul style="list-style-type: none"> ▪ Trend towards outsourcing ▪ Partnering and alliances ▪ In search of economy ▪ Focus on improvement initiatives 	<ul style="list-style-type: none"> ▪ Need to align facilities resource to strategic direction ▪ Service orientation

Table 2: Generations of FM - Major features

2.3.4.2.1 FIRST GENERATION FACILITIES MANAGEMENT - TASKS AND FUNCTIONS

First generation FM emerged in the 1980s and is characterised by FM working in isolation to the rest of the organisation and being perceived as an overhead expense (Becker, 1990).

Alexander (1996a) and Then (1996) identify some of the problems associated with first generation FM, despite the obvious benefits of “leaving FM by itself”. Many senior managers mistakenly view facilities as a necessary evil rather than a strategic asset and therefore as something to be managed for minimum cost rather than optimum value (Price and Akhlaghi, 1999). The tension between financial and FM employees, which, to some extent, is still an issue for facilities managers, characterises this first generation. Financial people believe that “FM is merely an overhead to the organisation” and facilities managers believe that “FM has not given due recognition” within the organisational setting. Figure 6 outlines the functional focus of FM present in the literature.

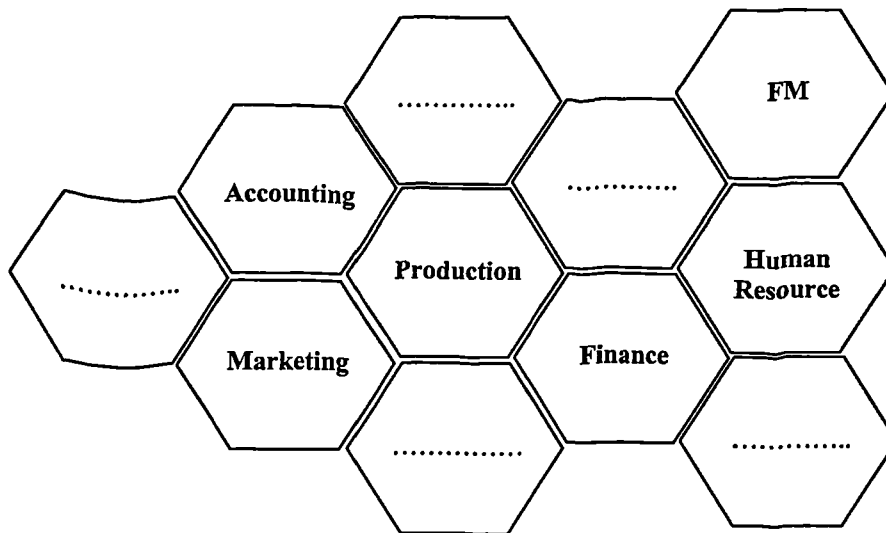


Figure 6: FM as one of organisational functions [Source: Adapted from Santos (1999)]

On a strategic basis, the criticisms of first generation FM are concerned with the lack of applicability of the output of the FM function and its lack of concern for the organisational effectiveness. This, of course, is marked by the changes in the functions and activities perspective to process perspective.

2.3.4.2 SECOND GENERATION FACILITIES MANAGEMENT - PROCESSES AND COMPETENCIES

Initial preoccupation with tasks and functions has given way to an emphasis on processes and their management (Then, 1999). In the later 1980s and early 1990s, links with the rest of the business functions were strengthened. Second generation FM seeks to promote the process focus between the organisation's individual businesses and the FM organisation by making FM activities within the organisation, a continuous process.

The move towards better management of facilities is set to continue as both buildings and their occupants become more sophisticated. Organisations need to concentrate on developing integrated, accountable and value adding services. The management of FM at the business and corporate level however, is still missing as second generation FM attempts to identify FM processes rather than identify specific FM "functions". FM processes identify needs, and design and specify the service to satisfy the service

management to ensure they deliver processes ensuring quality provision and the monitoring processes that enable control that is referred to as FM. Figure 7 identifies FM's process focus within organisations.

A process oriented approach was suggested echoing the growing interest in “re-engineering” business processes. FM entails maintaining a balance between an organisation’s needs and the provision of the facilities that are necessary for effective operation of a business, of a health care service, of a learning environment etc. the balance is maintained by processes that continuously match the provision of buildings, systems and services to changing needs (Alexander, 1993b).

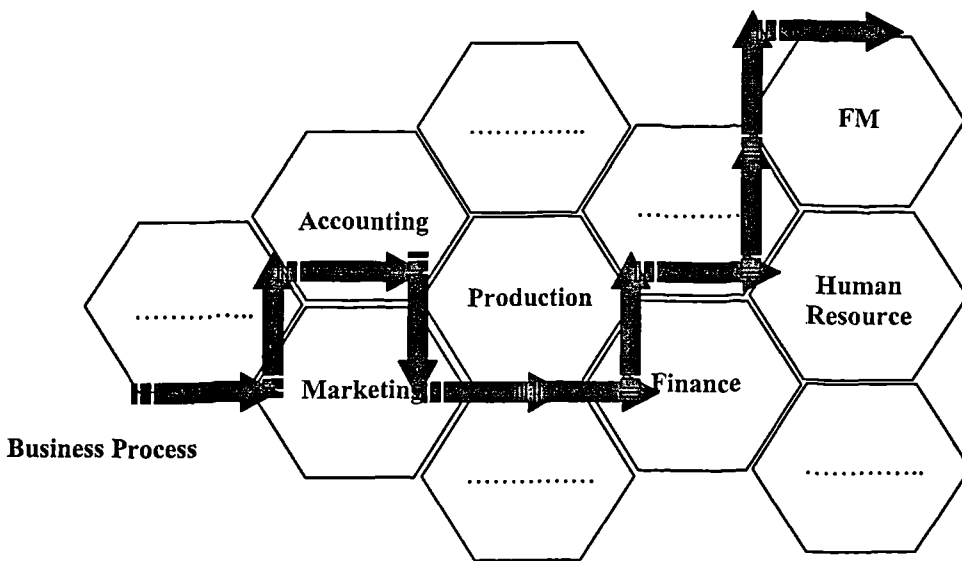


Figure 7: FM as part of the organisational business process [Source: Adapted from Santos (1999)]

2.3.4.2.3 THIRD GENERATION FACILITIES MANAGEMENT - RESOURCE MANAGEMENT

If “isolated FM functions” represents first generation of FM, and the “integration of FM processes” second generation, then third generation FM might be seen as more concerned with “resource management”, concentrating on managing supply chain issues associated with the FM function. More recently, the shift has been towards resource integration with the emphasis on provision of an enabling working environment where the issues of people, processes and property are elements of the

same problem seeking a common solution (Then, 1999) with due interaction across functions.

The above changing focus in FM as an integrated resource management spells dramatic shifts in competencies for both the demand side (purchasers of facilities and services) and the supply side (suppliers and service contractors). The trend towards organisational “downsizing” and “outsourcing” collectively imposed an onus on many organisations to seriously review their internal competencies necessary for managing the “new era of choices and flexibility” (Then, 1999).

This generation of FM stresses the importance of understanding FM as a business context. The practical relevance of FM to business is increasingly recognised (Alexander, 1993a; Centre for Facilities Management, 1999). FM is continuing to grow in importance because of the flexibility it brings to organisations in a continually changing climate. Closer integration of facilities and a more appropriate focus on user and strategic needs brings important business advantages.

2.3.4.2.4 FOURTH GENERATION FACILITIES MANAGEMENT - STRATEGIC FACILITIES MANAGEMENT

In order to achieve the much needed alignment between organisational structure, work processes and the enabling physical environment, the organisation’s strategic intent must clearly reflect the facilities dimensions in its strategic business plans (Then, 1999). This represents the fourth generation of FM. The essence of a strategic FM is making decisions in changing, uncertain, unpredictable and competitive circumstances (Nutt, 2000). This highlights three emerging themes: linking facilities decisions to corporate strategy, proactively managing facilities as a business resource, and measuring facilities performance to understand fully, the strengths of the above relationships (adapted from Then, 1999).

FM is first and foremost about organisational effectiveness; hence, the decisions taken about facilities are strategic decisions. The basis of understanding FM as a strategic issue depends on an understanding of the potential of facilities for creating quality-working conditions to support the key organisational objectives. Positively

managed facilities can add value to a business as a positive factor of production, can improve the quality of working life for employees, and project a strong corporate image (Alexander, 1993b; 1993c). Tuveson (1998) states that there should be a match between FM and organisational and business strategies and their delivery process, representing the main issues behind the fourth generation FM.

Figure 8 highlights the above generations of the FM function:

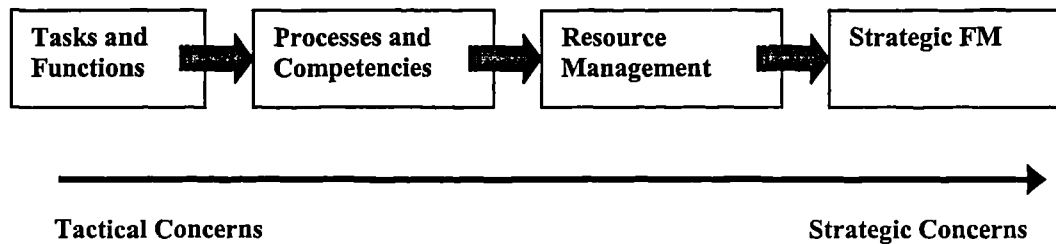


Figure 8: Changing focus in FM [Source: Adapted from Then (1996)]

The identification of FM generations helps to explain and identify the importance of, the need for strategic business planning to incorporate and, indeed, integrate the facilities dimensions of business delivery.

2.3.5 FACILITIES MANAGEMENT MODELS AND STRUCTURES

Further, literature reveals that FM encompasses a combination of perspectives about people, built assets and change processes to realise the value of any organisation. These practices are generally consistent with the ideas and techniques originally articulated by Nutt (1992) and Then and Akhlaghi(1992). By grouping similar requirements postulated in the literature, Barrett (1992a) classifies all these into three separate categories. Thompson (1990b) also provides a meaningful taxonomy for classifying FM attributes.

2.3.5.1 BECKER'S MODEL OF A FACILITIES MANAGEMENT ORGANISATION

Becker (1990) sees the facilities organisation as falling into roughly three categories: The loose-fit, the tight-fit and the elastic organisation (see Table 3):

Types of FM organisation		
Loose-fit	Tight-fit	Elastic-fit
Ad hoc	Central standard	Central guideline
Minimum information	Maximum information	Selected information
Minimum control	Maximum control	Selected control
Service	Cost	Cost and service
Reactive	Reactive	Proactive
Tactical	Tactical	Strategic
Unplanned diversity	Planned uniformity	Planned diversity
Negotiated decisions	Dictated decisions	Consensus decisions

Table 3: Models of changing FM organisation [Source: Becker (1990)]

In loose-fit organisations, there is little formal control over facilities. In tight-fit organisations, survival is the goal, someone is assigned to manage facilities, systematic databases and benchmarking are uncommon, operational decisions are often confused with strategic policy (Becker, 1990). In elastic organisations, there is clear FM philosophy and there is a strong emphasis on facilities quality, in terms of administrative ease, corporate image and cost and user satisfaction and effect of the facilities on internal communication and the ability to attract and retain high quality staff (Becker, 1990). Some of the characteristics of elastic organisations are: systems thinking and organisational ecology, accountability, linking the facility and the corporate plan, employee involvement – involving occupants in decisions about their work environment.

In practice, elements of each can be found in all three types, but the framework helps focus attention on organisations as dynamic organisms whose policies and practices should evolve with the organisation over time (Becker, 1990). FM’s role evolves from merely helping the organisation to survive to eventually acting to enhance its potential to prosper in a volatile, unpredictable business climate.

2.3.5.2 FACILITIES MANAGEMENT SPECTRUM

Thompson (1990a) refers to a “FM spectrum” which charts the potential development of the facilities function within any organisation. This is illustrated in Figure 10, below:

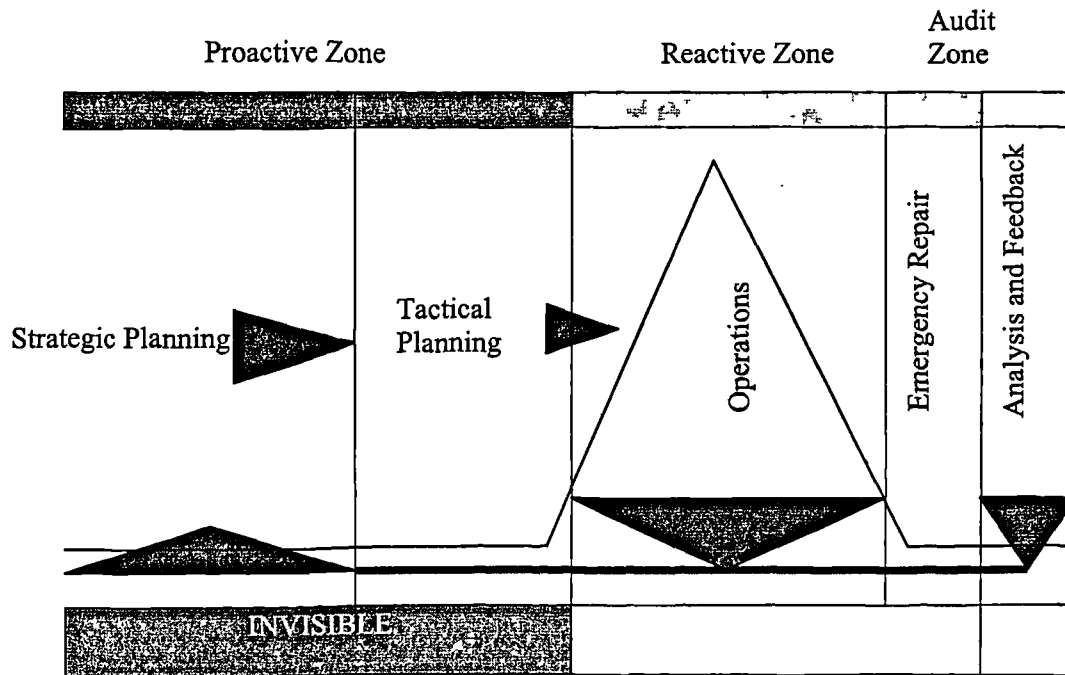


Figure 10: FM spectrum [Source: Thompson (1990a)]

The meritorious advancement of the facilities function, within any organisation, has to commence with the pro-active strategic planning stage (Featherstone, 1999). This gives the benefit of increasing the level of awareness of the facilities function. The development of the facilities function within any organisation is likely to vary in terms of its position along the FM spectrum and also in terms of the phasing of the development of FM within the organisation.

2.3.5.3 BARRETT'S FACILITIES MANAGEMENT CLASSIFICATIONS

FM departments vary considerably from one organisation to another. This is due to the fact that they have developed in response to the particular needs of their organisation (Barrett, 1995). Despite these differences, Barrett (1995) argues that the mode of operation of any FM function can be classified within one of five FM categories. His FM classifications are:

- *Office manager model* - under this model, FM function is largely performed by “someone as part of their general duties, such as the office manager” and the organisation “is located in just one building”;
- *Single site model* - although this type of model invariably delivers FM services through a separate FM department, all facilities are located on one site only;

- *Localised site model* - this type of FM model is generally applicable to organisations which have buildings on more than one site, most often within the same metropolitan area. He further states that this model will probably have a combination of in-house personnel and consultants/contractors... the headquarters will provide policy, overviews, budget control and technical assistance;
- *Multiple site model* - one of the main characteristics of this FM model is that the organisation operates across wide geographic regions and sometimes at a national level; and
- *International model* - this model is very similar to the previous example, but applies to large international organisations rather than to national organisations. The facilities department located at the head quarters acts as the policy maker and resource allocator, whilst the regional/national offices are primarily self-managing and responsible for operational activities.

2.3.5.4 "CONTRACTING FOR COMPETITIVE SUPPORT SERVICE" MODEL

Alexander (1997), in "Contracting for Competitive NHS Support Services" model, identifies four sub-models for FM:

- *A traditional approach* where the majority of services are delivered and managed in-house. A small number of specialist contracts may be controlled and integrated by the FM manager;
- *A balanced approach* between in-house and out-sourced functions, plus specialist contracts. In this model, entire services such as catering or maintenance may be contracted out, while others are trained- in house;
- *An entirely out-sourced FM package* using either one major contractor or a limited number of smaller contractors. An in-house facilities manager is responsible for overseeing the operation; and
- *A Public Finance Initiative (PFI) model* where the complete FM package is out-sourced through a management contract with an external facilities manager acting on the organisation behalf.

2.3.5.5 GENERIC FACILITIES MANAGEMENT MODEL

The generic model shown in Appendix one (Barrett, 1995) illustrates the range of continuing interactions, which are involved in FM. The generic model was based on a combination of systems theory (section 2.2.4) and information processing

perspectives, with specific reference to Beer (1985), Kast and Rosenzweig (1985) and Galbraith (1973) (cited in Barrett, 1995). The model shows how an ideal facilities department would interact with the core business and the external environment. The model differentiates between strategic and operational FM, highlighting the need to consider the future situation, as well as the current one.

2.3.6 TYPICAL FACILITIES MANAGEMENT ACTIVITIES

FM covers a wide range of services including property management, financial management, change management, human resources management, health and safety and contract management, in addition to more visible services such as building maintenance, domestic, and utilities supplies (Atkin and Brooks, 2000). These latter services are sufficiently obvious to need further explanation, but the former are not necessarily so. FM can therefore be summarised as creating an environment that is conducive to carrying out the organisation's primary operations, taking an integrated view of the services infrastructure, and using this to deliver customer satisfaction and value for money through support for and enhancement of the core business. This definition describes FM as something that will (Atkin and Brooks, 2000):

- Sweat the assets, that is, make them highly cost effective;
- Enhance the organisation's culture and image;
- Enable future change in the use of space;
- Deliver effective and responsive services; and
- Provide competitive advantage to the organisation's core business.

In the case of these services, softer issues are more evident and, in some respects, are more likely to determine the success or otherwise of an organisation's FM perspective. Dealing with people and their needs is often more consuming of management skill and time than technical services. This point perhaps underscores the distinction between yesterday's maintenance management and today's FM.

The focus of FM skills and techniques should be in the area that contributes to the overall management of a business by relating accommodation and support infrastructure issues to business, financial and personal criteria (Barrett, 1992a, 1992b). In their attempts to define the potential skills base of FM, Then and

Akhlaghi (1992) provide a matrix for classifying tasks that are associated with facilities management as shown in Table 4. This provides a classification of facilities tasks that may be carried out in a typical organisation. The columns reflect increasing strategic involvement as FM's responsibilities move from a project tasks' role to an executive responsibilities role. The rows reflect the strategic, tactical and operational management levels.

	Executive responsibilities	Management roles	Project tasks
Strategic	<ul style="list-style-type: none"> ▪ Mission statement ▪ Business plan 	<ul style="list-style-type: none"> ▪ Investment appraisal ▪ Real estate decisions ▪ Premises strategy ▪ Facility master planning ▪ Information technology strategy 	<ul style="list-style-type: none"> ▪ Strategic studies ▪ Estate utilisation ▪ Corporate standards ▪ Facilities management operational structure ▪ Corporate brief
Tactical	<ul style="list-style-type: none"> ▪ Corporate structure ▪ Procurement policy 	<ul style="list-style-type: none"> ▪ Setting standards ▪ Planning change ▪ Resource management ▪ Budget management ▪ Database control 	<ul style="list-style-type: none"> ▪ Guideline documents ▪ Project programme ▪ Facilities management job description ▪ Prototypical budgets ▪ Database structure
Operational	<ul style="list-style-type: none"> ▪ Service delivery ▪ Quality control 	<ul style="list-style-type: none"> ▪ Managing shared facilities ▪ Building operations ▪ Implementation ▪ Audits ▪ Emergencies 	<ul style="list-style-type: none"> ▪ Maintenance procurement ▪ Refurbishment/fit out ▪ Inventories ▪ Post occupancy audits ▪ Furniture procurement

Table 4: Classification of FM tasks [Source: Then and Akhlaghi (1992)]

Every item represents a category of decisions that have to be made at various management levels with skills required to make them and implement them or to assess their effectiveness and performance. The range of tasks covered within the matrix may be carried out in an organisation either by a facilities manager or by any individual or individuals who may not be recognised as being facilities related. Every item within each cell of the matrix represents a category of decisions that have to be made at various management levels with skills required to make them and implement them or to assess their effectiveness and performance (Then, 1996).

Atkin and Brooks (2000) identify the following functions as the main contributors to FM (Figure 11). This suggests that it is not the outcome that needs to be looked at closely, but the functions that lead to it.

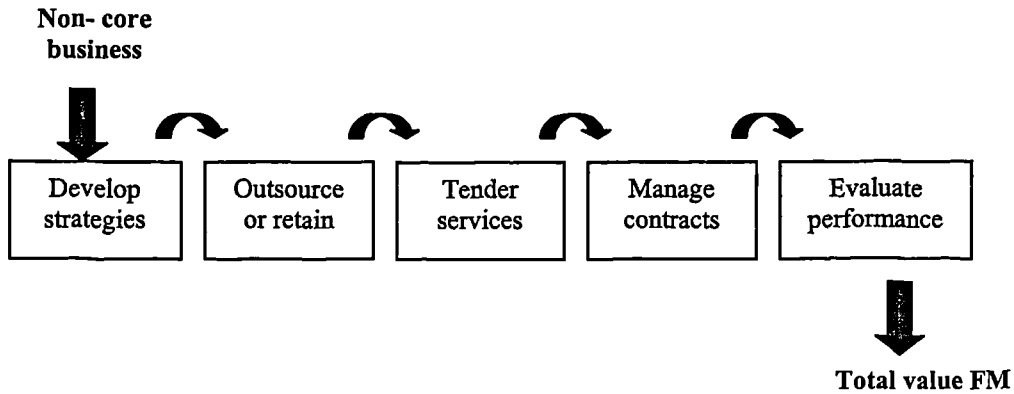


Figure 11: Overview of the top level functions within FM [Source: Atkin and Brooks (2000)]

Thompson (1990a) had some success in getting practitioners to agree with his presentation of a generic facilities department. Table 5 shows this structure. As indicated in the table, the generic department has four primary functions and two secondary functions.

Real Estate & Building Construction	Building Operations and Maintenance
<ul style="list-style-type: none"> ▪ New building design and construction management ▪ Acquisition and disposal of sites and buildings ▪ Negotiation and management of leases ▪ Advice on property investment ▪ Control of capital budgets 	<ul style="list-style-type: none"> ▪ Run and maintain plant ▪ Maintain building fabric ▪ Manage and undertake adaptation ▪ Energy management ▪ Security ▪ Voice and data communication ▪ Control operating budget ▪ Monitor performance ▪ Supervise cleaning and decoration

Facility Planning	General/Office Services
<ul style="list-style-type: none"> ▪ Strategic space planning ▪ Set corporate planning standards and guidelines ▪ Identify user needs ▪ Space planning ▪ Monitor space use ▪ Select and control use of furniture ▪ Define performance measures ▪ Computer facilities management 	<ul style="list-style-type: none"> ▪ Provide and manage support services ▪ Office purchasing ▪ Non-building contract services ▪ Reprographic services ▪ Housekeeping standards
<p>Landlord Activities</p>	
<ul style="list-style-type: none"> ▪ Assignment and sub-letting ▪ Promotion/market support 	

Table 5: Generic FM department [Source: Thompson (1990)]

Edwards (1997) argues that this list of potential responsibilities is much wider than the common perception of building occupiers or users. Thompson (1990a) suggests that one reason for this is the fact that many FM tasks, particularly the strategic and tactical planning tasks, are largely visible to the building occupants on a day-to-day basis who focus much more on the quality of their immediate work environment and anything that interferes with their daily routine. Thompson (1990a) refers to this as the “FM spectrum”, which charts the potential development of facilities function within any organisation (cited in Featherstone, 1999).

This is not to say, of course, that all facilities departments do or should look like this, but a reasonable department would be expected to have at least two primary functions. This may often be the case, as evidenced by many departments, which combine building operations and maintenance together with general/office services.

2.3.7 THE STRATEGIC ROLE OF FACILITIES MANAGEMENT

As the ensuing literature in section 2.3.6 evidence will support, the relationships between business management and the supporting role of facilities, that is the facilities they require to undertake their main activities, is often not properly defined at the strategic level, resulting in operational policies that do not clearly reflect the contribution of facilities in terms of the organisation’s overall performance. At the

strategic level, it must strive to interpret business plans in terms of facilities provision, in line with or ideally, ahead of projected demand (Then, 1996).

2.3.7.1 EVIDENCE OF UNDER MANAGEMENT OF FACILITIES

If facilities have been used for business operations since there have been business operations, why does FM still lacks clarity today? Facilities have been always taken care of, maintained to some degree or other, but strong management presence or knowledge hasn't been applied to them. Zeckhauser and Silverman (1981) in their study on "Corporate Real Estate Management in the United States" were the first to raise the corporate awareness of serious under management of the facilities assets. Another study by Gale and Case (1989) covering thirty selected large firms in fifteen industries also revealed that many corporate managers continue the neglect found in the earlier study.

Barrett (1995) has identified that in several of the organisations, FM is considered to be a purely operational function and hence, facilities departments exist to provide day-to-day service, not to consider how facilities could benefit the core business in the long run.

Hinks and Hanson (1998) further state that, "ignorance of the strategic worth of FM is a clear risk... it is not a simple issue to do with the direct costs of the built asset or other support resources.... The greater business issue is how well the scope for business agility is provided by FM.... If FM is to contribute more strategically to the business decision-making process, it will be necessary for a clear FM process to be defined which supports the integration of business processes and FM processes. This takes FM into business dimensions beyond the conventional core competencies and into the management dynamics of business decision-making – the definition and analysis of problems, the strategic analysis of options and the implementation and monitoring of the business FM process. To complement this, facilities managers must explore the world of business strategy so that they have a better understanding of corporate values and their relationship with FM....".

Numerous other writers reported a similar trend of low perception and low priority given to the facilities function by senior management of many organisations, example, McDermott (1994), Apgar (1995) and Hamer (1996). What is significant is that the findings from above cited studies highlight a consistent lack of awareness and understanding by most senior managers of the role of facilities and the contribution this resource could make to their organisation's success.

2.3.7.2 GROWING RECOGNITION OF FACILITIES AS A BUSINESS RESOURCE

A common theme that emerged from the recommendations of the studies reviewed in the last 2.3.7.1 section is that there is a growing need to raise the awareness of the contributory role of the facilities at senior management levels of organisations. The main findings of Then's study (1996) reflects a situation in which organisations are looking to optimise all their business resources whilst the dynamics of the market place and the pace of technological development are forcing many organisations to look at their operational assets and facilities more closely. There is a common consensus among senior facilities executives that the best way of raising corporate management awareness is to sell the role of operational facilities as a business resource, regarded in the similar light, as human resource and technology are now regarded as key business resources (Then, 1996). The clear message emerging from his study is that senior managers must acknowledge that facilities are a business resource, waiting to be utilised.

The practical relevance of FM to organisations in all sectors of the economy is now increasingly recognised (Alexander, 1996a). Organisations seek to improve their competitiveness by introducing a core business philosophy and restructuring to release senior management time and improve effectiveness. In these organisations, although the focus is on the core activities, facilities are no longer of marginal significance. The strategic role of FM is recognised and the opportunities provided through effective management are better understood.

A clear message emerging from the Anderson (1993) survey findings is that management must acknowledge that facilities are a business resource. It is important

for facilities managers to have an influence on strategic decisions and to demonstrate the contribution that facilities make to the achievement of organisational objectives and business targets. In order to respond to changing business practices, the range and scope of facility activities necessarily extends beyond merely providing technical solutions to problems arising, but to ensuring that facilities effectiveness is maximised and occupancy costs minimised. Another important aspect of operational assets which demands they should be considered as a strategic resource is their impact on the financial performance of the organisation that owns or uses the assets (Then, 1996).

The FM role is to meet the business challenges that confront the organisation it is supporting, as an enabler (Then, 1999). He stresses that in the long term, a sustainable FM role within organisations must be built upon an aspiration to continuously add value by providing appropriate and innovative “facilities solutions” to business challenges through the skilful manipulation of all business resources – the optimum balance between people, physical assets and technology. The need for senior management support is becoming clear. A study carried out by Rees (1997) assessed the extent to which the directors of FM are in a position to influence the organisation’s strategic development, business planning and policy decision-making. The study has concluded that most directors of FM are members of the management team and can make a direct contribution to the development of their organisation’s strategy and its major policy decisions.

2.3.8 THE IMPORTANCE OF FACILITIES MANAGEMENT IN ITS CONTRIBUTION TO THE SUCCESS OF ORGANISATIONS

Peters and Waterman (1994) cited major companies in the USA which were deemed to be excellent and showed how this has been achieved. Criteria included the empowerment of people, focus on customers and a shared vision of the direction of companies. Doyle (1992), analysed the factors which contributed to companies becoming “excellent”, having become dissatisfied by the lack of robustness of the companies achieving excellence according to industry surveys and the lack of rigour in the measures used to judge companies he made reference to profitability, shareholder value, quality and service and acquisitive growth as major factors.

“World class” has also been introduced into management vocabulary to describe the attainment of superior performance on a global scale. The factors which differentiate “world class” performers from other companies or operations are seen to be different across industry sectors but include the ability to increase productivity and the quality of outputs simultaneously (Ward, 1993). The contribution that services make to the success of organisations is being increasingly recognised in the literature (Alexander, 1996b; Barrett, 1995; Then, 1996). Doyle (1992) refers this to the increasing importance of service to supplement the product-based firms. Fitzgerald et al (1991), advocated that service based firms needed to measure their performance in six different dimensions – financial performance, competitive performance, service quality, innovation, flexibility, and resource utilisation.

2.3.8.1 LINKING FACILITIES MANAGEMENT TO BUSINESS OPERATIONS

McFadzean’s (1995) research concentrated on the relationship of an organisation as a whole with business results and to understand the link between business and FM. He identified the following links between FM operations and the business within an organisation (Figure 12):

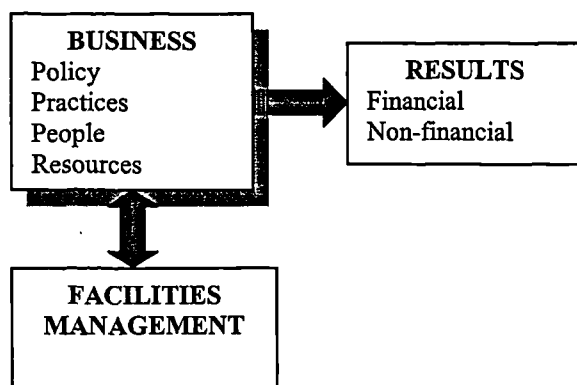


Figure 12: Linking FM to the business [Source: Adapted from McFadzean (1995)]

It was thought that FM may be defined as a “Resource” which supports the core business, as shown in the EFQM model in future section 2.6.6.7. This opinion was reinforced by the work of Collis and Montgomery (1995), who proposed the “Resource Based View of the Firm”. Ernst and Young started a re-engineering process within its FM operations promoted by the desire to obtain the British Standard 5750 (Melvin, 1993). The initial activities involved the identification of

approximately 91 FM related processes whose performance contributed to the business. Re-engineering processes were also used as a prerequisite for contracting out FM services at British Petroleum (Janzen et al, 1994), where facilities related staff identified activities, which were business critical. The judgement of criticality in terms of the business was based on a vision, “to satisfy the needs of the users and shared services by creating the most cost effective support environment”. This was translated into facilities terms by a series of statements including a quality support environment, flexible and responsive services.

2.3.8.2 VALUE OF FACILITIES MANAGEMENT WITHIN THE BUSINESS ENVIRONMENT

Convincing top management that the way in which the facilities are planned, designed, and managed affects the organisation’s ability to achieve its business objectives has not been easy (Becker, 1990). But, things are changing. The management tends to realise that for organisations to benefit from their enormous investment in facilities, they have to begin managing them actively and creatively, with commitment and a broader vision. They have had to link facility planning and management to the kinds of social and organisational trends identified by various writers (Varcoe, 1995; Barrett, 1995; Then, 1996). Table 6 describes number of facilities implications of a number of organisational trends.

In some respects, first impressions will determine whether or not customers return subsequently to businesses. This is why the concept of “facilities supporting or contributing to the core business of an organisation” is on the agenda. More satisfied customers mean more revenue and this should be contrasted with the kind of management where cost cutting leads to lower, less acceptable standards for users of facilities. Applying principles of best practice FM across the entire organisation will have further, measurable benefits. Indeed, it is always possible to measure value for money. So long as quality thresholds have been agreed between providers and users, cost becomes the deciding factor. That is, the idea that one is receiving better value for money this year, simply because costs are lower than last year, is not sufficient evidence of added value.

Trends	Pressures	Implications
<p><i>Social Organisational</i></p> <p>Participation Health/Well-being Multiple Choice Networking High Touch Decentralisation Information age Work Groups World Economy</p> <p><i>Work Force</i></p> <p>Better Educated More women/Working mothers Multiple Wage Earners/Part time Handicapped Older</p>	<p><i>Simultaneous increase in:</i></p> <p>Control Co-ordination Co-operation</p>	<p><i>Process/Product</i></p> <p>Space planning Policy/Standards Facilities Design Facilities systems Furniture Information Technology</p>

Table 6: Facility impact on social and organisational trends [Source: Adapted from Becker (1990)]

The potential FM market is worth £47 billion and could be more than three times that amount, the latest survey shows (Centre for Facilities Management, 2000). The attraction of FM is becoming increasingly common as forward-looking organisations are beginning to realise FM as a function with clearly defined objectives, strategic and commercially oriented discipline (Laird, 1994). A reason for this development is that, for the past ten years, the economy of the United Kingdom has imposed severe commercial pressures on business – both in private and public sectors. These pressures have made organisations realise that they must seek some form of competitive edge from every part of their organisation, which must include the costs of running the working environment (Laird, 1994).

Lack of relevant information and poor understanding of the FM function at the highest levels in organisations is costing British businesses £7 billion a year, according to FBA (1999). FBA's latest research activity involves many of Britain's blue chip businesses across a range of business sectors, as well as many organisations in the public sector. A focus on top businesses in banking and

financial services, legal, technology and telecommunications has identified that over 90% of those organisations involve operating considerably below best practice.

2.3.9 FACILITY IMPLICATIONS OF SOCIAL AND ORGANISATIONAL TRENDS

The role of FM in its contribution to the success of the organisation has had increasing importance since the origins of the concepts of FM. In the 1980's FM was managed as an isolated activity and considered as an overhead like any other cost in the budgeting process (Spedding, 1994). Today, however, FM is managed in most of the organisations as an integrated activity – integrated with the commercial, manufacturing and marketing functions of the enterprise (Then & Akhlaghi, 1992; Then, 1996; Barrett, 1992a, 1995, 2000; Madeley, 1997; Featherstone, 1999; Centre for Facilities Management, 1996; Alexander, 1994a) Concepts such as strategic FM and the FM business organisation are characteristics of the FM function as a source of competitive advantage, achieved primarily through the development of new facility management techniques.

Closer integration of facilities brings important business advantages – a more cost effective operation, avoidance of redundant and underused facilities – to provide a competitive edge (Alexander, 1996a). Success in FM will ultimately be measured by the extent to which facilities supports the “business” operation.

2.4 SUMMARY - PART ONE

This section has provided an analysis of the trends of FM and its characteristics over the last two decades and has served as a background to the context within which this research is undertaken.

Facilities and their management have always existed for as long as people have needed somewhere to sit, some lighting for their work, a building in which to stay dry, wash, use the toilet and eat food (Clark and Hinxman, 1999). The practice of FM is concerned with the delivery of enabling the workplace environment – the optimum functional facilities that supports the business processes and human

resources. The FM’s role is to meet the business challenges that confront the organisation it is supporting, as an enabler in the first instance. In the long-term, a sustainable FM role within organisations must be built upon an aspiration to continuously add value by providing appropriate and innovative “facilities solutions” to business challenges through the skilful manipulation of all business resources – the optimum balance between people, physical assets and technology.

The last few decades have seen FM change as technology has impacted on the production and administrative processes. The discussions surrounding the four generations FM illustrate the trends in the literature over the last two decades. Table 7 summarises the main trends:

	First generation	Second generation	Third generation	Fourth generation
Focus	FM in isolation	Process focus	Resource management	Integrated with business
Structure	Hierarchy	Matrix	Co-ordinated matrix	Matrix and networks
Process	Minimum communication	Service to service basis	FM portfolio	Feedback loops – cross boundary learning

Table 7: Characteristics of generations of FM

The integration of FM with the rest of the organisation is found in discussions relating to the fourth generation of FM in section 2.3.4.2.4, the need for strategic FM in section 2.3.7 and organisational and social implications of FM in section 2.3.9. The focus of FM activities underwent the most dramatic change from the first to the second generation. Not surprisingly, the third generation FM has a more balanced approach among resources. This trend towards development may also be connected to the increasing concern for strategic importance of the FM function, which has been made more accountable for its activities in recent years and has therefore become more visible.

The FM mechanisms which many of the authors refer to (relating to definitive models of the FM Organisation) are discussed above and were summarised in section 2.3.5. There is a general consensus as to the features of FM organisation - most of

the models mentioned above include functions, tasks, processes, competences, resource management and strategic issues – but the tools and techniques for the implementation of these concepts are ambiguous and ill defined.

Research in the specific area of FM organisations is riddled with problems of validity and reliability. As will be discussed in the methodology chapter (chapter four), the idea that one definitive model of an organisation which optimises performance under any circumstances is problematic and does not form a strong basis for a scientific endeavour. The performance measurement approach, addressed in the next section, yields more opportunities for researchers and is therefore the point of departure for this research.

Therefore, performance measurement in general and the need for assessment of performance is discussed in more general terms in part two (which is equally applicable to FM) of this chapter whilst the final section is dedicated to discussing the roles which performance measurement assume specifically within the context of FM. Further, it then describes the process, involving the use of a survey, interviews and literature review, which resulted in the selection of research needs.

PART TWO – THEORETICAL BACKGROUND AND FOUNDATION TO RESEARCH - CONCEPTS OF PERFORMANCE MEASUREMENT

2.5 OVERVIEW

Measurement has always been of great importance in every realm of life: Lord Kelvin described knowledge of any given subject as being, “of a very meagre and unsatisfactory kind” if it cannot be expressed in numbers. It is an area which has been discussed increasingly over the past few years, and the adages “you can’t manage what you can’t measure” and “what gets measured gets done” and “has never been so powerful a truth” (Peters, 1987) (cited in Stone, 1996) are an all too common element of many management texts.

Extensive use of the word “measurement” in recent literature has led to some confusing and contradictory definitions and interpretations of performance measurement in organisations. The result of these differences renders this field of research difficult to approach. For example, there are differences between authors’ perspectives of the characteristics of performance measurement and the level of analysis, which should be adopted.

The review of the literature on performance measurement, which follows in the following sections, aims to address the main issues of the field, and some of the reasons for the different ways in which performance measurement is used in the literature. This thesis does not focus on one specific definition of performance measurement but embraces the important issues, which emerge from each. Hence, the literature review in part two of this chapter derives from a number of the above disciplines, whilst the focus of part three is specifically on performance measurement in FM literature.

2.6 THE CONCEPT OF PERFORMANCE MEASUREMENT

2.6.1 THE CONCEPT OF MANAGEMENT AND MANAGEMENT PERFORMANCE

Management is an activity which has been practiced for as long as man has existed (Kast and Rosenzweigh, 1985). The task of management is carried out in the context of an organisation. Over the past sixty years attempts to develop coherent theories to explain the behaviour of people in organisations have moved away from purely structural or human relations considerations to a more comprehensive systems view. Nature and definitions of management has been described in section 2.2 in detail, but it is worthwhile to re-visit the classic definition of “management” which is still held to be that of Fayol’s (cited in Cole, 1996): “to manage is to forecast and plan, to organise, to command, to coordinate and to control”.

Over the past twenty-five years the impact of the behavioural sciences on the study of mankind at work has led to the ascendancy of organisation theory over purely management theory (Cole, 1996). Management is no longer seen as “the” controlling

factor in work organisations. Instead it is seen as a function of organisations. Its task is to enable the organisation's purposes to be defined and fulfilled by adapting to change and by maintaining a suitable balance between various, and frequently conflicting, pressures at work in the organisation.

Using the definition of management, management is about the accomplishment of preselected missions and objectives (Simpson, 1998) and it can be argued that management is largely concerned with achieving quality. Moving on now to consider the performance aspect of management, a dictionary definition of "performance" is "manner or quality of functioning" (Harper Collins, 1993). This implies that management performance is concerned with the manner or quality of managing (that is, the way in which management is done or how well management is done (Simpson, 1998).

2.6.1.1 PERFORMANCE ASPECTS OF MANAGEMENT – THE GENERAL NEED

In modern times, beginning with F.W.Taylor around the end of the nineteenth century, interest in the assessment of performance has shown accelerating growth up to the present day. Taylor (cited in Cole, 1996) felt that everyone should benefit from scientific management as described in section 2.2.2.1 – workers as well as managers. He disagreed with the way most piece-rate systems operated in his day, as the practice for management to reduce rates if workers earnings went up beyond an acceptable level. Taylor's view was that, having scientifically measured the workers' jobs and set rates accordingly, then efficient workers should be rewarded for their productivity without limit. According to his scientific management theory, measurement of tasks and processes provided useful information on which to base improvements in working methods, plant design etc. Shewhart and Deming (cited in Sashkin and Kiser, 1993), in the 1930's and 1940's looked at the production process, devising ways of measuring and controlling variability. More recently, writers have spread the word that management should have ways of measuring quality (Crosby, 1979).

A brief history of the measurement of management has been given but why should an organisation want to do this? From a classical management perspective, there is a need to assess performance in order to guide management's decision making in Fayol's defining activities of planning, organising, commanding, coordinating and controlling (cited in Cole, 1996). Similarly, from the human relations angle, there is a need to assess performance to know whether an initiative is producing the benefits intended. Feedback, involving performance assessment is also listed as being one of the key concepts of general systems theory (Kast and Rosenzweig, 1981).

2.6.1.2 MOTIVATIONAL AND ORGANISATIONAL VARIABLES AS PERFORMANCE DETERMINANTS

In general terms, motivation can be described as the direction and persistence of action (Kast and Rosenzweig, 1985). It is concerned with why people choose a particular course of action in preference to others, and why they continue with a chosen action, often over a long period, and in the face of difficulties and problems. The underlying concept of motivation is some driving force within individuals by which they attempt to achieve some goal in order to satisfy some need or expectation (Kast and Rosenzweig, 1985). In understanding the effects of motivation on performance, Douglas McGregor (cited in Dawson, 1986) suggested several steps of management:

- *Delegation* - give people a degree of freedom to assume responsibility in helping to achieve organisational goals;
- *Job enlargement and participation* - encourage people of all levels of the organisation, including the lowest levels to assume responsibility and to participate in developing solutions to problems; and
- *Goal setting and performance appraisal* - involve individuals in setting goals on their own that will act in concert with those of the organisation. Encourage them to take greater responsibility for planning and appraising their contribution to the organisation's objectives.

The performance-reward linkage indicates that the workers would perceive that the rewards are allocated by the organisation on the basis of performance. Major demotivators will always be frustration and uncertainty affecting performance. One

precondition for action is critical and inescapable – a willingness and a desire by management at all levels to ask, to listen and to respond (Rabey, 2001).

Rabey (2001) quotes from various research into motivational theories to show that motivation:

- Influences performance;
- Reduces absenteeism and turnover;
- Influences commitment to the organisation;
- Leads to job satisfaction; and
- Attracts people to the organisation.

The above literature review emphasises the impact of performance as a motivational determinant. Section 2.9.1 in Part three revisits the motivation concepts in detail.

2.6.2 CONCEPTS UNDERLYING CURRENT PERFORMANCE MEASUREMENT THEORIES

Performance measurement is a topic which is often discussed but rarely defined (Neely et al, 1995). Performance measurement systems developed as a means of monitoring and maintaining organisational control (Nani et al, 1990), which is the process of ensuring that an organisation pursues strategies that lead to the achievement of overall goals and objectives. Literally it is the process of quantifying an action, where, measurement is the process of quantification and action leads to performance. Sink (1991) suggests that performance measurement is a “mystery...complex, frustrating, difficult, challenging, important, abused and misused” function. The level of performance a business attains is a function of the efficiency and effectiveness of the actions it undertakes, and thus: performance measurement can be defined as the process of quantifying the efficiency and effectiveness of an action. Zairi (1994) identifies that performance measurement has been the systematic assignment of number of activities. He further suggested that the function of measurement is to develop a method for generating a class of information that will be useful in a wide variety of problems and situations.

A performance measure can also be defined as a metric used to quantify the efficiency and/or effectiveness of an action. Hronec (1993) defines performance measures as the vital signs of the organisation, which quantify how well the activities within a process or the outputs of a process achieve a specific goal. A performance measurement system can also be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions (Neely, 1994). The need for integration is supported by Hronec (1993), who defines a performance system as a “tool for balancing multiple measures (cost, quality and time) across multiple levels (organisation, processes and people)”. Performance measures are used to ensure that an organisation is achieving its aims and objectives (Moxham and Greatbanks, 2000). The measures are used to evaluate, control and improve production processes (Ghalayini and Noble, 1996).

Even with these definitions, performance measurement remains a broad topic. Edson (1988) and Talley (1991) stress the need for performance measurement systems to focus attention on continuous improvement. Kaplan (1991) states that an effective performance measurement system should provide timely, accurate feedback on the efficiency and effectiveness of operations. The following dimensions: planning, controlling and evaluating, managing change, communication, measurement and improvement, resource allocation, measurement and motivation have been identified by Sinclair and Zairi (1995a) as the need for measurement.

Performance measurement has become a very popular topic in recent years both in academic and management literature. This can be partly attributed to the claims made by authors (Neely, 1998, 1999; Neely & Adams, 2000; Neely et al, 1994, 1997; Nani et al, 1990; Sink, 1991; Edson, 1988; Zairi 1994, 1996; Zairi et al, 1998; Hronec, 1993) as described above, as to its benefits. Sinclair and Zairi (1995a; 1995b) exemplify the need for measurement in enabling good planning and control; management of change; communication; continuous improvement; resource allocation; motivation; and long-term focus, judging it to be a “vital management tool”. Sink and Tuttle (1989) also provide persuasive evidence of its potential. Measurement systems have a significant history as ‘control’ mechanisms (Sinclair and Zairi, 1995a), have contributed to developments in this area. As Sink (1986)

(cited in Stone, 1996) postulated some time ago: “ we are evolving from an era in which control was the major focus of most measurement and evolution systems to an era in which development, commitment, involvement... will be the major focus”.

In order to better understand the field, Martins (2000) has compiled the main characteristics of performance measurement:

- Congruent with competitive strategy; composed of financial and non-financial performance measures;
- Provide direction and support to continuous improvement activities;
- Provide support to identify tendencies and progress in performance;
- Facilitate understanding of cause-and-effect relationships regarding performance;
- Intelligible to majority of employees;
- Cover all company’s business processes;
- Real time information about performance;
- Dynamic;
- Induce employees’ attitudes; evaluate group performance instead of individual performance;
- Allow performance to be compared against competitive benchmarks;
- Composed by efficiency and effective performance measures;
- Linked to business processes; to part of individual and organisational learning;
- Composed of integrated process and result performance measures; integrated to management systems; and
- Provide a perspective of past, present, and future performance.

These may be seen as a foundation to develop and implement performance measurement systems within organisations.

2.6.3 GENERAL NEED FOR PERFORMANCE ASSESSMENT

Performance measurement systems historically developed as a means of monitoring and maintaining organisational control, which is the process of ensuring that an organisation pursues strategies that lead to the achievement of overall goals and objectives (Nani et al, 1990). In attempting to change the focus of an organisation, Brignall (1992) suggests that performance measurement is a key agent of change.

Even when an organisation has attained such a focus, however, performance measurement plays a vital role in maintaining attention on changing customer requirements and competitor actions. Performance measurement is a key factor in ensuring the successful implementation of an organisation's strategy (Fitzgerald et al, 1991). Business and business unit performance needs to be measured in relation to the objectives identified in the planning process. Attention on performance measurement in the context of modern business has been focused by the admission that financial information that had traditionally been provided to organisations for control and management purposes was no longer adequate for fully effective performance measurement to be achieved.

Dixon et al (1990) suggest that inappropriate performance measurement is a barrier to organisational development since measurement provides the link between strategies and actions. Inappropriate measures lead to actions incongruent with strategies, however well formulated and communicated. Appropriate measures should provide and strengthen this link, and both lead to attainment of strategic goals and impact on the goals and strategies needed to achieve them.

The importance of performance measurement in an organisation has been emphasised by many other authors. Oakland (1993) suggests that measurement plays an important role in quality and productivity improvement to:

- Ensure customer requirements have been met;
- Provide standards for establishing comparisons;
- Provide visibility and provide a “score-board” for people to monitor their own performance levels;
- Highlight quality problems and determine which areas require priority attention;
- Give an indication of the costs of poor quality;
- Justify the use of resources; and
- Provide feedback for driving the improvement effort

Park et al (1996) have mentioned the following reasons for measuring performance:

- To characterise, to gain understanding of processes, products, resources and environments and to establish a baseline for comparisons with future assessments;
- To evaluate, to determine status with respect to plan;
- To predict and thus enable planning; and
- To support improvement by gathering information that helps to identify problems and by planning and tracking improvement efforts.

Despite the diversity of opinion, however, each of the reasons offered falls into one of four generic categories, according to Neely (1998):

- Check position;
- Communicate position;
- Confirm priorities; and
- Compel progress

The need for information to stimulate appropriate action and organisational learning at the right level of the organisation and stage of the decision making process emphasises the need for performance measurement (Brignall and Ballantine, 1996). It was emphasised that in a competitive environment, management-by-exception may suffice so interactive systems may not be needed. In general, professional services face more volatile and uncertain external environments than mass services, and are therefore more likely to need interactive performance measurement systems.

It is already noted above that performance measurement can contribute to more effective control through giving insights as to whether, and if so which, control mechanisms to choose. But the process of performance measurement can also fulfil other functions within the control process. For example, Jorissen (1994) states that besides providing insights, performance measurement may also help clarify general management's organisational objectives to the lower organisational levels (cited in Drongelen, 1999). Furthermore, Pritchard (1990) has discussed how performance measurement can be built and used as a motivational tool.

Parker (2000) too, defines the fundamentals of performance measurement:

- Performance measures need to be aligned with the organisational strategy;
- Sub-unit measures must aggregate into organisation wide measures;
- There must be commitment to the measurement regime;
- Measurement must have an effect on performance; and
- Measures must be reliable.

The above literature review clearly shows that the development of performance measurement in management has followed a path that has been influenced by the general push to improve quality and service, in addition to meeting cost parameters. For many organisations, the justification has been acknowledged by senior management that a lack of appropriate performance measurement can act as a barrier to change and improvement.

2.6.4 REALISING STRATEGY THROUGH MEASUREMENT

It has long been recognised that performance measures can be used to influence behaviour and, thus, affect implementation of strategy (Skinner, 1971). Strategies are realised through consistency of decision-making and action (Mintzberg, 1979). Indeed, performance measurement is seen as an integral part of the strategic control cycle. Performance measures provide one means of:

- Helping managers to identify good performance (Hall et al, 1991);
- Making explicit the trade-offs between profit and investment (Kaplan, 1990);
- Providing a means of introducing individual strategic stretch targets (Kaplan, 1996); and
- Ensuring that corporate management knows when to intervene because business performance is deteriorating (Bungay and Goold, 1991).

The fact that performance measurement systems within organisations need to achieve alignment with strategic priorities is becoming established within the performance measurement literature (Cross and Lynch, 1998; Kaplan and Norton, 2000; Bititci et al, 2000). Bititci et al (2000) further identify that performance measurement needs to have the following characteristics:

- Being sensitive to changes in the external and internal environment of an organisation;
- Reviewing and reprioritising internal objectives when the changes in the external and internal environment are significant enough;
- Deploying the changes to internal objectives and priorities to critical parts of the organisation, thus ensuring alignment at all times; and
- Ensuring that gains achieved through improvement programmes are maintained.

In the organisational behaviour literature, the link between performance measurement and strategy is less explicit, although there is widespread recognition that performance management systems can be used to focus activity (Neely et al, 1994). In the manufacturing literature the focus tends to be more uni-dimensional and performance measurement is seen as a primary means of inducing consistency of decision-making and action (Kaplan, 1990; Hall et al, 1991).

There appears to be widespread agreement with Mintzberg's (1979) thesis that strategies are realised through consistency of decision-making and action. In the business strategy literature it is argued that such consistency can be induced through the use of strategic controls. In the organisational behaviour literature it is argued that one can use performance management systems for the same purpose. The manufacturing management literature, however, tends to focus on performance measurement assuming that this is key to generating the consistency of decision making and action required to achieve strategy realisation.

The above literature review defines performance measurement, identifies the reasons for performance measurement and describes the factors underlying an effective measurement regime. The next section deals with the measurement revolution followed by brief comments on some of the more modern approaches to performance measurement.

2.6.5 PERFORMANCE MEASUREMENT REVOLUTION – WHY NOW?

Performance measurement is an established concept that has taken on renewed importance in varieties of organisations (Camarata and Camarata, 2000). Given that the “basic management techniques” as discussed in section 2.2, have been used for so

long and that performance measurement is undoubtedly one of these techniques, then surely most organisations should have had well developed performance measurement systems in place for many years by now?

Examination of academic and practitioner literature would confirm that this is not the case (Medori, 1998; Brown and Laverick, 1994; Lynch and Cross, 1991; Neely, 1998; Lee et al, 1995; Olive et al, 1999; Kaplan and Norton, 1992, 2000). The start of the 1990s has had the impact of causing a rethink amongst senior executives in a broad range of industries of how to measure the performance of their businesses. They all recognised that new strategies and competitive realities demand new measurement systems. Eccles (1991) describes this recognition as a “revolution”: “At the heart of this revolution lies a radical decision: to shift from treating financial figures as the foundation for performance measurement to treating them as one among a broader set of measures”. The performance measurement revolution has identified that traditional financial measures do not give a ‘true’ reflection of corporate performance (Brown and Laverick, 1994). Numerous authors’ discuss the problems with the performance measures used by organisations today. During the last ten years, traditional management controls have been increasingly criticised and summarised below are some of the views advanced in the debate:

- They are rarely integrated with one another or aligned to the business processes (Lynch and Cross, 1991);
- Measures are often poorly defined (Neely, 1998);
- Traditional performance measures that enterprises have used may not fit well with the new business environment and current competitive realities (Lee et al, 1995);
- Misleading information is furnished for decision making (Olive et al, 1999); and
- Fail to provide information on what customers want and how competitors are performing (Kaplan and Norton, 1992).

Traditional financial accounting measures offer a narrow and incomplete picture of business performance, and a reliance on such data hinders the creation of future business value. The same measures are criticised for being historically focused (Dixon et al, 1990). Many organisations are realising that the traditional financial orientation of their performance measurement systems is no longer adequate.

Newing (1995) claimed, “In particular, it places too much emphasis on pure profit measures and too little on the customer, staff, risk process and control aspects of the organisation’s operations, although these are the key drivers of the financial results”. Yet another problem with the performance measures used in many organisations is that they are really integrated with one another or aligned to business processes (Lynch and Cross, 1991).

By the end of the last century, there were many vocal and well-respected critics of traditional measures, as described above. The questions this raise, however, is why now? What is it about managers in the last two decades that has made them so receptive to the message that their performance measurement systems are obsolete? Why have these problems come to the fore today? Why have they captured management’s attention? What sparked the performance measurement revolution? What has been the impact of this revolution? (Neely, 1999). Evidence suggests that there are seven main reasons for measurement revolution, according to Neely (1998):

- The changing nature of work;
- Increasing competition;
- Specific improvements initiatives;
- National and international quality awards;
- Changing organisational roles;
- Changing external demands; and
- The power of information technology

Criticisms of traditional performance measurement discussed above provide evidence that a revolution in performance measurement is taking place. Further evidence that a revolution in performance measurement is taking place is provided by the language used in annual reports (Neely, 1999). Ten years ago little mention of non-financial performance would have been made in the Chairman’s and Chief Executive’s statements. Recently, however, some organisations have been far more explicit about the link between financial and non-financial dimensions of performance (Neely, 1999). The notion of “balance”, perhaps most neatly encapsulated by Kaplan and Norton’s (1992,1996, 2000) Balanced Scorecard, is widely accepted.

Performance measurement incorporating non-financial measures has been a topic of great interest throughout most of the 1990s. This is because non-financial measures overcome the limitations of just using financial performance measures. “Soft” measures, such as employee satisfaction and commitment, are coming to the fore as protagonists of the business performance measurement revolution urge organisations to complement their traditional financial focus with softer data. Also, in today’s global economy, total customer satisfaction is seen by academics and industrialists alike as one of the key indicators of competitive success (Anderson and Sullivan, 1994). “Soft” issues, “those areas of the discipline which are generally difficult to measure and assess” (Black and Porter, 1995), are becoming more widely recognised as having an impact on business performance. They include issues such as employee and customer satisfaction, and they acknowledge “tomorrow’s organisation needs to measure these issues in order to fill an identifiable information gap”.

Protagonists of the “revolution” have continued to urge managers to focus upon “soft” issues as part of their “new agenda” (Geanuracos and Meiklejohn, 1993), with theoretical linkages between entities such as employee satisfaction, customer satisfaction and the bottom line (Heskett et al, 1994) (cited in Stone, 1996) formalising the need for this activity in practitioners’ minds (see Figure 13).

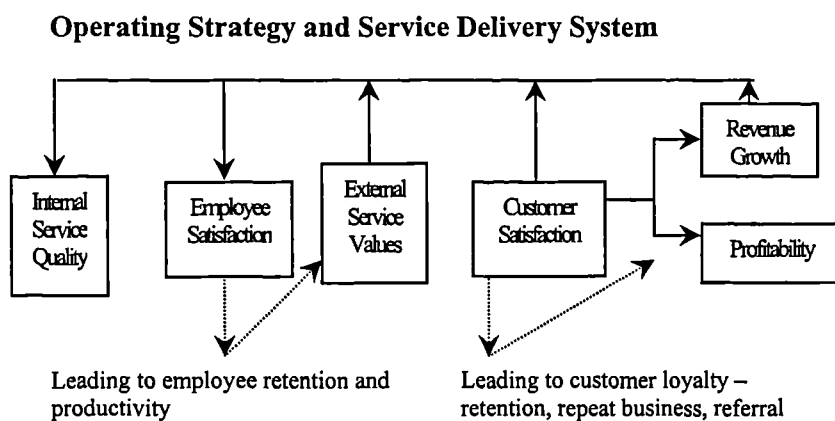


Figure 13: The service-profit chain [Source: Adapted from Heskett et al (1994) (cited in Stone, 1996)]

It seems that practitioners too have taken this idea on board. Jack Welsh, the Chief Executive Officer of General Electrics, believes that measurement priorities have to change, because “too often we measure everything and understand nothing” (cited in Stone, 1997). His view that “the three most important things you need to measure in a business are customer satisfaction, employee satisfaction and cash flow” provides evidence that this more “inclusive” approach to measurement, which has been hailed as a prerequisite for “Tomorrow’s Company” (The Royal Society for the Encouragement of Arts, Manufactures and Commerce, 1995) (cited in Stone, 1996), is not just an academic ideal. This approach, which underlines the importance of awareness of all stakeholders’ opinions, could also provide the basis for long overdue systematic thinking within today’s organisations, as advocated by Senge (1990) (cited in Stone, 1996). This would give all stakeholders the opportunity to communicate in one language, instead of “multiple dialects”, which include the “language of money” and the “language of things”, which lead to misunderstandings throughout the hierarchy (Juran, 1993). This fundamental change in the philosophy of measurement is illustrated in Figure 14:

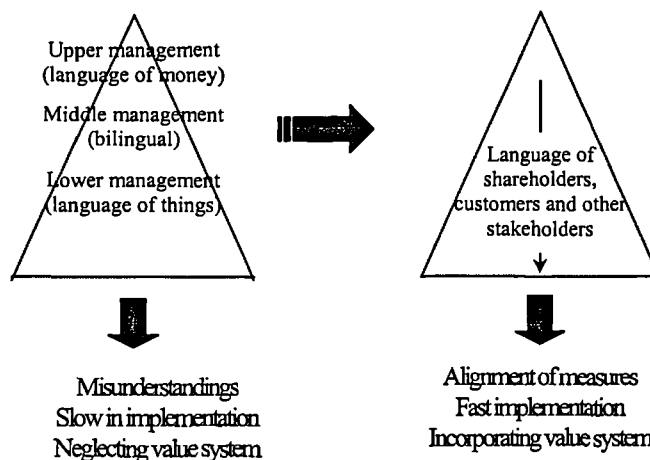


Figure 14: Measurement practice - Philosophical changes [Source: Feurer and Chaharbaghi (1995)]

Organisations have come to realise the importance of an enterprise wide strategic feedback and performance measurement and management application that enables them more effectively to drive and manage their business operations. No longer can organisations simply monitor key financial performance indicators that have often been historical in nature. While these remain critical, what has become apparent to

many organisations is the need to more effectively track and manage performance in other key areas of their business, that is all areas that contribute to future financial results.

The literature review in section 2.6.5 argues why performance measurement has become so typical so recently and sought to address why performance measurement is on the agenda. Arguably, this is equally applicable to newly emerged disciplines such as FM. Performance measurement issues specific to FM are addressed in detail in the proceeding sections, but current literature review provides a foundation for such arguments in latter parts of the thesis.

2.6.6 EXISTING PERFORMANCE MEASUREMENT SYSTEMS

The nature of measures sought in the name of continuous improvement has changed greatly over time: there are vast differences between performance measurement activities being reported today, and those of seven or ten years ago, which are of a demonstrably “harder” and more financially oriented nature (Stone, 1997). Many studies have been produced throughout the period of “revolution”, and the change in focus of some of the better-cited performance measurement literature reveals this new measurement trend. Some of these studies are outline below:

2.6.6.1 THE “SMART” PYRAMID

The Strategic Measurement Analysis and Reporting Technique (SMART) was developed by Wang Laboratories (Lynch and Cross, 1991; 1995) as a result of dissatisfaction with traditional performance measures such as utilisation, efficiency, productivity and other financial variances. The objective was to devise a management control system with performance indicators designed to define and sustain success (Ghalayini and Noble, 1996). The SMART system can be represented by a four level pyramid of objectives and measures (Figure 15). It adds to the notion of cascading measures down the organisation so that measures at department and work centre level reflect the corporate vision as well as internal and external business unit objectives (Kennerley and Neely, 2000).

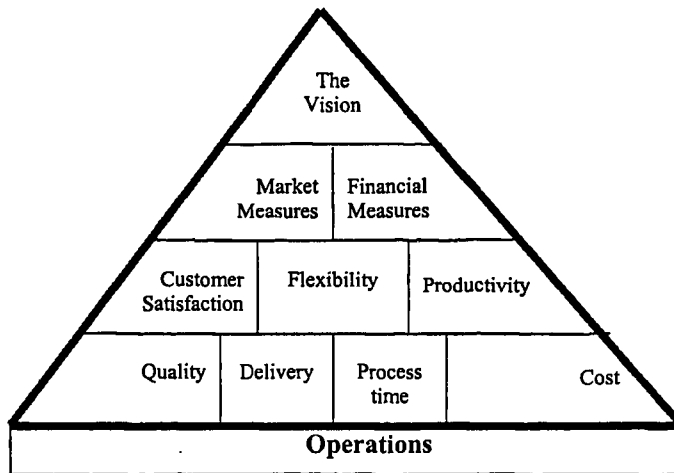


Figure 15: The SMART way [Source: Ghalayini and Noble (1996)]

At the top is the corporate vision or strategy. At this level, management assigns a corporate portfolio role to each business unit and allocates resources to support them. At the second level, objectives for each business unit are defined in market and financial terms. At the third level, more tangible operating objectives and priorities can be defined for each business operating system in terms of customer satisfaction, flexibility and productivity. At the fourth, departmental level, customer satisfaction, flexibility and productivity are represented by specific operational criteria: quality, delivery, process time and cost. As the foundation of the performance pyramid, these operational measures are the keys to achieve higher-level results and ensure successful implementation of the organisation strategy.

2.6.6.2 THE BALANCED SCORECARD

In the literature it is frequently argued that performance measures should be derived from strategy; that is, they should be used to reinforce the importance of certain strategic objectives (Skinner, 1989). The Balanced Scorecard (Kaplan and Norton, 1996) presents such a model for strategic performance measurement and management for high performance organisations.

The Balanced Scorecard translates the organisation's vision into a set of performance indicators distributed among the following four perspectives:

- *Customer*: how must we look to our customers?
- *Internal processes*: what internal processes must we excel at?
- *Financial*: how will we look to the shareholders?
- *Innovation*: how can the organisation learn and improve?

In viewing an organisation in four perspectives (Figure 16) the Balanced Scorecard is intended to link short-term operational control to the long-term vision and strategy of the business.

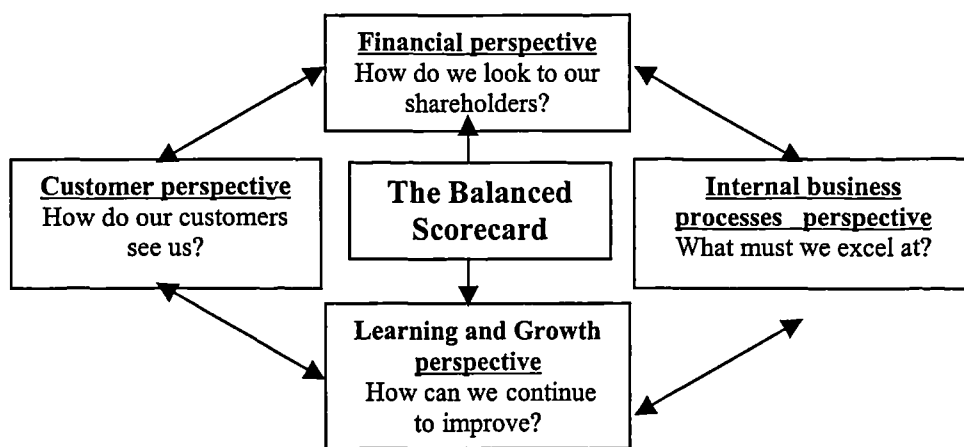


Figure 16: Four perspectives of the Balanced Scorecard [Source: Kaplan and Norton (1996)]

The balanced scorecard translates an organisation's mission and strategy into a comprehensive set of performance measures that provides the framework for a strategic measurement and management system. Ashton (1998) believes that the Balanced Scorecard provides:

- A practical framework for implementing corporate strategy;
- A management tool for linking business, team and individual objectives and rewards to strategic goals;
- An effective mechanism for implementing change management;
- A good fit with the organisation's move away from a command and control culture to one of empowerment and coaching.
- The ability to understand the drivers of business success;

- The story of the strategy will set the foundation for a management system that is capable of driving dramatic improvements in performance;
- Easy identification of “cause-and-effect” relationships across operations;
- Both quantitative and qualitative information; and
- Dynamic communication and feedback.

The Balanced Scorecard is a management framework that measures the economic and operating performance of an organisation. “Short-termism” of traditional accounting principles can be counter productive; thus, the scorecard’s emphasis on non-financial measures is a welcome development. The Balanced Scorecard makes a compelling case for the inclusion of non-financial measures in an organisation’s overall measurement system. The power of the framework comes from a second “balance” that goes beyond an ad-hoc collection of financial and non-financial measures. The scorecard has to tell the story of the organisation’s strategy, and that story is told by means of a cause-and-effect model that ultimately links all the measures to shareholder value. Non-financial measures, such as customer retention, employee turnover, and number of new products developed, belong to the scorecard only to the extent that they reflect activities an organisation performs in order to execute its strategy, and thus, these measures serve as predictors of future financial performance.

This well-rounded assessment provides management with a “balanced” view of the business. Through the Balanced Scorecard, the organisation monitors both its current performance (finances, customer satisfaction, and business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems – its ability to learn and improve. It does still include the hard financial indicators, but it balances these with other, so-called “soft” measures, such as customer satisfaction and organisational learning.

2.6.6.3 THE PERFORMANCE PRISM

In the Tomorrow’s Company Report, the RSA (1995) suggested that competitive success in the future would increasingly depend on taking an inclusive approach to

management, reflecting the need for consideration of the requirements of all stakeholders to be central to performance measurement and management activities. To reflect the growing importance of satisfying stakeholder requirements, the Performance Prism adopts a stakeholder centric view of performance measurement (Kennerley and Neely, 2000).

Having identified the key stakeholders of the organisation and defined their requirements, it is necessary to consider whether the organisation has strategies in place to deliver stakeholder satisfaction. The need to implement measures that reflect and communicate the organisation's strategies has been a consistent message in much of the recent literature on performance measurement. The following five distinct but linked perspectives of performance identified the need for organisations to address when defining a set of performance measures (Kennerley and Neely, 2000 (Figure 16):

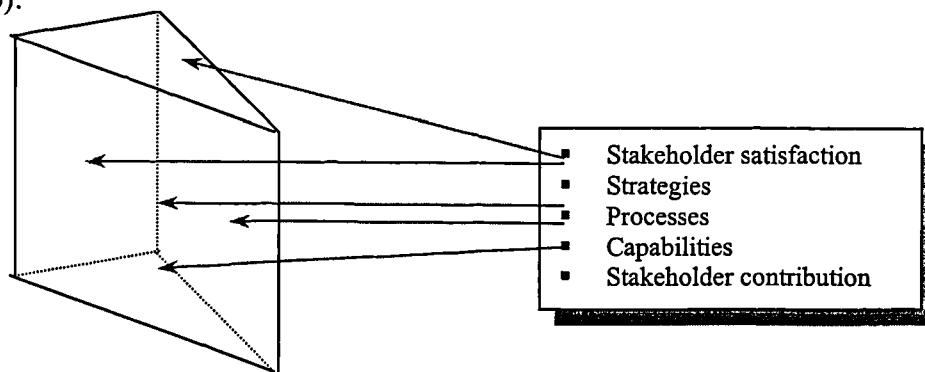


Figure 17: The five facets of the performance prism [Source: adapted from Kennerley and Neely (2000)]

- *Stakeholder satisfaction* –who are our key stakeholders and what do they want and need?
- *Strategies* – what strategies do we have to put in place to satisfy the wants and needs of these key stakeholders?
- *Processes*- what critical processes do we need to operate and enhance these processes?
- *Capabilities* – what capabilities do we need to operate and enhance these processes? and
- *Stakeholder contribution* – what contributions do we require from our stakeholders if we are to maintain and develop these capabilities?

2.6.6.4 THE PERFORMANCE MEASUREMENT QUESTIONNAIRE

Dixon et al (1990) developed this technique to help managers identify the improvement needs of their organisation, to determine the extent to which the existing performance measures support improvements and to establish an agenda for performance measure improvements (Ghalayini and Noble, 1996). This system consists of four parts. The first part provides general data to be used to classify respondents. Part two of the system assesses the organisations’ competitive priorities and performance measurement system. It consists of items labelled as “improvement areas”. They are placed in the centre of the questionnaire as shown in Table 8. The respondent is asked to circle a number on each side of the table. The third part of the system is similar to Part two except the focus is on performance factors (measures). This final part of the questionnaire asks the respondents to provide performance measures that best evaluate their own performance and any other general comments.

Long-run importance of improvement							Improvement areas	Effect of current performance measures on improvement						
None >>>>> Great								Inhibit >>>>>>>>> Support						
1	2	3	4	5	6	7	Quality	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Labour efficiency	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Machine efficiency	1	2	3	4	5	6	7

Table 8: Section of part two of performance measurement questionnaire [Source: Dixon et al (1990)]

The results of the questionnaire are evaluated in four ways: alignment, congruence, consensus and confusion. Alignment analysis is conducted to investigate in general terms how well an organisation’s actions and measures complement its strategy (Ghalayini and Noble, 1996). Congruence analysis is conducted to provide a detailed understanding of how well the measurement system supports an organisation’s actions and strategy and is carried out by grouping the data by management level or by functional group. This analysis shows the effect of communication. The goals of the confusion analysis are to determine the extent of consensus regarding each improvement area and performance measure.

2.6.6.5 “PROMES” APPROACH

The principle guideline of ProMES is that employees at the shop floor develop their own measurement system via a bottom up approach which, at certain milestones in the development process, is validated by the management to ensure alignment with higher level objectives and strategies (Pritchard, 1990). This method does not work with predetermined subject clusters, but prescribes the indicator format: for every relevant performance aspect an “effectiveness impact diagram” has to be developed which expresses to what extent different amounts of that performance aspect contribute to the overall functioning of the unit.

Figure 18 summarises the ProMES method:

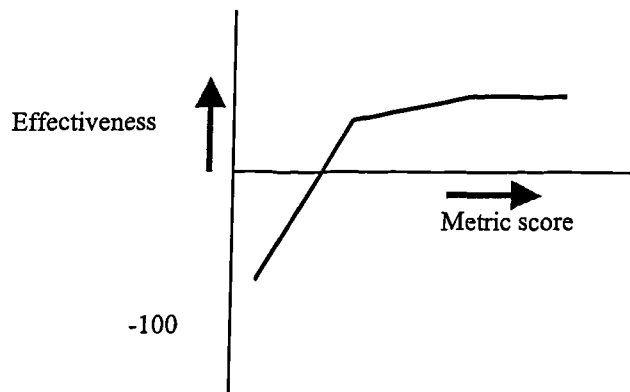


Figure 18: ProMES Approach [Source: Drongelen (2000)]

2.6.6.6 FEEDBACK/FEED FORWARD CONTROL MODEL

Following their study in service industries, Fitzgerald et al (1991) proposed a framework consisting of three main elements: a control model within which performance measurement is sited; a recommended level of organisational analysis for performance measurement; and a range of dimensions for performance measurement. Fitzgerald et al (1991) adopted a feed forward/feedback control model in which performance measurement is part of feedback control, being a stimulus to appropriate action and organisational learning at the right level of the organisation and stage of the decision making process (Bringnall and Ballantine, 1996) (

Figure 19).

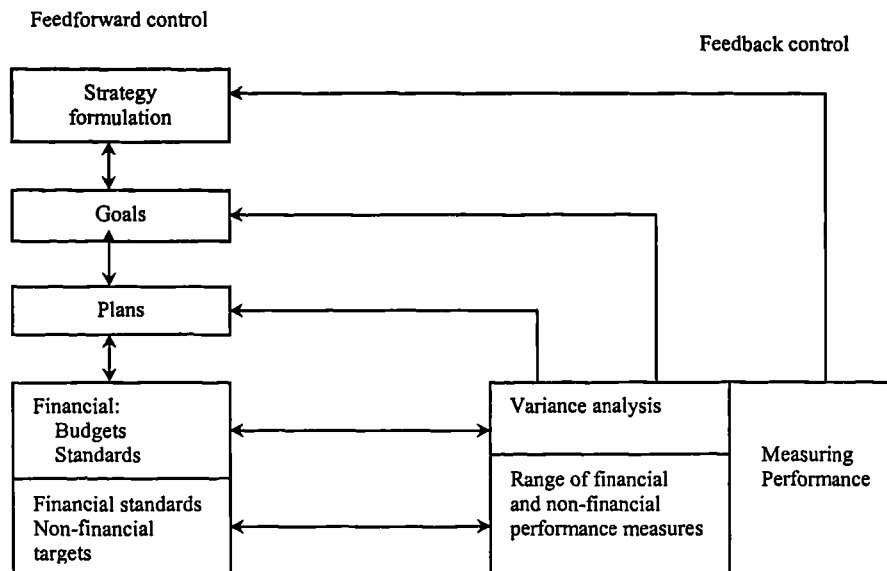


Figure 19: Feedback/feed forward control model [Source: Adapted from Brignall and Ballantine (1996)]

2.6.6.7 “EFQM” MODEL AND ITS SELF-ASSESSMENT

Although, not designed as a performance measurement framework, the European Foundation for Quality Management’s (EFQM) Business Excellence Model takes a broader view of performance, addressing many of the areas of performance not considered by the other methodologies. The EFQM model is a management model that explicitly highlights the enablers of performance improvement and indicates results areas that should be measured (Figure 21). The EFQM model is based on nine criteria, of which five are enablers (how things are done in the organisation) and four are results (what is achieved by the enablers). The belief is that “excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy, people, partnerships and resources, and processes” (EFQM, 1999). Ghobadian and Woo (1996) describe enablers as policies, resources and processes, which transform inputs into outputs, and the results as measures of the level of output and outcome achieved by the organisation. The

process is systematic with each of the nine criteria scored against sub-elements to indicate a level of achievement on a continuum. The assessment process is explicit in requiring trend data, evidence of quality issues and organisations or services to encourage continuing improvement. However, it is a self-assessment, rather than objective framework and the categories for measurement are very broad (Kennerley and Neely, 2000). Whilst the results areas are readily measurable, some of the enablers are not (Neely and Adams, 2000).

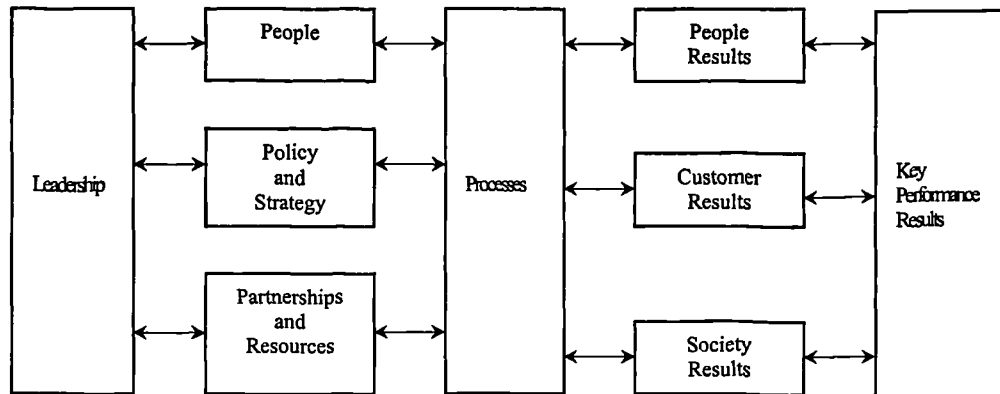


Figure 19: The EFQM model for business excellence [Source: EFQM (1999)]

2.6.6.8 "SPICE" APPROACH

The SPICE (Standardised Process Improvement Framework for Construction Enterprises) framework is a pro-active approach to continuous improvement, focusing on improving the capability of management processes (Construct IT, 2000). The framework assumes that process improvement is achieved through small systematic evolutionary steps and will allow FM organisations to evaluate their current processes, and identify areas for improvement based on the core business objectives. SPICE has borrowed many basic concepts from CMM[®] (Capability Maturity Model) and developed them into a construction specific framework. SPICE is intended to address processes related to product development within construction companies. It is relevant to processes associated with tendering, design and construction. However, it does not cover many of the other processes relevant to construction companies, such as finance or marketing. The SPICE framework helps organisations understand their level of process capability, in terms of their process maturity. In general, mature organisations have a high level of process capability, while immature organisations have a low level.

2.6.6.8.1 STEPWISE IMPROVEMENTS IN ORGANISATIONAL MATURITY

The SPICE framework promotes continuous process improvement based on many small, evolutionary steps. It divides these evolutionary steps into five maturity levels, which lay successive foundations for continuous process improvement. These maturity levels form a scale for measuring the capability of a construction organisation's individual processes, and its overall process capability. Each level of maturity consists of a set of key processes. When an organisation is successfully applying each key process, it can stabilise an important part of the construction process and make it predictable. The five levels provide guidelines on how to prioritise efforts at process improvement. The SPICE model is shown in Table 9.

Level Five Continuously Improving	Key processes from original CMM: - Process change management Technology change management Defect prevention
Level Four Quantitatively Controlled	Key processes from original CMM: - Construction quality management Quantitative process management
Level Three Well Defined	SPICE recommended key processes: - Organisation process definition Organisation process focus Integrated design & construction management Construction Life cycle engineering Training programme Peer reviews
Level Two Planned and Tracked	SPICE key processes: - Brief and scope of work management Project planning Project tracking and monitoring Subcontract management Project change management Health and safety management Risk management Project team co-ordination
Level One Initial	No key processes

Table 9: SPICE key processes [Source: Construct IT (2000)]

For each level, the model specifies a number of "key processes". By following the steps in the model, an organisation can achieve effective and continuous improvement based on evolutionary steps. An organisation can only be at one level

of the model at any one time. If an organisation is at level one, but implements some of the key processes of level three or four, it is still considered a level one organisation. This is because each level lays successive foundations for the next. The model shows that the organisation has little to gain by addressing issues at a higher level if all the key processes at the current level have not been implemented.

2.6.6.8.2 PROCESS ENABLERS

Process enablers are types of thinking or activities that are pre-conditions for implementing the construction process. They focus on the results that can be expected from a key process. This is a forward-looking approach, which indicates an organisation has process capability before a process takes place. Process enablers provide details of the features a key process must possess to yield successful results. Ensuring that all the process enablers are in place improves the performance and predictability of key processes. Process enablers apply across all the key processes. SPICE process enablers are listed below (Construct IT, 2000):

- *Commitment* - ensures that the organisation takes action to ensure that the process is established and will endure. It typically involves establishing organisation policies. Some processes require organisational sponsors or leaders. Commitment to perform ensures that leadership positions are created and filled and the relevant organisational policy statements exist;
- *Ability* - describes the preconditions that must exist to implement the process competently and generally involves adequate resourcing, appropriate organisational structure, and training;
- *Verification* - verifies that the activities are performed in compliance with the agreed process and in turn emphasises the need for independent, external verification by management and quality assurance;
- *Evaluation* - describes the basic internal process evaluation and reviews which are used to control and improve the processes. During the early stages of maturity this translates into efforts by the team to improve their existing processes; and
- *Activities* - describes the activities, roles and procedures necessary to implement processes. It typically involves establishing plans and procedures, performing the work, tracking it, and taking corrective action as necessary.

The SPICE assessment mechanism ensures that each key process has reached capability by testing it against the above “process enablers”. The combination of these key processes viewed as a whole will place the organisation at a level of process maturity in the model. An organisation can only be considered to be at a particular level in the model if all the key processes are deemed capable at that level.

2.6.6.9 OTHER METHODS AVAILABLE

In the past two decades, various other authors have reported different types of measurement procedures. Table 10 summarises some of these studies:

Approach/ Author	Performance measurement system developed
Barker (2000)	Describes time based performance measurement techniques
Baron et al (1993) (cited in Stone, 1996)	It encompasses “soft” employee related issues as part of the criteria for measuring the success of quality
Beischel and Smith (1991)	Performance measures emphasising the link between strategies, action and measures
Bititci et al (2000)	Disseminates results of a comparative study in order to develop a better understanding of the relative merits of different frameworks for performance measurement
Black et al (2000)	Provides an overview of the position of measuring service quality in organisations
Blenkinsop and David (1991)	A system which adopts the view that the best way to overcome the complexity of performance measurement systems is by producing a process for designing a measurement system, rather than a framework
Macro Process Model of the Organisation (Brown, 1996)	Developed the concept of linking measures through cause and effect relationships
Chennell et al (2000)	Provides a structured approach to developing and implementing an efficient and effective measurement system in enterprises
Develin and Partners (1989) (cited in Stone, 1996)	The focus was upon the enablers of success, as opposed to direct measurement
Fortuin (1988)	A system with a set of measures which provides: fast feedback; information; be precise; and be objective
Globerson (1985)	Measurements system choosing to explore the issue of a formula – the way the measure is calculated, as well as the way it is used
Keegan et al (1989)	Performance measurement matrix reflecting the need for balanced measurement and categorises

	measures as being “cost” or “non cost”
Horizontal approach (Kerklaan et al, 1994)	All matrices of the measurement system have a causal relationship with customer requirements
Vertical approach (Kerklaan et al, 1994)	Set of matrices for each business level is derived via deployment of quantified organisational goals
Lea and Parker (1989)	Suggest a set of transparent performance measures which is: simple to understand; have a visual impact; focus on improvement rather than variance; and visible to all
Hierarchical schema for performance measurement (Lee et al, 1995)	A theory of measurement, which has been extensively applied in modelling the human judgement process
Integrated performance measurement framework (Medori and Steeple, 2000)	A comprehensive framework which revolves around a six-stage plan that incorporated the basic design requirements
The Bradford Study (Oakland et al, 1993) (cited in Stone, 1996)	Performance indicators include people related issues
Oakland et al (1999)	Performance indicators used did prompt responses on a broad spectrum of “hard” and “soft” issues
Goal/Question/Metric approach (Park et al, 1996)	Process metrics derived from general business goals
Shulver et al (2000)	Describes a process for the selection of relevant measures of intellectual capital
Storbeck & Waring (2000)	Has developed realistic model support for performance based budgeting
Walker (2000)	Summarises a framework adopted to measure and evaluate construction time performance in the construction industry
Critical success factor approach (Wall and Bulthuis, 1995)	Mission and strategy are translated into functional critical success factors
The Institute of Management Study (Wilkinson et al, 1993) (Cited in Stone, 1996)	Performance measurement saw improvements in “soft” indicators such as customer satisfaction, employee morale and teamwork
Wisner and Fawcett (1991)	Proposed a nine-step “process” for developing a performance measurement system, but make no attempt to explain how it can be operationalised

Table 10: Various approaches to performance measurement as given in literature

The similarity between the methods mentioned in Table 10 is that they are all predetermined, prescribing a certain system format and development process regardless of the problem and/or context. It should be noted that these performance measurement methodologies were not chosen at random, but identified following an extensive review of the performance measurement literature, which has been published as indicated above.

2.7 SUMMARY – PART TWO

Part two started by introducing the concept of general management performance. The area of performance measurement was then introduced in this part as being subjected to many different definitions. The prescriptive writings on the concept of performance measurement were discussed in section 2.6. This section on performance measurement further discusses the main theoretical issues including the process of performance measurement and its implications, types of performance measurement models available etc. Throughout this part, the importance of performance measurement in today's organisations has been highlighted, together with evidence of how this revolution came about. There appears to be a growing recognition that the measures of performance that organisations have traditionally used are inappropriate for most types of businesses. One conclusion which was drawn from this part of the literature was that many authors believe in the concept of "what get measured gets done".

In this context, the concepts of performance measurement will be focused in Part Three, to look specifically at FM performance. The different types of performance measurement techniques identified in section 2.6.6 proposed by various authors provide an interesting area of research, but, in that the role of the extent of the applications of these different types of performance measurement techniques within FM has yet to be revealed. This will then be used as the basis for identifying the research need, further discussed in Part three of this chapter in detail.

PART THREE – PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

2.8 OVERVIEW

As analysed in the previous section, application of appropriate performance measurement procedures can provide major benefits to organisations. The above stated broad performance measurement need for management applies to management in a FM context when FM is considered as a subset of general management. To this

can be added need which is applicable more narrowly to FM. A reasonable case for the need for and benefits of performance measurement systems in FM environments will be discussed in this section together with some relevant trends in management performance measurement literature which offer opportunities for identification of such systems. It further discusses the increasing trend towards performance measurement in FM organisation. The format of the section illustrates the different ways in which authors perceive the relationship between FM and performance measurement. It will be further showed that there is also a need for a new approach to performance measurement systems in FM organisations, by discussing problems with the existing approaches to performance measurement systems. This section then concerns the identification of the need for research within the field.

2.9 THE ROLE OF PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

In the previous section (Part two), it was already noted that performance measurement could contribute to more effective control through giving insights as to whether, and if so which, control mechanisms to chose. It further discussed several measurement procedures in more detail, and attempted to structure them in a taxonomy of performance measurement functions. Through supporting one or more of these measurement functions, a performance measurement system contributes to better goal attainment by the organisation. The broad management need for performance measurement can be interpreted in a FM context. Its application in FM environments will be illustrated in the next subsections..

The contribution made by FM will be judged by an organisation's stakeholders over a wide range of performance criteria including the hard metrics of finance and economics. FM is seen to be able to contribute to performance of organisations in many ways, including strategy, culture, control of resources, service delivery, supply chain management and, perhaps most importantly, the management of change. Quality, value and the management of risk emerge as significant factors. The discussion considers how FM contributes towards effectiveness of the organisation, and examines the number of ways by which performance may be influenced.

2.9.1 MOTIVATIONAL AND ORGANISATIONAL VARIABLES AS PERFORMANCE DETERMINANTS IN FACILITIES MANAGEMENT

Section 2.6.1.2 briefly addressed the motivational issue and its relevance to performance measurement in general. This section tries to further elaborate the arguments raised in section 2.6.1.2, in terms of identifying the relationships between motivational issues of people and the performance of facilities, thus to emphasise the role that facilities performance plays in organisations at large.

A motive is what prompts a person to act in a certain way or at least develop a propensity for specific behaviour (Warren, 1989). This urge to action can be touched off by an external stimulus or it can be internally generated in individual physiological and thought processes. The process of motivation involves choosing between alternative forms of action in order to achieve some desired end or goal (Cole, 1996). As Figure 20 shows, goals can be tangible, such as higher earnings, or intangible, such as personal reputation:

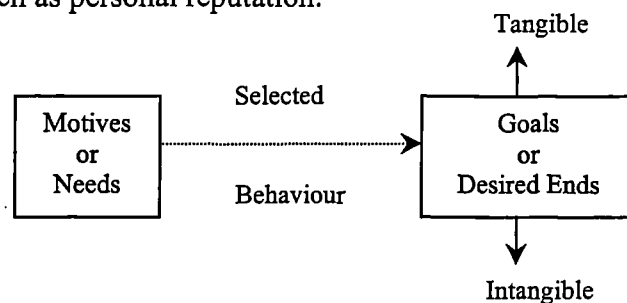


Figure 20: Basic model of motivation [Source: Cole (1996)]

2.9.1.1 MANAGEMENT'S ASSUMPTIONS ABOUT PEOPLE

Professor Edgar Schein (1965) (cited in Cole, 1996) describes a classification of assumptions about people implicit in managerial ideas about what motivates people. He identified four sets of assumptions:

- *Rational economic Man* - it states that the pursuit of self-interest and the maximisation of gain are the prime motivators of people. It lays stress on Man's rational calculation of self-interest, especially in relation to economic needs;
- *Social Man* - this view of "Man" sees people as predominantly motivated by social needs, and finding their identity through

relationships with others. Acceptance of this view by managers means more attention to people's needs and less to task needs;

- *Self-actualising Man* - this view of human motivation sees not social needs but self-fulfilment needs as being the prime driving force behind individuals. Self-actualising Man needs challenge, responsibility and a sense of pride in his work; and
- *Complex Man* - this view of human beings sees them as being altogether more complex and more variable than the other methods described above. In this concept, the requirement for managers is that they should be intelligent, sensitive people able to diagnose the various motives, which may be at work in their staff.

Schein's classification (Cited in Cole, 1996;Warren, 1989), helps to relate all the major approaches of management theory, as described in section 2.2, to the concept of motivation. The basis of this concept is that human motives or needs are directed towards desired goals or ends, and that a person's behaviour is selected, consciously or unconsciously, towards the achievement of these ends. Different viewpoints have emerged concerning the key needs and ultimate goals of human beings at work, from which FM cannot be disassociated.

2.9.1.1.1 MASLOW'S THEORY OF HIERARCHY OF NEEDS

Maslow's studies (Maslow, 1954) into human motivation led him to propose a theory of needs based on a hierarchical model with basic needs at the bottom and higher needs to the top (Figure 21). He suggests that human needs are arranged in a series of levels, a hierarchy of importance.

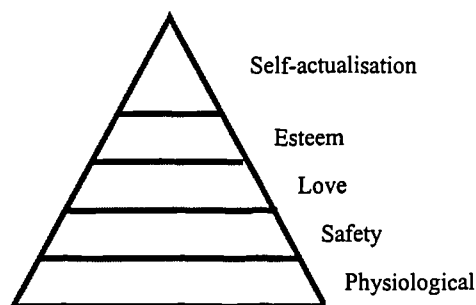


Figure 21: Maslow's hierarchy of needs [Source: Cole (1996)]

As stated above, the starting point of Maslow's hierarchy theory is that most people are motivated by the desire to satisfy specific groups of needs:

- *Physiological needs* - need for food, sleep etc.;
- *Safety needs* - needs for stable environment
- *Love needs* - needs related to affectionate relations with others and status within a group
- *Esteem needs* - need for self-respect, self-esteem and the esteem of others; and
- *Self-actualisation needs* - the need for self fulfilment

2.9.1.1.2 THE IMPACT OF ELTON MAYO

The name of Elton Mayo is most commonly associated with what has come to be considered as the best known and the most widely quoted piece of social research in the last century, namely the Hawthorne studies (Cole, 1996). Researchers at Hawthorne were primarily concerned with studying people, especially in terms of their social relationships at work. As already detailed in section 2.2.3, the Hawthorne experiment began as a study into physical conditions and productivity and it ended as a series of studies into social factors. The study emphasised the importance of monetary rewards and physical working conditions and further showed the social relationships at work. The concept of “effect of environment” on production can be related to the findings of Hawthorne studies.

2.9.1.1.3 HERZBERG’S MOTIVATION THEORIES

Herzberg’s studies concentrated on satisfaction at work (Herzberg et al, 1959; Herzberg, 1968). He came to a conclusion that certain factors tended to lead to job satisfaction (motivators), while other led frequently to dissatisfaction (hygiene factors). Herzberg identified five factors that most often contributed to employee “dissatisfaction”. These included perceived fairness of organisational policy, pay, working conditions, relations with one’s supervisor, and relations with co-workers. These factors are related to job context, they are concerned with job environment as extrinsic to the job itself. The other set of factors are those which, if present, serve to motivate the individual to superior effort and performance. These “motivators” include: achievement, recognition, the work itself and responsibility. These factors are related to job context of the work itself. The strength of these factors will affect feelings of satisfaction or no satisfaction but not “dissatisfaction”.

2.9.1.1.4 MCGREGOR – THEORY “X” AND “Y”

Douglas McGregor’s (1960) “Theory X” and “Theory Y” are essentially sets of assumptions about human behaviour. He sees two noticeably different sets of assumptions made by managers about their employees. The first theory, “Theory X”, regards employees as being inherently lazy, requiring coercion and control, avoiding responsibility and only seeking security. The second set of theory, the “Theory Y”, sees man in a more favourable light. In this case, employees are seen as liking work, which is as natural as rest or play; they do not have to be controlled and coerced, if they are committed to the organisation’s objectives; under proper conditions they will not only accept but also seek responsibility; more rather than less people are able to exercise imagination and ingenuity at work (Cole, 1996).

2.9.1.2 IMPLICATIONS OF FACILITIES MANAGEMENT ON THE CONCEPT OF MOTIVATION

The above literature review of various concepts to motivation theories clearly shows the relationships that such theories have on physical working environment as a motivator. The concept of “social man” in Maslow’s hierarchy of needs (Cole, 1996; Maslow, 1954) sees people as predominantly motivated by social needs, such as working conditions. Maslow viewed satisfaction as the main motivational outcome of behaviour. Schein (cited in Warren, 1989) sees motivation in terms of a “psychological contract” based on the expectations that the employee and the organisation have of each other, and the extent to which these are mutually fulfilled. The relationship between an individual and his organisation is an interactive one, he further emphasises. Herzberg (1959; 1968) has identified working conditions as a “hygiene factor”; a variable, which when thought to be unsatisfactory, usually resulted in employee dissatisfaction.

2.10 PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT – CURRENT THINKING

Hronec (1993) defines performance measurement as: “a quantification of how well the activities within a process or the outputs of a process achieve a specified goal.

Performance measures must be developed from the top down in an organisation and must link the organisation's strategies, resources, and processes". Hronec stresses that for any performance measurement system; both process measures and output measures must be present. The interrelationship between the two sets of measures is illustrated in Figure 22. Hronec draws the following analogy of performance measurement in an organisation setting: "performance measurement are the 'vital signs' of an organisation. They tell the people in an organisation what and how they are doing and whether they are functioning as part of the whole. They communicate what is important throughout the organisation: strategy from top management downward through the organisation, process results from lower levels upwards to top management, and control and improvement within the process".

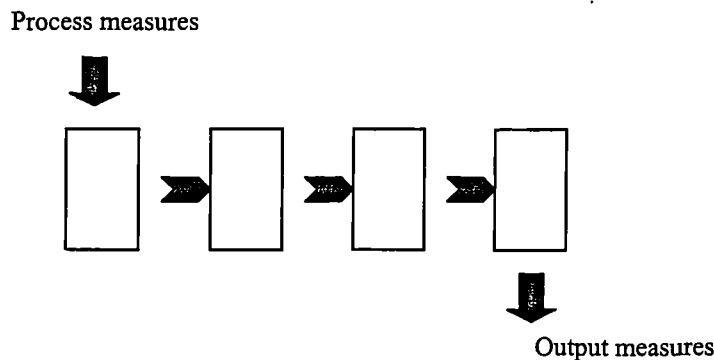


Figure 22: Process and output performance measures [Source: Adapted from Then (1996)]

Hronec (1993) also lists four potential benefits that can arise as a result from having an appropriate performance measurement system: satisfying customers; monitoring progress; benchmarking processes and activities; and driving change. The emphasis on promoting customer satisfaction and driving change accords with the response to external pressures from an increasingly global competitive marketplace, while the emphasis on monitoring progress and benchmarking is a clear reflection of the culture promoting continuous improvement, driven from both within and outside the organisation (Then, 1996).

The above brief re-visited review of development of performance measurement within the context of business management against a competitive marketplace of dynamic change is important in that it sets the background against which senior

management within organisations will evaluate the current performance and contribution of their physical workplace environment in fulfilling corporate objectives.

Even in FM environments, where performance measurement has long been deemed inappropriate, the acceptance of performance measurement is growing. As Grimshaw and Keeffe (1992) stated: “A link exists between the physical environment and the operational efficiency of the organisation”. The need for FM performance measurement systems has been already emphasised by identifying FM as a business resource (see section 2.3.7.2). Today’s organisations constantly review the composition of their core business and the way it operates (Royal Institution of Chartered Surveyors, 1993). Therefore, clear attention must be paid both to the effective maintenance of support systems and the culture of the organisation. FM is an important emerging business sector with an annual size well into tens of billions of pounds in the UK (Tranfield and Akhlaghi, 1995). Section 2.3.8 has further discussed the importance of the contribution of FM in today’s’ business environments. The FM budget of an organisation can often require thirty to forty per cent of total organisational expenditure, second only in cost to payroll (Williams, 1994). Therefore, good performance in FM is essential.

In the research described in this thesis, it was found out that FM managers no longer reject FM performance measurement and further acknowledge the benefits of their various measurement procedures (Amaratunga and Baldry, 2000a).

2.10.1 PERFORMANCE OF FACILITIES MANAGEMENT AND PERFORMANCE OF ORGANISATIONS

The emergence of FM as a catalyst for change and an enabler to improve organisational performance continues to gain recognition within major institutions within the UK (Madeley, 1996). Facilities managers are increasingly valued for their entrepreneurial skills and knowledge of the core organisation, with the ability to preempt and translate the organisation’s need for change into facilities strategies which underpin operational objectives to yield competitive advantage. Section 2.9.1 has already dealt with the relationship between the organisational overall performance

and facilities performance. Then and Akhlaghi (1992) further confirm such a need: “The focus of FM skills and techniques are in the area that contributes to the overall management of a business” A definition of FM, suggested by Kincaid (1994b) emphasises this relationship: “The management of facility resources and services to support the operation of an organisation”.

Alexander (1994a) believes that FM is “positioned as a cross functional activity” evolving as the “intelligent client”, close to and interpreting the needs of the core business. This would infer a strategic role, which entails (Alexander, 1994a):

- Recognition of shareholder needs, corporate values, culture and creativity of people;
- The strategic management of resources and formulation of supply chain strategy;
- Development and communication of facilities policy, standards and systems; and
- Planning and implementation of continuous improvement including the management of strategic change.

Many organisations are transforming their cultures as a means by which they may improve performance. FM has a positive role to play in enabling the transformation either by supporting the organisation as part of the holistic drive for change or by acting as a catalyst, leading the way for others to emulate (Madeley, 1996). Figure 23 further elaborates this concept:

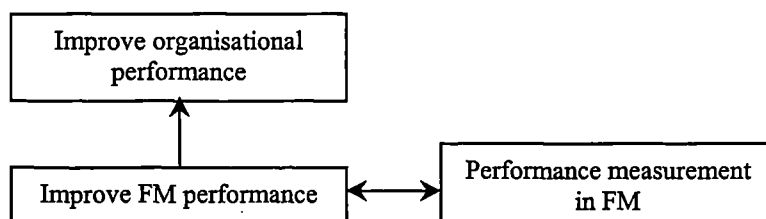


Figure 23: FM's relationship to organisational performance

Strategic management, leadership and formal strategic planning afford the opportunity for FM to establish its purpose within the core business, and to influence the direction and pace of progress. Increasing awareness of the benefits to be derived from the development and alignment of facilities strategies with the core business

objective is seen to be reinforcing the links between FM and organisational effectiveness. Facilities are increasingly being regarded as a strategic issue and should be managed as an enabler for performance rather than viewed as an overhead and constraint on progress (Madeley, 1996).

Kincaid (1994a) argues that the integration of FM as an effective function for an organisation is achieved by recognising the following characteristics of FM:

- FM is a support role within an organisation, or a support service to an organisation;
- FM must link strategically, tactically and operationally to other support activities and primary activities to create value; and
- Within FM, managers must be equipped with the knowledge of facilities and management to carry out their integrated support role.

Madeley (1996), in his research work has identified the following as most significant areas in which FM is observed to be improving the overall performance of the organisation:

- Cost reduction;
- Gains in productivity;
- Reconfiguration of property;
- Disposals;
- Refurbishment and adaptation projects which directly underpin operational changes and delivery of service to external customers;
- Space planning and improved utilisation;
- Improved procurement strategies, leading to reduced costs and better quality;
- Standards and image of the business – a closer fit and support of the brand;
- Customer focus and responsive service to operational departments;
- Higher standards of facilities services such as cleaning at lower cost;
- The ability to generate sub tenancy income from surplus accommodation; and
- The successful management of change.

For all the organisations in his selected sample, FM appears to play a direct role in enabling performance of the business, but the degree of significance clearly varies with the actual level of dependence.

As the above literature review emphasised, the majority believe that facilities is an enabler in an organisation. The view that facilities are an essential overhead that should be tolerated and minimised is one that is gradually being replaced with the more enlightened view that a good facilities team can enhance the performance of the organisation and should be given the headroom to do so.

2.10.1.1 THE SYSTEMS VIEW OF FACILITIES MANAGEMENT PERFORMANCE

FM is a sub set of general management (Simpson, 1998). The following definition presents a picture of this function: “FM is the practice of co-ordinating the physical workplace with the people and work of the organisation; it integrates the principles of business administration, architecture and the behavioural and engineering sciences” (British Institute of Facilities Management, 1994). Systems theory has been used as a recent and comprehensive approach to the study of management in organisations (Cole, 1996). Literature review carried out in section 2.2.4 identifies systems theory, which provides a broad analytical framework for understanding organisations. System theory is a way of viewing dynamic entities. A key feature of a system is its three stages of performance: input, process and output. The system takes in inputs, processes, them and produces outputs (Kast and Rosenzweig, 1985). Kramer’s (1977) definition of a system introduces the concepts of sub systems. He describes a system as: “a set of interrelated entities, of which no subject is unrelated to any other subset”.

The relationship between the FM organisation and the rest of the organisation could be described as a system, according to the above definitions. A simple systems view of the relationship between the FM and core sides of an organisation is given in Figure 24 (Simpson, 1998):

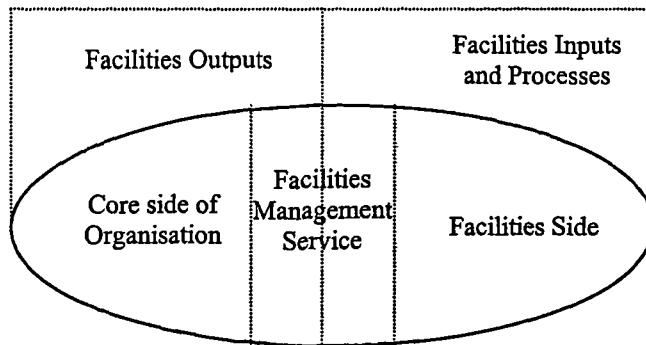


Figure 24: Model of FM support for the core side of an organisation [Source: Simpson (1998)]

An example of a system model of FM is provided by Barrett (1995) (see section 2.3.5.5). This depicts FM as a function comprising a complex set of relationships, both between the facilities side and the core side, as well as within the facilities side itself. How might the “performance of FM versus performance of organisations” be explored, using a systems perspective? This can be done by looking at the whole of the FM function as a sub system whose performance can be explored. This further emphasises the relationship that FM performance has with the core organisational performance.

2.10.2 THE NEED FOR PERFORMANCE MEASUREMENT SYSTEMS IN FACILITIES MANAGEMENT

There has been a growing interest in performance measurement throughout FM. For the economic health of the organisation, the senior management at the core of the business will want to know the performance of facilities. Much work has been done to measure FM performance, but it often ignores the influences of erratic patterns of reinvestment in building fabric and components which can add as much as twenty five percent to the cost of running a building (Kincaid, 1994b). Alexander (1996b) identifies measurement of performance as one of “three essential issues for the effective implementation of a facilities strategy”.

Many writers have mentioned that they were still struggling with the issues of what are actually the most meaningful measures and how to measure them (Hinks and

McNay, 1999; Douglas, 1994; Williams, 1999). For example, Waddell, Managing Director of the Corporate FM Resources in Melbourne, noted: “ that there are three key issues which FM in all parts of the world must address. These issues are: the impact of global service provision and global contracts, the future of outsourcing, and the practice of performance measurement”. Findings by Varcoe (1993; 1996a; 1996b; 1998) based on opportunities of performance measurement within FM, corroborate this comment, both with respect to the growing necessity of performance measurement and the limited knowledge in this area. FM processes are pressurised and becoming more and more complex, and FM managers are at the same time required by senior managers to become more accountable for FM’s contribution to business results. Thus performance measurement is becoming increasingly important both for reasons of justification to general management and to support management and practice within the FM organisation. However, a large majority of academic articles reported that currently, within their FM group, knowledge of FM performance measurement is limited (Varcoe, 1996a, 1996b; Simpson, 1998; Then, 1996; Barrett, 1995).

According to a survey of 162 organisations in many parts of Europe (Barbuk, 1995), facilities property is still regarded as a cost factor rather than an investment. The survey revealed that:

- Property and facilities accounts for around 25% of the organisation’s assets;
- Only 50% of those interviewed admitted that they have a strategic property plan;
- A minority measured the performance of their property and other related facilities;
- The majority want to reduce costs but are mainly focusing on cleaning, heating and security; and
- Property is viewed as an item for cost cutting and subject to speculation in the property market.

This study further highlights the need to measure FM performance.

The generic FM model shown in Appendix one illustrates the range of continuing interactions which are involved in FM. It shows how an ideal FM would interact

with the core business and the external environment. This generic model emphasises the need for the facilities manager to benchmark the performance of existing internal facilities services against other FM organisations, so that possible areas for improvement can again be identified. Further, a facilities manager interacts with the core to ascertain what future changes may occur to the business as a response to external influences, the aim being to synergistically balance current operations with the needs of the future. A properly formulated performance measurement system will contribute to achieving the needs of such interactions.

The nature of change has driven many large organisations to develop management initiatives designed to optimise the functional value obtained from facilities (Gibson, 1994; 1995). The development of performance assessment techniques allows information for decision making to be fed to management prior to action more specifically. The assessment of facilities performance, a measurer of support provided by a facility for a specific organisation at a certain time, is applicable to the management of facilities encompassing both the investment and operational objectives of owners and occupiers.

2.10.3 CURRENT PRACTICE OF PERFORMANCE MEASUREMENT TECHNIQUES IN FACILITIES MANAGEMENT

The importance of assessing performance in FM and a general need for the assessment of FM were discussed in section 2.10.2. In recent years, a number of management tools have been found to be particularly useful in the area of FM evaluations. The provision of information decision-making is a key component of a facilities strategy, in particular literature emphasises the usefulness of facilities performance measurement techniques (Williams, 1999; Varcoe, 1996a, 1996b; Then, 1996; Hinks, 1999; Avis et al, 1993; Gibson, 1994). Worldwide literature indicates a fast developing market for techniques and services relating to the measurement of facilities performance. Appraisal techniques for assessing performance are becoming an essential part of the FM process, particularly those that provide information that can be arrayed so as to ensure management can learn about the consequences of their actions. In addition to the literature review on performance measurement in FM, it

was decided to include an initial fact-finding survey, a section devoted to identify techniques used to assess FM performance in practice.

2.10.3.1 A SURVEY TO OBTAIN A SAMPLE VIEW OF CURRENT PERFORMANCE MEASUREMENT PRACTICES IN FACILITIES MANAGEMENT

Numerous descriptive accounts based on case studies, consultancy experience and anecdotal evidence, detailing the various factors affecting implementation of performance measurement in FM have found their way into the literature (section 2.10.3.2 discusses these issues in detail). Beyond the intuitive appeal, the organisational improvements that accompanied the adoption of such factors lack empirical support. Thus, a survey was planned to be carried out by the researcher for the purpose of initial fact-finding concerning the measurement of FM performance. The design of the questionnaire relied largely on the early work in the area (Willaims, 1994; Varcoe, 1996; McFadzean, 1995).

Due to the scope of this initial study, this quantitative analysis was carried out by the researcher subject to some limitations. The measures used in the analysis were either adopted from the factors pointed out in the literature or were specifically designed for this study by the researcher. Responses to all the items were scored on a five-point Likert scale measuring respondents agreements/disagreements relating to the actual practical implications in their particular FM organisation and where necessary their personal perspective with the item in question (1 = strongly disagree; 5 = strongly agree). This classification was used by the researcher to record the responses for variables in most of the parts in the analysis. The responses reporting a value of 4 or 5 for the variables are labelled “has impact/effect”, and those reporting a value of 1 or 2 are labelled “ has no impact/effect”. Respondents rating with a value of 3 are discarded in the analysis in taking any specific conclusion to eliminate any ambiguity concerning their status. Statistical analyses using SPSS statistical package were conducted on relevant sections of the questionnaire database in order to identify the need in the research area, as addressed above. (A copy of the initial questionnaire is enclosed in Appendix two – Part one).

Although it was not known how fairly representative the above sample analysed was for all FM organisations in the country, the survey did confirm that a range of approaches to the performance assessment of FM was being used. The survey results presented a picture of what was being employed by practising facilities managers. A random sample of managers may well have produced a lower proportion of respondents employing performance measurement systems. Some of the findings are discussed below:

2.10.3.1.1 PERFORMANCE MEASUREMENT STRATEGY

The respondents were asked to rate, on a scale of 1 (strongly disagree) to 5 (strongly agree) on the type of strategy used at the stage of performance measurement implementation. The responses are shown in the following Table 11:

<i>Performance measurement implemented in FM was.....</i>	Mean Score	S.D.	High Practice	Low Practice
- driven by the core organisation	3.87	1.60	53.3%	40.0%
- initiated on FM's own initiative	3.60	0.99	33.3%	53.3%
- as a result of customers' requests	2.87	1.64	73.3%	20.0%
- the first performance measurement initiative practiced in the organisation and it led the rest of the organisation moves towards performance measurement	3.93	1.10	53.3%	26.7%

Table 11: Performance measurement implementation strategy

The results revealed that over 50% of the adoption of performance measurement in FM was driven by the core organisation, thus it is a part of an organisational wide initiative. It is also interesting to see that more than 30% of the organisations sampled, have initiated the performance measurement programme on FM's own initiative and out of those organisations, some have led the rest of the organisation moved towards performance measurement. Yet another 73.3% listened to the customers' views and responded to the performance measurement programme.

Data collected was further subjected to correlation analysis and although some logical relationships were expected from the analysis of some variables, with the strategy they adopted this initial study had no evidence in confirming them. The negative correlation ($r = -.399$ & $p \leq .001$) between "performance measurement

implementation driven by the core organisation” and “customer satisfaction drives the measurement function” suggests that force fitting of performance measurement initiatives driven by the core organisation would not ultimately result in the desired benefit of performance measurement, that is, customer satisfaction. There is another relationship, a positive one, between those who implemented performance measurement on their initiative and “customer satisfaction drives the performance measurement function”, ($r = .230$ & $p \leq .05$). This simply meant that performance measurement had helped to address the important issues of the facility delivery process.

2.10.3.1.2 REASONS FOR IMPLEMENTING PERFORMANCE MEASUREMENT PRACTICES IN FACILITIES MANAGEMENT

To provide an indication on what led the facilities managers to implement performance measurement in their organisation, the respondents were asked to rate the importance on a scale of 1 (strongly disagree) to 5 (strongly agree) of four elements. The findings are given in Table 12:

<i>Adopt performance measurement as.....</i>	Mean Score	S.D.	High Practice	Low Practice
- a response to competitive forces	4.00	1.36	66.6%	26.7%
- a part of long term corporate vision	3.20	1.08	26.7%	46.7%
- a result of external factors	3.53	0.99	33.3%	26.7%
- a result of the realisation of the need to improve the effectiveness of FM	2.40	1.64	33.3%	53.4%

Table 12: The reasons for performance measurement adoption in facilities organisations

33.3% had indicated that external factors such as customer requests had led their approach to performance measurement. 66.6% said that there had been changes due to competitive pressures and as a part of a long-term corporate vision, but the unusual finding was that very few (33.3%) had indicated that they implemented the practices with the intention of improving the effectiveness of their unit. Performance measurement in these FM organisations thus appears to be a survival strategy rather than one searching for effectiveness.

These results have prompted the wish to postulate that if performance measurement is seen to be one of the keys to survival or one to improve competitiveness in a changing environment, it is then easier to gain acceptance from the management.

2.10.3.1.3 MANAGEMENT PERCEPTION ABOUT PERFORMANCE MEASUREMENT PRACTICES IN FACILITIES MANAGEMENT

<i>Benefits of performance measurement are.....</i>	Mean Score	S.D.	High Practice	Low Practice
Identification of and solutions to problems of facilities	4.67	0.49	66.7%	33.3%
Overall increase in effective use of productivity	4.13	1.06	40.0%	53.4%
Increasing the customer focus	4.40	0.63	46.7%	46.7%
Increasing employee satisfaction	3.67	0.72	13.3%	40.0%
Understanding the performance implications of changes dictated by budget cuts	3.73	1.10	33.3%	20.0%
Significant cost savings throughout the service life cycle	4.00	1.20	46.7%	46.7%
Understand the strategy communication	3.73	0.88	26.6%	60.0%

Table 13: Management perception about performance measurement practices in FM

The means given for personal perception about some performance measurement practices is consistently higher than for what they actually practice (see Table 13), which gives evidence of the scope for improvement. The scores achieved by “understanding the solutions to facilities problems” and “significant cost savings”, revealed that the FM organisations had realised the vital role of performance measurement in FM.

2.10.3.1.4 USE OF APPROACHES/TECHNIQUES TO MEASURE FACILITIES MANAGEMENT PERFORMANCE

The survey results as presented in Table 14 presents a picture of performance measurement practices within FM organisations. This random sample may have produced a lower proportion of respondents employing the measurement techniques.

<i>Approach for the measurement of FM performance.....</i>	Number using the approach	Proportion against the total sample
Business excellence model (EFQM)	3	20.00%
Best practice Benchmarking	5	33.30%
Total quality management	1	6.67%
Customer satisfaction surveys	10	66.67%
Post-occupancy evaluation	6	40.00%
Evaluate return on funds employed	-	-
Through observe of complains	7	46.67%
Employee indexes	-	-
Measurement against service level agreement	1	6.67%
No method used	1	6.67%
Any other method	-	-

Table 14: Use of approaches/techniques for the measurement of FM performance

2.10.3.1.5 LACK OF ACCEPTANCE OF THE PERFORMANCE MEASUREMENT PROCESS IN THE PART OF FACILITIES MANAGERS

Through their experience the respondents were asked to rate on a scale of 1 (strongly disagree) to 5 (strongly agree), the importance of a number of issues which are typical of the reasons why FM organisations have a lack of acceptance of performance measurement practices (Table 15):

<i>Lack of acceptance is because of.....</i>	Mean Score	S.D.	High Practice	Low Practice
The failure to provide a suitable definition for performance evaluation, applicable for FM	4.27	0.96	60.0%	26.7%
There is no systematic attempt and/or measurement issues to empirically investigate the relationship among the FM practices and the core business	4.47	0.74	60.0%	26.7%
There is no single theoretical model representing performance issues within FM	4.27	1.03	66.7%	13.3%
The difficulty in accepting the premise that things can be further improved based on performance measurement outcomes	3.87	0.83	26.7%	53.3%
The extent of management commitment is poor	3.87	0.83	26.7%	53.3%

Table 15: Lack of acceptance of performance measurement in FM

Encouragingly, other than the more commonly held issues, the data reflected a fundamental disagreement about the general view of the literature that “many reasons exists for the lack of acceptance of the performance measurement process” (Neely, 1999), “it is often difficult for facilities managers to accept performance measurement and integrate it into their daily work” (Varcoe, 1996a).

Establishing objective measures of performance was given the highest ranking and supports the view mentioned in FM performance measurement literature that it is an unclear issue for many FM organisations. Therefore, from this view, it is assumed that this is the most complex, difficult and elusive aspect of performance measurement which hinders its effectiveness in FM organisations.

2.10.3.1.6 SURVEY ASSOCIATED INTERVIEWS

In order to glean some further information, the researcher had discussions with senior FM practitioners at a series of separate meetings, trying to analyse the determinants of performance measurement implementation in FM, as proposed by Varcoe (1996a) in the context of FM organisations. Another purpose of this exercise carried out by the researcher was to test the interviewing method for future work, as well as to increase the understanding of what exactly had been done in practice on performance measurement issues in FM organisations. Also this ultimately helped to uncover the type of information that was required to carry out the more comprehensive study at the next phase. Interviewees were selected through the personal contacts of the researcher’s research supervisor, with known interest in the subject. Discussions were conducted following a flexible set of questions, which were varied or extended at the time of interviewing, to provide a more detailed view on the matter investigated. The discussions are reported in summary beneath.

Some interviewees reported that their core businesses wanted to be viewed by the world outside as “quality” businesses. Facilities managers who use EFQM culture followed the leadership of the senior managers from their core businesses in their use of total quality management as a measurement tool. On the negative side, some managers reported that the total quality management approach consumed a lot of resources for performance reviews of various kinds.

According to Table 15, it is apparent that there is a strong need to identify performance measurement mechanism within FM. According to Table 15, it is emphasised that there is such a need, even though there are current practices among the facilities managers, as per Table 14.

Further, the interviews confirmed that the survey questionnaire had worked fairly well by capturing the industry practice relating to performance measurement issues.

2.10.3.2 LITERATURE REVIEW CONCERNING THE MANAGEMENT OF FACILITIES MANAGEMENT PERFORMANCE

The initial survey carried out by the researcher of performance measurement techniques in FM revealed that some were using the EFQM model of Business Excellence (EFQM, 1999), in order to manage their performance. Others were using benchmarking, and still others were using no particular performance measurement culture or system. There was apparent uncertainty as to which was the best approach to managing FM performance. Would this uncertainty also be found in literature?

In many articles and textbooks, it is stated that FM performance measurement has long been, and often still is, an issue evaded by managers as they consider it to be too difficult or even counter productive (see for example Becker, 1990). The following sections critically evaluate the performance measurement processes identified through the literature review.

2.10.3.2.1 OPERATING COSTS – STARTING POINT FOR MEASURING FACILITIES MANAGEMENT PERFORMANCE

Much excellent work has been done in recent years to measure FM performance, particularly in terms of operating costs, but there are significant variations in current practices in the measurement of cost of the FM provision. Many categorisation and measurement practices are too broad resulting in attribution to business units rather than the service provision (Then, 1996).

2.10.3.2.2 BENCHMARKING

Kearns (cited in Bendall, 1993) gives a generic definition of benchmarking as: “the continuous process of measuring products, services and practices against the toughest competitors or those recognised as industry leaders”. Becker (1990) refers to the practice of FM benchmarking to ensure the compatibility of facilities with the core organisation, and the requirement for compatibility with organisational goals and objectives. Therefore, the measure of compatibility, or facilities quality, requires having some comparators by which performance of the key FM measurables can be judged in the wider sense (Featherstone, 1999). These comparators are largely defined from within the application environment and can include both internal and external organisational and/or specific FM comparators. According to Featherstone (1999), the collection of data from the establishment of these comparators is generally known as benchmarking.

The process of benchmarking FM functions can result in a more elastic type of facilities function within the organisation, thereby adding value to the entire organisation. Benchmarking of the FM process can further help negate the ineffectual use of the organisation’s facilities through the effective application of, and establishment of, key performance indicators that provide a valid and objective view of the facilities function within the organisation.

2.10.3.2.3 THE “BIFM” MEASUREMENT PROTOCOL

The British Institute of Facilities Management (British Institute of Facilities Management, 1997) has established a measurement protocol for measuring the effectiveness of any organisation’s FM operation, particularly from a cost performance perspective. Within this context, the initial requirements of the protocol are:

- To provide a standard which will be readily adopted by the FM profession; and
- To provide a consistent format to enable meaningful comparisons of service, cost and value, for business managers and FM providers.

The protocol consists of a measurement framework which covers the following areas (Varcoe, 1996a):

- Standards units;
- The organisation;
- The estate;
- The buildings;
- Facilities management;
- Operational services/cost centres;
- Functional use of space;
- Financial performance; and
- Other performance;

It is hoped that BIFM measurement protocol will provide a common basis and guide for undertaking the performance measurement of FM and services. It should also be seen as the necessary first step in the development of such standards, which need to be evolved in the future to embrace wider dimensions of activity and building types. It has further identified that closer integration of the facilities perspective with overall organisational objectives will also be valuable.

2.10.3.2.4 THE CONCEPT OF BUILDING PERFORMANCE AND POST-OCCUPANCY EVALUATION

In simple terms, building performance has been defined in BS 5240 as behaviour of a product in use. It thus relates to a building's ability to contribute to fulfilling the functions of its intended use (Williams, 1994). Buildings represent a substantial percentage of most organisations' assets and their operating costs. Thus, it is hardly surprising that building performance appraisal is becoming a formal and regular part of the FM process. The above definition of Williams (1994) points to three key aspects of performance in-use, functional efficiency, physical efficiency and financial efficiency. Figure 25 illustrates the interrelationships of the three facets of building performance:

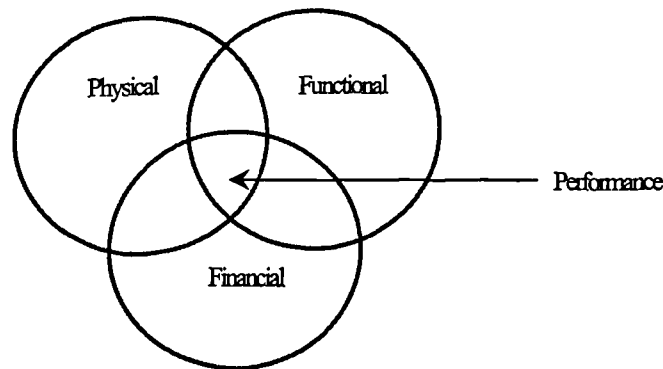


Figure 25: The three facets of building performance – Interrelationships [Source: Williams (1994)]

The concept of building performance is the major philosophical and theoretical background for Post-occupancy evaluation. (Preiser et al, 1988). It is the comparison of client's goals and performance criteria against actual building performance, measured both subjectively and objectively. It is also a diagnostic tool and system, which allows facility managers to identify and evaluate critical aspects of building performance systematically (Barrett, 1992b). This is an attractive concept, not only for designers and users, but also for the long-term benefit of those concerned with the built environment - but only if it leads to an overall improvement in design standards. Post-occupancy evaluation enables building designers and users to analyse the performance of facilities under conditions such as functional and social environments. In addition, it creates a feed back mechanism to allow comparison of true performance with initial user goals. This is valuable in allowing the generation of a design database, but the more immediate benefit to the user is the ability to fine tune the built environment. Perhaps the most important purpose of post occupancy evaluation and, without question the most pragmatic, is to act as a tool which allows the fit between user and building to be tightened, thus ensuring a more supportive environment for user activities (Riley et al, 1995).

If is to be useful, post occupancy evaluation should measure the performance of a building in use providing the decision makers with information relating to a series of key performance criteria. Any such evaluation must comprise the following key stages (Barrett, 1992b):

- Establishing the purpose;
- Definition of the key performance criteria;
- Planning the post occupancy evaluation process;
- Measurement of the criteria;
- Evaluation of data/making assessment; and
- Feedback/stating the lessons learnt

Ultimately, as Figure 26 illustrates, facility managers may become the keepers of expertise and databases/information systems on building performance. Being on-site and familiar with the everyday problems and issues of building performance, facility managers may also be aided by building user manuals which should be developed to be operable at a given point of time (Preiser, 1997).

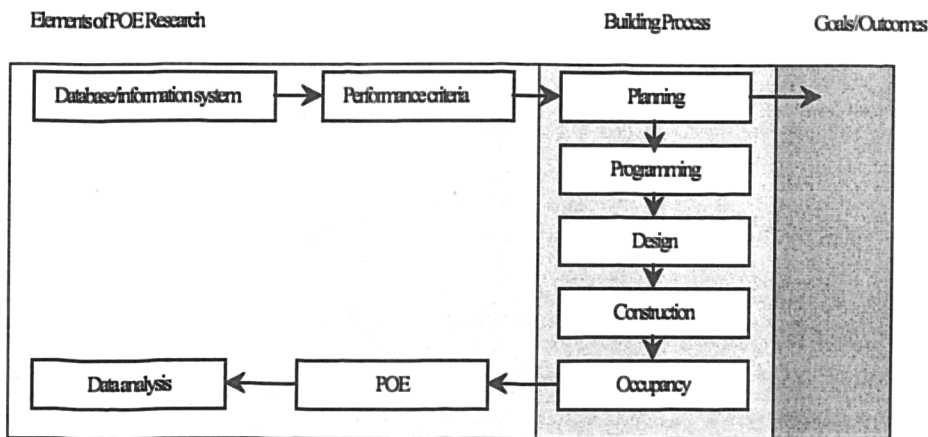


Figure 26: Post-occupancy evaluation as a FM performance assessment tool [Source: Adapted from Preiser (1988)]

2.10.3.2.5 OTHER METHODS AVAILABLE

In the past two decades, various other authors have also reported the use of similar or other types of measurement procedures. Table 16 summarises these, as reported in the literature.

Author	Method	Procedure and characteristics
Belcher (1997)	Hierarchical system of performance indicators	Provides a hierarchical system of performance indicators relating to the provision of facilities designed to sustain the teaching and research processes.
Bon et al (1994)	A conceptual framework	Discusses a conceptual framework developed to measure performance. The primary operational task of this framework is to provide an approach that facilitates the formation and maintenance of a feedback loop between real property performance across the portfolio and managerial action.
Bottom et al (1996)	Measurement system based on the level of support	Represents a measurement of the level of support afforded by changing tenant organisation requirements.
Carder (1995)	Knowledge based FM	Discusses a new form of performance knowledge that works at the interface between the organisation's core and its workplace infrastructure.
Clift (1996)	Building quality assessment	Describes a computerised system of building appraisal
Davis et al (1999)	Performance "only" version of a framework	Concerns the application of novel technology in the measurement of service quality.
DEGW (1986) (Cited in Becker, 1990)	ORBIT –2	Deals with background to the ORBIT-2 methodology of measuring FM performance
Douglas (1994)	Total performance of buildings	Considers the potentials and modern methods of evaluating the total performance of buildings
Finlay and Tyler (1991)	Questionnaire survey	Describes the measures and reports the results of a questionnaire survey and examines the quantitative measures of performance
Heavisides & Price (2001)	Input versus output based performance measurement	Provides a comparative analysis of the different specifications in use, whether in-house or outsourced providers deliver the services, and how these providers are assessed for satisfactory performance
Hinks and McNay (1999)	Management-by-variance tool	Describes the process of developing management-by-variance tool for monitoring the performance of the FM function.
Kincaid (1994b)	Range of measurement methods	Considers the basis for performance measurement in FM with reference to the following: range of measures, statistical quality control and decision support measurements.

Murphy (1999)	Service performance measurement using simple techniques	The methodology chosen measured the service performance through a self-assessment technique, which is a simple experiment, using a small sample and indicates positive signs of predictive validity.
NHS Executive (1999)	EFQM Model	NHS performance assessment framework
Parasuraman et al (1985; 1988; 1991)	SERVQUAL model	The model is predicted on the notion of the performance gap as a basis for the measurement of service quality and one of the attractions of the SERVQUAL measure is its supposed universality and ubiquity
Pheng (1996)	Total Quality Management Philosophy	Proposes the TQM philosophy to the arena of FM and, in the process, suggests a framework to help practitioners implement a total quality FM system which is relevant for their organisations
Simpson (1998)	A Scaling system	Describes a classification system of techniques for assessing performance in FM
Thompson (1998)	Competency measured performance outcomes	Reinforces the need for organisations to seek appropriate measures of corporate and competitive performance and discusses the cause-manifestations-outcomes model to embrace the relevant issues and possible measures
Varcoe (1996a)	Performance measurement	Outlines the principles and process of performance measurement and the benefits it can bring when used in the appropriate way.
Walters (1999)	Customer satisfaction issues	Suggests that the types of performance measures used to measure the facilities resource should reflect the culture of the primary task, and measures of customer satisfaction were devised to measure performance, in accordance with the culture of the primary task of the organisation.
Williams (1999)	“Frisque” Programme	Gives a detailed account of the Frisque (Facilities Risk and Quality Evaluation) programme developed, which, he says (with due modesty) “blows all traditional methods of benchmarking right out of the water”

Table 16: Examples of FM measurement procedures reported in literature

Above Table 16 further highlights the diversity of techniques available in the literature and from these studies, it could be concluded that the concept of performance measurement can indeed have various benefits in FM environments, even though the procedures may involve some subjectivity and uncertainty.

However, it is acknowledged that designing an appropriate FM performance measurement system requires some considerable effort and time, not least because managers have to be convinced about the necessity and the benefits. Section 2.12 explores the existing difficulties with FM performance measurement implementation.

2.10.4 WHAT FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT REPRESENT IN ORGANISATIONS

Modern management theory seeks to target and measure the performance of individuals, work-groups and equipment. This principle is now becoming enshrined in the FM culture, with the development and use of performance indicators across the whole range of cost centres (Williams, 1994). He identifies the following as what FM measurement represents within organisations:

- The extent to which facilities support or can be adapted to the changing needs of an organisation;
- The contribution that facilities make to organisational effectiveness;
- The value added by effective management;
- Improvements in service and environmental quality; and
- The risks associated with using facilities.

The FM function must expect to be tested like any other aspect of business activity and the issues identified above suggest the features which need to be assessed in the process of measuring this performance.

Simpson (1998) identifies the nature of FM performance within organisations by:

- Looking at the whole of the FM function as a system whose performance can be explored (viewing as a whole entity);
- Expressing the whole function as a set of component parts each of which can be viewed as a system in its own right and have its performance examined (as a collection of common parts); and
- By acknowledging the existence of various perspectives on the quality of functioning (as a function which can be perceived differently by different groups of people).

The performance of FM is only of relevance to an organisation if it is viewed within the context of the overall achievement and success of the business (Madeley, 1997).

Facilities reflect an organisation's attitudes and behaviour and are an intrinsic part of the culture of the organisation (Madeley, 1996). The closeness of the relationship between FM and the performance of the organisation may be seen in terms of its relevance to the performance objectives of the business. There are many opportunities whereby FM may exert its influence.

Figure 27 highlights such relationships:

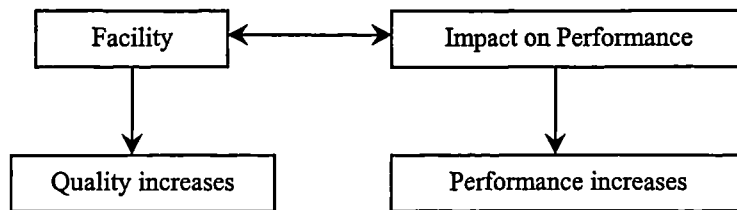


Figure 27: Facilities and its influences on organisations

2.10.5 THE BENEFITS TO BE DERIVED FROM THE MEASUREMENT PROCESS

It is widely accepted that working conditions and facilities influence behaviour and job satisfaction in organisations. Job satisfaction refers to an individual's positive emotional reactions to a particular job (Oshagbemi, 1998; 1999). Herzberg's (1959) extrinsic or dissatisfaction factors include organisational policy, status, pay, benefits, and overall work conditions (Herzberg et al, 1959). These factors comprise the background of one's work, the environment setting. It is an effective reaction to a job that results from the person's comparison of actual outcomes with those that are desired, anticipated, or deserved. The movement of workers to act in a desired manner has always consumed the thoughts of managers (Tiejien & Myers, 1998). The instilling of satisfaction within workers is a crucial task of management. Satisfaction creates confidence, loyalty and ultimately improved quality in the output of the employed. Further, Oshagbemi (1998) identifies physical conditions/working facilities as one of the eight basic elements in an organisation. Leaman (1995) examines the question of whether peoples' productivity in offices, for example, is affected by environment conditions, and identified a positive outcome.

It can be further seen that FM performance measurement practices could relate to a number of facilities objectives which could be relevant to both higher macro-organisational levels and micro-departmental levels within an organisation. With reference to this issue specific FM added value benefits empowered from the FM performance measurement process could include (adapted from Featherstone, 1999):

- Increasing FM efficiency;
- Choosing best FM practice/practices;
- Defining organisational user requirements;
- Establishment of furtherance of organisational goals and objectives; and
- Development of tangible organisational FM quality measures.

As described in section 2.10.3.2.5, various other authors have reported the use of similar or other types of measurement procedures with different benefits. Table 17 summarises some of these and as well as some other cases reported in various articles and books:

Author	Characteristics	Use	Benefits realised
Alexander (1993b)	Quality management facilities (QMF)	Advocates a process of determining service level requirements with users as a prerequisite for writing a service level agreement	Helps to judge performance against targets
Becker (1990)	An expert based system	Assessing building performance by relying on expert's judgement about the building performance	Concentrates on the adequacy of the building for the organisation's effective functioning.
Becker (1990)	Check list appraisal system	A check list is used to rate the performance of important considerations	This system helps to ensure that important factors are not ignored in the assessment and that there is some way to compare different sites using the same criteria.
Becker (1990)	The matrix method	Used to compare the suitability of buildings for a particular type of occupant	Relies on expert judgement

Hammer and Champy (1997)	Process re-engineering	Enables organisations to refocus their activities on their core competencies	Leads to the highlighting of factors in the business activity which are crucial to business success or to the ability to measure them for the first time
McFadzean (1995)	Organisational performance indicators	Generic FM performance indicators	Shows strong links between FM and organisational performance
Rappaport (1986)	Shareholder value model	Links organisational practices with one of the key stakeholders, that is the shareholder	Identifies the value drivers to develop goals and measures of organisational performance
Tranfield and Akhlaghi (1995)	Measurement process for FM	A measurement process for FM in relation to the business	Business related performance measures, which gives an indication about how facilities affects the core business
Varcoe (1995)	Overall approach to facilities performance	Based on an understanding of the key organisation issues linked to specific facilities standards	Helps to prioritise performance based on a scale

Table 17: Examples of FM performance measurement procedures reported

From the above literature review it could be concluded that the concept of performance measurement can indeed have various benefits in FM environments. However, it is acknowledged that designing an appropriate FM performance measurement system requires some considerable effort and time, not least because people have to be convinced about the necessity and the benefits. In the next section, this need for performance measurement systems in FM is further explored which leads to the identification of the research need in a subsequent section.

2.11 GAPS IN THE LITERATURE

In the previous section 2.10, a reasonable case for the need for and benefits of performance measurement systems in FM environments has been made. In section 2.10.3.1.2, some relevant trends in performance measurement is discussed which offer further opportunities for the development of such systems in FM. The objective of the current section is, therefore, to show that there is a need for a new approach to

measure performance in FM by discussing the problems with the existing approaches of performance measurement and the requirement for a FM research agenda at large.

2.11.1 FACILITIES MANAGEMENT RESEARCH AGENDA

Having put the FM field in context this section shows the dynamic relationships between FM practice and theory, and discusses some of the current research issues dominating the field. This section further argues that FM is still not adequately supported by a good research base, from which performance measurement issues cannot be dissociated.

The advancement of FM as a profession and a serious new discipline needs to be supported by good quality academic, as well as applied, industry-based research (Akhlaghi, 1997). Research in FM must have its primary focus the need to address the nature of professional knowledge and practice and reflect on ways in which FM professionals actually develop their practice.

In the past two decades, FM has evolved from a set of heuristic ideas to a portfolio of somewhat developed concepts and principles. This has followed the typical path of knowledge development as illustrated in

Figure 29, “Resource Management” and “Strategic FM” integrate most of the modern concepts and principles in the field, but as the Figure 28 illustrates, modern concepts needs more development, in order to strengthen credibility of the discipline.

Organisations operating in competitive environments are constantly trying new ideas in order to cope with an increasing complex business environment. They now realise that keeping in touch with, or developing new knowledge, is a key factor in guaranteeing their survival. The constant shift of FM as discussed in section 2.3.4, demonstrates the eagerness of organisations for new knowledge in this respect, as

Figure 29 illustrates. Furthermore, this shift of emphasis is part of a continuous and cumulative learning process that affects what is known, and practised, in the field of

FM. Indeed, from the narrower view of organisational processes, there has been a gradual evolution of emphasis towards issues involving the entire organisation.

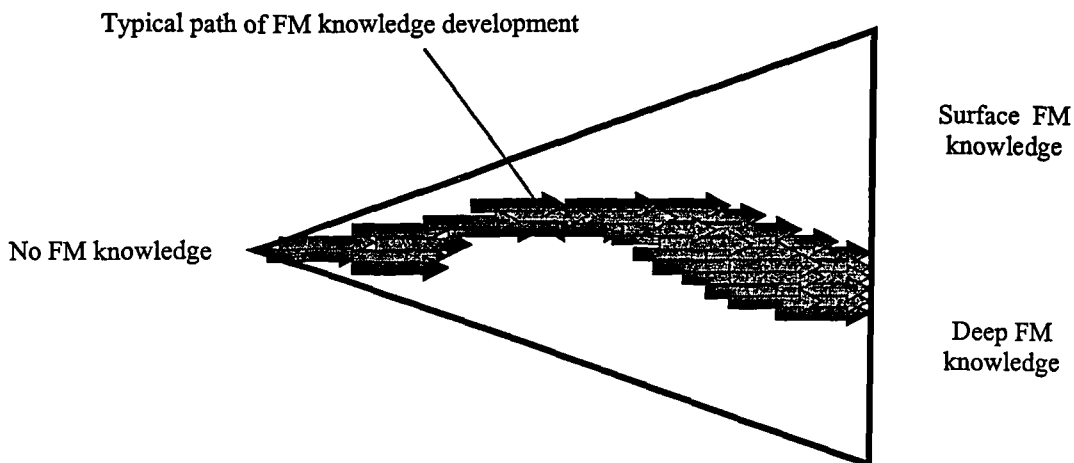


Figure 29: Evolution of FM knowledge [Source: Adapted from Santos (1999)]

In FM practice and education, there is a record of early success with much progress having been achieved in a short time (Nutt, 1999a). On the research front, the situation is rather different. Despite the considerable achievements of the last few years the field of FM remains at a very early stage of development in which (Nutt, 1999b):

- It operates in an ever widening and ill-defined sphere of activity;
- The claims that it makes for itself are mainly untested;
- It has few secure methods of its own to underpin good practice experience;
- It is not yet supported by an adequate knowledge base;
- It has yet to make its own distinctive contribution to the management discipline;
- Its development to date has been unsupported by practical theory; and
- It is grossly under-researched.

It is not uncommon for practitioners in professional disciplines to argue that research is an expensive unnecessary luxury, which frequently produces nothing worthwhile,

and such views are to be expected from practising facilities managers (Grimshaw, 1999) These arguments must be counteracted and two main points can be put forward in support. The first is that FM has been born out of dynamic change and must, as a profession is able to react to future change; and the second is the discrepancy between accepted definitions of FM and current practice. Grimm (1992) has expressed the view that facilities managers should develop a close link between research and practice, so that professional development is based on the results of sound empirical research.

Further, in order to move from the present reality to the intended future, where FM is represented at board level, organisations must be persuaded that a link exists between their physical environment and the operational efficiency of the organisation. This can only be done through good quality research. In view of the need to develop the role of FM in organisations, it is particularly important to establish a link between the environment and organisational efficiency and establish FM as central to the operation of any organisation. (Barrett, 1992a).

The need for FM research has been already emphasised above. Bannett (1995) suggests some research content and process issues which are worthy of further study. The following Table 17 summarises some suggested strengths, weaknesses, opportunities and threats to FM as a research base: the brief identification of a FM research area above suggests a range of research content and process issues which need to be addressed, including the need for performance measures within the field.

Strengths	Weaknesses
Existing management research base Existing facilities research base Evidence of FM practice	Little evidence of actual performance Shallow/narrow FM research base Few FM specific systems and processes
Opportunities	Threats
Large potential market for application Diversification for property professions Context for property professions	Becoming subsumed into other disciplines Loss of managerial/technical linkage Backlash following “honeymoon” period

Table 18: Some suggested strengths, weaknesses, opportunities and threats of FM as a research discipline [Source: Adapted from Bennett (1995)]

2.11.2 NEED FOR AN INTEGRATED PERFORMANCE MEASUREMENT SYSTEM FOR FACILITIES MANAGEMENT

It is worth re-emphasising the importance of having a clear understanding of the underlying issues and organisational demands relating to performance measurement in FM (Varcoe, 1996a). There must be clarity in linking operations to strategic goals, with a focus on business operations in the context of customers and their requirements. It is only from this firm basis of a clear understanding of the overall organisational performance equation that business decisions and value-based recommendations for improvements, supported by performance measurement, can be made in the proper context of true organisational need. Thus, performance measurement is becoming increasingly important both for reasons of justification to general management, as discussed in section 2.6.1.1, and support management and practice within the FM department. However, a large majority of academics and practitioners in the field reported that currently, within their FM group, knowledge of FM performance measurement is limited.

Therefore, the aim of this section is to emphasise these issues of inadequately addressed performance measurement systems in FM, leading to the identification of the research needs in the preceding section 2.11.2.1.1.

2.11.2.1 SUMMARY OF REVIEW OF EXISTING LITERATURE

Although giving an insight into FM organisations' activities in performance measurement as detailed in section 2.10.3.2, current literature does not appear to give a comprehensive overview of practice in this field. The literature review conducted points to at least the following requirements:

- The need for an integrative methodology for considering the facilities implications of business decisions; and
- The need for processes to monitor performance of existing facilities portfolio in a dynamic business environment.

Within FM literature, the use of integrated performance measurement systems incorporating financial and non-financial measures is very briefly glossed over, if mentioned at all. The view of Neely et al (1997) that “despite the academic interest, there appears to have been little research on what industry is actually doing with regard to its performance measurement systems” still holds true in the FM context. An assessment of the trend in the use of measures showed more recently that organisations have begun to touch upon non-financial or “soft” issues as well as traditional accounting variables, giving an indication that these measures now assume a place on organisational agendas. However, there is no indication of how this activity is permeating within the FM organisations, and there still seems to be much truth in the statement that “it is not completely clear what should be measured” (Simpson, 1998). Why are such systems necessary to measure FM performance?

2.11.2.1.1 TO UNDERSTAND THE CORE BUSINESS INFLUENCE ON FACILITIES

Although some knowledge of performance measurement in FM has already been developed, it is still inadequate. Much work has been done to measure FM performance, as current available systems often ignore the influences of core business strategies towards FM. On the other hand all organisations, regardless of what they produce and regardless of size, are continuously faced with technological change. Often this technological change happens with great rapidity which demands an adequate response from a FM point of view. With the increasing need for FM to become more professional, strategic and commercially oriented, the issue of performance measurement in FM has been a major consideration in the facilities cycle.

In summary, just as performance measures in the provision of core business to support the overall business strategies require action to be taken to continuously align business supply to anticipated business demand; performance measurement in the delivery of facilities services similarly needs to balance internal competencies.

2.11.2.1.2 MEETING CURRENT CORE BUSINESS NEEDS – ASSESSMENT OF THE USEFULNESS OF FACILITIES MANAGEMENT

Even though FM exists to support the core business, it is often this relationship that runs into difficulties (Barrett, 1995). As it is a support service, many facilities managers have taken a reactive role, waiting for instructions before they perform any action. The result is that the facilities manager has to remedy the situation quickly, rather than assessing what would be the best long-term solution. One of the ways to improve facilities services therefore is to become more proactive, that is actively seek out problems and requirements before they become critical. Even though the meetings are a useful way of gauging satisfaction with facilities services, there is generally no time to discuss things in great detail and only certain people's views will be represented. Facilities managers should therefore consider developing an audit system that seeks to improve service through feedback (Barrett, 1995).

Simpson (1996) views FM performance as a whole entity, as a collection of component parts, and as a function, which can be perceived differently by different groups of people. In reality, FM can contribute to, or detract from, business performance at a number of levels (Nutt, 1999b). Therefore, FM performance needs to be assessed in relation to (Nutt, 1999b):

- Its contribution, or not, to the core business of an organisation;
- Its support, or not, to business operations and productivity;
- The effectiveness, or not, of its own facilities management arrangements;
- The delivery and quality of out-sourced, part-sourced and in-sourced services;
- The support it provides to the end user; and
- The service received by the customer.

Further, Hinks (1999) speculates that the future of performance assessment of FM will have to shift in emphasis towards the assessment of the usefulness of FM. He further suggests that currently there is a mismatch between the performance indicators preferred by the FM industry – which tend to be reductive databases used for the quantitative comparison of the facilities-oriented aspect of FM – and those performance indicators which the core business is interested in, which tend to correspond to more synergistic and business-outcome oriented issues.

Extensive literature review carried out in performance measurement in FM (section 2.10.3.2) failed to find performance instruments which would meet the above needs. Consequently, the research need is confirmed.

2.11.2.1.3 TO ENSURE FACILITIES PERFORM TO THE EXPECTATIONS OF THE USERS

The task of ensuring that the facilities provision performs to the expectations of the users/occupiers is a complex facilities-related service delivery process that involves a number of stakeholders comprising both internal and external customers. The focus of management attention here should be a constant balancing of priorities: between cost of provision and occupiers' demand, between strategic and operational demands, and between maintaining control and exploiting sourcing opportunities (Then, 1996).

2.11.2.1.4 SECURING THE FUTURE

Alexander (1994a) identifies performance measurement as one of the three essential issues for the effective implementation of a facilities strategy within organisations, "better tools are needed for assessing an organisation's rate and level of improvement – to ensure that gains have in fact been made". Therefore, adaptation to change will continue to be a key business criterion in the coming decade and will continue to provide the greatest challenge for FM. Predicting the future and managing uncertainty is in the nature of FM. Identifying the influences for change in the business environment and developing facilities to accommodate it are central to the function.

The survey and extensive literature review carried out on existing performance measurement techniques in FM, in sections 2.10.3.1 & 2.10.3.2, failed to locate any empirical evidence to suggest the superiority of performance measurement systems in an FM setting. It can be seen, therefore, that the question of "best performance measurement techniques in general management and organisational settings versus their applicability in FM", with regard to the measurement of FM performance is unanswered in literature. Literature support for the researcher's findings obtained

from the survey has therefore been sound, confirming that this is a topic worthy of research.

2.11.2.2 SUMMARY OF REVIEW OF EXISTING TECHNIQUES

The use of a broad range of approaches to the management of performance in FM was confirmed by the survey and the interviews carried out, as described in section 2.10.3.1. It was further confirmed that appraisal techniques for assessing performance should become an essential part of the FM process, particularly those that provide information that can be arrayed so as to ensure management can learn about the consequences of their actions.

Those using the cost benchmarking techniques appeared fairly confident that they were using the best approach. Their opinion was founded on rational consideration of the technique, rather than any evidence of comparative performance of approaches to performance measurement. None of these interviewees had the authority to reject the technique and were interested to see evidence concerning the efficiency of the system. Those personnel, who were using approaches other than benchmarking techniques, appeared less certain that they had the best method for performance measurement but they wondered whether there might be a better approach to this task. Several interviewees described a need to undertake their own measures of performance, especially to obtain an assessment of customer satisfaction. One interviewee responded that he had no method of assessing the performance of facilities services he provided. Interviewees all expressed a wish for methodologies to provide valid measurements of FM service quality, irrespective of whether it is FM inputs, processes or outputs. An interest has been found, therefore, in the investigation of the best approach to managing performance of FM.

One of the major difficulties encountered by a facilities manager in the sphere of performance measurement is his/her understanding of this topic. There is a great deal of confusion about the reasons for *performance indices and performance measurement services*. It is frustrating that the FM market has been slow to take on board the concept of performance measurement.

There is frequent comment that there are too many performance indices (especially in terms of cost) in the FM market. Therefore, a more positive and preferable stance in respect of performance measurement in FM is needed and the evaluation process should stand up to scrutiny and allow the measurement of FM performance of individual services as well as aggregating this information into indices and integrated performance measurement “universes”. This should allow assessment of FM performance covering various perspectives of FM together with FM’s relationship to the core organisation, although to date the key problems have been those of performance measurement techniques availability.

Simpson (1998) identifies the following types of FM performance measurement systems which might be used at different levels of the FM organisation:

- Whole FM function;
- Individual support service; and
- Part of individual support services

Interviewees were asked whether they would find assessments at any or all these three levels useful to them and all confirmed that they would be interested in obtaining assessments at all three levels. Such systems would clearly be popular within the FM community as a means of obtaining valid measurements of FM performance at different levels. Interviewees further wanted a way of measuring their customers’ perceptions of FM performance; they wanted to know what their customers’ thoughts are. However, the interviewees also acknowledged that they might have to balance the customers’ perception with what was affordable for the core business, when considering resource allocation. The possibility of measuring innovation issues within FM was raised and the interviewees were attracted to this idea. They were clear that they needed to know how they perform in terms of implementing their future plans. Some of the interviewees further confirmed, even though there are existing performance measurement instruments to assess the performance of the FM output in certain circumstances, there is room to develop measurement instruments to measure the out put of the entire process, that is, input, process and output.

2.12 THE RESEARCH NEED

Previous section 2.11.2.2 has shown the problems associated with current performance measurement systems and emphasises the requirement for an integrated performance measurement system for FM. This section further confirms this need for a new approach to such systems by identifying the current problems in evaluating the performance in FM. It is identified through the extensive literature review that the following explorations are required in FM performance measurement setting:

- The service received by the different segments of customers;
- Its contribution, to the core business of an organisation, that is, its support to business operations and productivity; and
- The effectiveness of its own FM arrangements.

2.12.1 FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT PROBLEM

As mentioned in a previous section 2.12, appropriate measurement procedures can provide major benefits. When applying current measurement principles applicable to FM environments, several problems have to be faced:

- It is difficult to isolate FM's contribution to organisational performance from the other business activities because it is always the intertwined efforts that eventually result in outcomes in the market place;
- The problem of matching specific FM inputs and intermediate outputs with final outputs;
- A third major measurement problem is the time lag between FM efforts and their payoffs within an organisational setting;
- Besides problems with the selection of performance metrics, there is also the problem of determining the right norms to compare with; and
- Another issue, which is already mentioned in the previous section, is the acceptance of performance measurement in FM.

Therefore, it is argued in this research that performance measurement techniques available in general management literature haven't been fully transformed into FM literature, emphasising the research need identified in section 2.2. The research carried out by McFadzean (1995) proposed that a clear methodology for linking FM

to the core business is required to resolve the above current problems experienced by many of today's FM organisations in measuring facilities performance and to develop knowledge about the links between FM and the business in research terms. The process should include links to the core business at a corporate level.

2.12.2 ISSUES NEED ATTENTION

Above evidence suggests that performance measurement concept is firmly on the FM agenda. Hinks (1999) has speculated on the future of performance measurement in FM in the context of the future business needs. It has been observed that the focus of contemporary FM performance assessment has limited the consideration of the wider, perhaps less tangible or differentiable, value of FM. The emphasis on measuring FM performance has separated it from the business and has neglected its inter-active value. Therefore, condensing FM from the business view, there is a need for the development of models and theories which would be suitable for assessing the business utility value of FM.

In terms of issues that need researching, the literature review detailed in the above sections has identified the following as key:

2.12.2.1 ISSUES ASSOCIATED WITH INDIVIDUAL PERFORMANCE MEASUREMENT

- Is performance measurement a luxury for FM? Which performance measures are of greatest value to FM organisations?
- Should measures focus on input processes, the output of processes, or both?
- Is time the fundamental measure of FM performance?
- How can flexibility, which is often simply a property of the "system", be measured?
- How can FM performance measures be designed so that they encourage inter-functional co-operation?
- How can FM related measures which do not encourage short-termism be designed?
- How can FM performance measures be designed so that they encourage appropriate behaviour?

- Can “flexible” FM measures which take account of the changing business environment be defined?
- How should the data generated as a result of a particular FM measure be displayed?
- How can one ensure that the management loop is closed – that corrective action follows measurement?

2.12.2.1.1 ISSUES ASSOCIATED WITH THE PERFORMANCE MEASUREMENT SYSTEM AS AN ENTITY

- What are the “definitive” principles of performance measurement system design in FM?
- How can the measures be integrated both across the FM organisation’s functions and through its hierarchy?
- How can conflicts between FM performance measures be eliminated?
- What techniques can facilities managers use to reduce their list of “possible” measures to a meaningful set?
- Would a “generic” FM performance measurement system facilitate this process or is a process-based approach required and what are the relative advantages and disadvantages of the above?
- Do “generic” performance measurement systems actually exist?
- Can a practicable FM performance measurement system design process be specified?
- Can a “flexible” FM performance measurement system which takes account of the changing business environment be defined?
- How can the cost-benefit of a FM performance measurement system be analysed?

2.12.2.1.2 ISSUES ASSOCIATED WITH THE SYSTEM AND ITS ENVIRONMENT:

- Why do organisations fail to integrate their FM performance measurement into their strategic control systems?
- How can we ensure that the FM performance measurement system matches the organisation’s strategy and culture?
- To which dimensions of the internal and external environment does the FM performance measurement system have to be matched?

2.12.3 RESEARCH PROBLEM DEFINITION

In the previous sections 2.12.2.1, 2.12.2.1.1 & 2.12.2.1.2, it is shown that there is an increased interest in FM performance measurement systems in practice. In theory, various FM performance measurement concepts are available, as identified in section 2.10.3.2, but choosing among these concepts and tailoring a chosen concept to fit a specific measurement need and context is not an easy task. However, contingency theorists have made convincing arguments that such a fit with the purpose and context of measurement is necessary to make the measurement procedure effective (Emmanuel et al, 1990; Macintosh, 1994; Neely et al, 1997; Brown and Gobeli, 1992; Domsch et al, 1983; Hauser and Zettelmeyer, 1997). In this research, this argument is accepted by the researcher and further assumed that effective measurement procedures will contribute to FM effectiveness. Though the concept of FM effectiveness has not been explicitly operationalised, some examples of the benefits claimed by practitioners and academics are given in section 2.10. Though additional evidence of benefits will be gathered during the empirical research, it is not intended to validate this assumption, but rather to regard it as a premise. In Figure 31 all the premises of the research have combined:

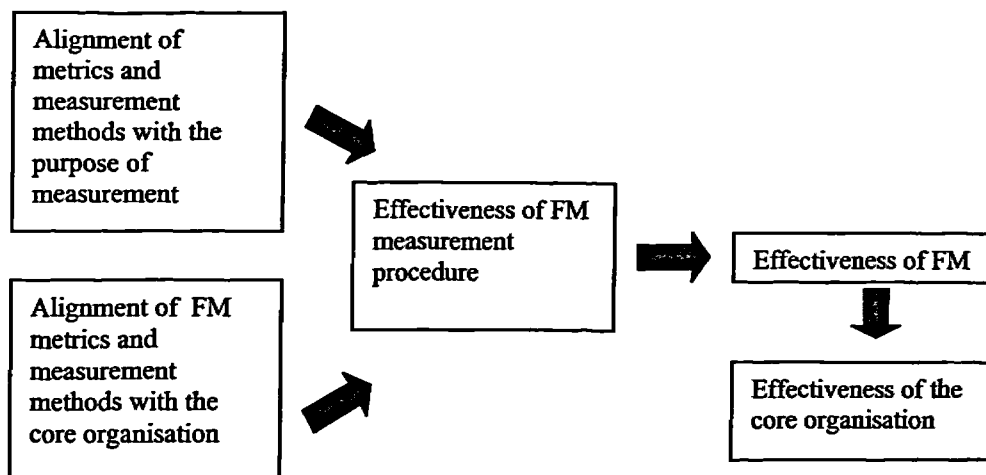


Figure 31: Impact model of research premises [Source: Adapted from Drongelen (1999)]

As shown in the above, in

Figure 31, there is a concern as to “how could FM measurement system be aligned with the purpose of measurement and with the relevant contingencies in an FM context?” As discussed in section 2.12.2, current performance measurement system approaches do not give any advice. They support the “embodiment and detailed design phases of a measurement system design process, but factors identified in section 2.12.2, are often ignored. Therefore, there is a need for research aimed at contributing to closing this gap. Given the time constraints of a PhD process, all the performance measurement parameters discussed in section 2.12.2.1 will not be addressed, instead the research will focus on the alignment of the most prominent elements of a performance measurement system in FM, as identified in section 2.12.3. The research objectives were formulated based on this assumption, which will be visited in Chapter four.

2.13 USEFUL STRATEGIES FOR DEVELOPING PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

Performance measurement theory, as any other managerial theory, could be interpreted as “condensed learning” as it incorporates many of the core ideas and cumulative experiences that have led to current best-known performance measurement practices. Thus, performance measurement theory could be considered as a result of a natural learning process of organisations searching for ways to become more competitive. Therefore, the constant shift of managerial emphasis should provoke reflection and drive further improvement in performance measurement theory.

Current research agenda of performance measurement increasingly focuses on the study of comprehensive and integrating theories. This indicates that performance measurement has begun to be a mature field of knowledge. This is not to say that it is applicable to all types of management disciplines including FM. In fact without adequate understanding of previous theories, within FM or outside the field, there is a risk of overlooking important knowledge. Therefore, this section explores the

context of the development of new performance measurement theories in FM, since this was the main source of empirical evidence in this research.

Identification of new performance measurement theory in FM requires an adequate understanding of the main characteristics of the sector and the implications of these characteristics in performance measurement practices. All these issues have been addressed in detail in various previous sections. The unique and complex environment represented by the combination of these, and other, characteristics represents a challenge for performance measurement research in FM. The overall opinion among academics and practitioners with respect to how to develop better performance measurement practices in FM varies considerably. In this context, the next sections report the most common strategies identified in the literature.

2.13.1 ADAPTATION OF IDEAS FROM OTHER INDUSTRIES

Today, the applicability and transfer of practices and theories from other sectors is the constant subject of discussion within any industry. Indeed, there are now major research programmes that aim to transfer theories, practices and processes among industries (Santos, 1999). For example, in the UK, the Construction Task Force's report on the scope of improving the quality and efficiency of the construction industry says: "we see that construction has two choices: ignore all this in the belief that construction is unique that there are no lessons to be learned; or seek improvement through re-engineering construction, learning as much as possible from those who have done it elsewhere" (Egan, 1998).

The defenders of the transfer of practices from other industries (Sarshar et al, 1999) question the conventional assumptions of the related process itself. Traditionally, because of the characteristics of FM, it has been claimed that the "process" approach is the most suitable option for the sector (Sarshar et al, 1999; Hinks, 1999). Therefore, FM business processes should be subjected to the same successful practices found in other industries.

2.13.2 DEVELOPMENT OF FACILITIES MANAGEMENT'S OWN THEORY

Another perspective for developing performance measurement in the FM sector is shared by those who believe in the development of FM's own particular theory, especially in relation to the characteristics of the sector (Varcoe, 1996b; McFadzean, 1995; Hinks, 1999). But, following this line of thinking, and driven by its own economic weight, FM has not yet developed a particular body of knowledge in performance measurement. The literature review in section 2.10.3.2 further emphasises this issue in detail. According to the developers of this strategy, the combination of the various characteristics of FM confers a "peculiar" mode of performance measurement to it (McFadzean, 1995). These identifications cannot be ignored or overlooked when developing a consistent and coherent theory of performance measurement in FM. For this reason, Hinks (1999) and Varcoe (1998;2000) argue that there is a need to develop techniques customised for the FM sector.

2.13.3 AN ALTERNATIVE STRATEGY

Following Lillank's (1995) concepts of knowledge transfer, practices of different industries can be effectively transferred across industries if they are translated into highly abstract ideas (Santos, 1999). Thus, an alternative strategy for developing a performance measurement theory suitable to FM is to search for common abstract definitions that enable the effective exchange of ideas with other industries. This means widening the scope, abstracting and improving the core ideas of performance measurement theory in order to contemplate and consider the FM's peculiarities.

If only certain types of performance measurement can be fully transformed in FM, there will always be certain misfits between the general management literature and the FM practice with respect to performance measurement. In fact, this is one of the main arguments for those defending the development of a particular performance measurement theory for FM (Varcoe, 1996a; Douglas, 1994; 1996). However, as the literature review revealed, while FM has dedicated an effort to develop its own body

of knowledge, it has often done so whilst being unaware of the recent and useful advances in performance measurement in general management.

In this context, the strategy of widening the scope of performance measurement theory in FM in this research is seen as a viable alternative to effectively avoid the inaccuracies of copying performance measurement in general management practices, or the risks of alienation caused by the search for a special FM theory. This theory should provide a useful filter for FM by means of which it would be possible to consider the applicability of ideas generated in other contexts, thus, enabling cross-industry learning.

2.14 SUMMARY OF PART THREE

The area of performance measurement in FM was introduced in this Part as being subjected to many differing definitions. The objective of this section is to draw together key emerging themes in FM performance measurement from the literature review of the last few sections; section 2.10.3.2: the prescriptive writings on relationships between performance measurement in FM and the core organisation and section 2.10.3.2 on performance measurement. This section discusses the main theoretical issues including the process of performance measurement in FM, the level at which performance measurement occurs, and the types of performance measurement. Section 2.12.1 discusses the need for an integrated performance measurement system for FM.

The following themes are discernible from the literature survey carried out:

- There is a need to proactively manage the facilities base within the core organisation;
- A strategic response is needed to raise management awareness of the contributing role of the facilities resource; and
- A coherent performance measurement framework is needed to measure the role of FM within the core organisation

These emerging themes will form the basis of identifying research needs aimed at improving management effectiveness of facilities within the core business as means to support the achievement of core business objectives.

2.15 SUMMARY OF THE CHAPTER

The contribution of the literature review is to bring together wide, yet disparate, areas of information under a coherent framework that looks at the facilities resource and its ongoing management of performance from an organisational wide perspective. The characteristics of FM make it different from other types of processes within organisations, but the processes by which it is valued and its performance is measured are becoming much more comparable with those which prevail in the other organisational markets.

FM emerged over the last two decades in response to turbulent change in the business environment, the pervasive influence of information technology, more independence and a stronger voice for knowledge workers, and completion of the single European market. The FM movement can be summarised as a belief in potential to improve processes by which workplaces can be managed to inspire people to give of their best, to support their effectiveness and ultimately to make a positive contribution to economic growth and organisational success. The last two decades have seen dramatic changes in the facilities market, against an increasingly dynamic business environment, which dictates that prudent management of all businesses resources is necessary for survival and growth. The role of facilities as a business resource is receiving wider recognition at senior management levels.

At a macro level, the review of literature from the theory and practice in FM points towards a need for a performance measurement system to define, explain and justify the role of facilities within the remit of business management. Hitherto, literature in the various related areas are presented and the main contribution is to provide the path for developing a performance measurement formwork for FM integrating business considerations.

Some important issues identified in chapter two are summarised below:

2.15.1 GENERAL

Performance measurement as an academic subject has been studied within the context of FM according to the main perspectives: that FM is, by its nature, a supporting organisational process to the core business. The requirement of the use of appropriate performance measurement systems to fulfil this responsibility was addressed, uncovering in this literature analysis the development of an appropriate performance measurement system.

The generations of FM discussed at the beginning of this Chapter further depict a trend towards strategic awareness in FM leading to the requirement of performance measurement and management for FM.

2.15.2 GAPS IN THE LITERATURE

The areas which have been identified for further research within the context of FM are revisited in this section and provides a prelude to the next two chapters on the theoretical framework and research objectives and methods to be used in this research. The areas, which were identified throughout this chapter, and which provide potential research topics, can be classified into the areas of the concept of performance measurement, performance measurement constructs in FM organisations and the FM organisation itself. The gaps in the literature identified in these three sections are the basis upon which the research objectives and the pilot study were developed.

2.15.2.1 FACILITIES MANAGEMENT

The concepts identified and the problems associated with the FM organisation, as discussed in detail in Part one of this chapter, render FM more suitable in terms of providing an area from which a rigorous and valid research design can be developed.

Generally, the constructs of FM per se are not very well established. Different authors have highlighted this need and have been discussed in detail in section 2.11.1. That is, the relationships within and between various concepts of FM are, at

this point, fairly speculative and derive from the author's reviews of previous writers. Further research is required in this area to provide validity for these constructs and the relationships between them

2.15.2.2 PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

Most FM organisations are now realising that key competitive advantages reside with the ability to satisfy the core organisational needs (Then, 1996). The applicability of performance measurement concepts to FM provision cannot, therefore, be disputed. What remains to be challenged, however, is the translation of the various principles of performance measurement for them to remain meaningful and effective in a FM context.

The problems associated with performance measurement in FM organisations identified in section 2.12.3 render the area of performance measurement more suitable in terms of providing an area from which a rigorous and valid research design can be developed. It was noted that clarity is needed in the area of performance measurement within FM. Again, this presents a potential research opportunity.

The literature in FM organisations does not utilise many of the concepts of performance measurement defined in Part two of this chapter. There has been little attempt to use the performance measurement models to explain (and, ultimately improve) the behaviour and performance of FM organisations. Therefore, the investigation of previously identified potential areas for research in the context of the FM organisation would again make for an interesting research project.

There is a wide range of choices in measuring facilities management performance reflecting the varied nature of the field. Benchmarking and post-occupancy evaluation could be identified as two (Kincaid, 1994b). In essence, however, they are all seeking to address one of the two fundamental questions associated with performance measurement, namely: what are the determinants of performance measurement in FM; and how can FM performance be assessed? However, what is

needed is an assessment of facilities performance in the eyes of the core business. An extensive literature search has failed to reveal a technique which provides such an assessment. Is such an assessment possible?

2.15.2.3 DEVELOPMENTS OF PERFORMANCE MEASUREMENT THEORIES IN FACILITIES MANAGEMENT

The literature reveals that performance measurement has two main veins of development in FM: the adaptation of ideas from other industries or the development of FM's own particular theory. The analysis of both strategies presents weaknesses that often are overlooked or not considered by the majority of researchers. In this context, an alternative strategy conceived by the researcher is to widen the scope and improve the content of performance measurement theories in order to make them valuable in FM.

In summary, it is suggested that there is lot of room for further improvement in the performance measurement in FM setting as many concerns remains unsolved, in particular, the extent to which the performance of FM could be measured in relation to its contribution to the core business and the measurements associated with such a system. This needs special consideration in FM research.

Based on the alternative strategy suggested to develop performance measurement theories in FM, the next chapter focuses on the structure and content of some core principles of modern performance measurement that will be used as the "theoretical framework" or "benchmark of practice" to analyse empirical evidence obtained in FM.

Chapter 3

Theoretical Framework

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

“The man who becomes interested in making this kind of study will become so fascinated by it that it will be on his mind almost all the time”
- Frank Bunker Gilbreth

3.1 OVERVIEW

Chapter two placed FM in perspective regarding the historical evolution of the managerial theories, current organisations’ FM needs and the need for performance measurement within FM. Subsequently, it presented some of the most common arguments and counter-arguments in relation to the peculiarities of FM and the implications of performance measurement in terms of its contribution to the business strategy needs. It lead to the identification of the research needs relating to performance measurement applications within the FM organisation.

In this context, the present chapter discusses requirements of performance measurement systems together with problems associated with such systems. Based on the use of an “alternative” strategy (as described in section 2.13.3 of chapter two) to develop performance measurement theories in FM, the current chapter discusses possible directions of FM performance measurement systems together with creating awareness in integrating prevailing performance measurement theories into practice within the FM environment.

The present chapter further focuses on the structure and the context of some of the core principles of modern performance measurement that will be used as the “theoretical framework” to analyse practice evidence obtained in FM and thereby to develop FM’s own performance measurement theory.

3.2 REQUIREMENTS OF A PERFORMANCE MEASUREMENT SYSTEM

Performance measurement has been already described as a process of assessing progress towards achieving pre-determined goals, including information on the efficiency by which resources are transformed into goods and services, the quality of those outputs and outcomes, and the effectiveness of organisational operations in

terms of their specific contributions to organisational objectives. The measurement of performance is one of the most prominent features of modern life extending as it does through politics, economics, business, education and sport (Kincaid, 1994a). Allied to this has been a more widespread desire amongst organisations to know that their facilities provide a value-for-money working environment. In 1991, Eccles predicted, “Within the next five years, every organisation will have to redesign how it measures its business performance”. Given the current levels of activity in the field, it appears that Eccles’s assertion was fair.

The need for information to stimulate appropriate action and organisational learning at the right level of the organisation and stage of the decision making process emphasises the need for performance measurement (Brignall and Ballantine, 1996). It was emphasised that in a competitive environment management-by-exception may suffice so interactive systems may not be needed. In general, professional services face more volatile and uncertain external environments than mass services, and are therefore more likely to need interactive performance measurements.

The growing acceptance of a need to measure FM performance is in contrast to a lack of a systematic process for determining appropriate measurements (section 2.11 of chapter two). In contrast, FM is too complex a subject for a few measurements to satisfy all needs. However, if FM is viewed as a process, performance measurement can be effectively determined (Amaratunga et al, 2000a).

3.3 PROBLEMS WITH PERFORMANCE MEASUREMENT SYSTEMS

In the last decade, there has been a growing criticism of traditional performance measures as too narrowly focused on financial measures (Olve et al, 1999). The reason is that conditions today are no longer the same as when traditional management control emerged. An attempt has been made below to summarise some of the views advanced in this debate in the following sections:

3.3.1 CRITICISM OF TRADITIONAL MANAGEMENT CONTROL

The business performance measurement revolution has identified that traditional financial measures do not give a “true” reflection of corporate performance (Brown and Laverick, 1994). Non-financial issues, “those areas of the discipline which are generally difficult to measure and assess”, are becoming more widely recognised as having an impact on business performance (Stone, 1996). Various authors have pointed out the need in many decision-making contexts to integrate financial and non-financial measures of performance and qualitative information (Letza, 1996; Rangone, 1997; Bromwich and Bhimani, 1994; Neely, 1998). In many of today’s competitive environments, each presenting a series of intangible critical success factors, the assessment of organisational effectiveness cannot be narrowed to quantitative measures, but must also explicitly include intangible factors. During the last ten years, traditional management controls have been increasingly criticised and summarised below are some of the views advanced in the debate:

- They are rarely integrated with one another or aligned to the business processes (Lynch and Cross, 1991);
- Measures are often poorly defined (Neely, 1998);
- Traditional performance measures that enterprises have used may not fit well with the new business environment and current competitive realities (Lee et al, 1995); and
- Misleading information is furnished for decision-making (Olve et al, 1999).

Traditional financial accounting measures offer a narrow and incomplete picture of business performance, and a reliance on such data hinders the creation of future business value. As a result financial results should be supplemented with additional measures that reflect customer satisfaction, internal business processes, and the ability to learn and grow. Is there scope to assess FM performance using an alternative approach, covering both financial and non-financial issues, whilst still preserving the insights into the integrative value of FM? These are some of the issues that need to be addressed.

3.3.2 NEED TO REPRESENT NON-FINANCIAL MEASURES

Much of the criticism of traditional performance measurement systems stems from their failure to measure and monitor multiple dimensions of performance by concentrating almost exclusively on financial measures (Brignall and Ballantine, 1996). Organisations are searching for ways to incorporate intangibles – such as quality management, customer retention, internal organisational processes, research and development and innovation – into their regular performance evaluation.

A number of recent studies highlight the limitations of traditional financial accounting measures and the growing importance of non-financial data (Ernst and Young, 1998):

- Nearly forty per cent of the market valuation of the average company was “missing from the balanced sheet” (Lev, 1996). For high-technology firms, that percentage was over fifty per cent;
- Sixty four per cent of all U.S. controllers reported that their companies were actively experimenting with new ways of measuring, collecting and reporting non-financial data (Institute of Management Accounting, 1998);
- Non-financial criteria constitute, on average, thirty five per cent of the investor’s decision. For seventy per cent of investors, at least thirty per cent of their decision is attributed to non-financial performance. These criteria are already being used as predictors of financial performance and already have an impact on share price;
- Sell-side research analysts use non-financial data when evaluating companies and making buy/sell decisions;
- The more non-financial measures analysts use, the more accurate are their earnings forecasts;
- The non-financial measures that matter to investors vary across industries, and, within peer groups, from organisation to organisation; and
- If an organisation does not strategically manage key non-financial measures: its operating performance and the value of its securities will suffer.

All of these efforts suggest a growing recognition of the limitations of relying on primarily financial indicators. In a world of relentless technological change, non-financial indicators are essential for characterising an organisation’s future financial

performance. Further evidence that a revolution in business performance measurement is taking place is provided by the language used in annual reports as ten years ago little mention of non-financial performance would have been made in the Chairman’s and Chief Executive’s statements (Neely, 1998).

Not all non-financial criteria are created equal, according to the study carried out by Ernst and Young (1998). Measures of strategy execution, management credibility, innovation and market position, for example, proved to be far more useful than measures of customer complaints, employee training programmes or environmental and social policies (Table 19).

Most valuable	Least valuable
Strategy execution Management credibility Quality of strategy Innovations Ability to attract talented people Market share Management experience Quality of executive compensation Quality of major processes Research leadership	Compensation ratios Use of employee teams Process quality awards Social policies Published investor materials Quality of customer service organisation Quality analyst guidance Quality of investor relations Number of customer complaints

Table 19: Which non-financial metrics value most? [Source: Ernst and Young (1998)]

Developing a comprehensive performance measurement system incorporating non-financial measures has frustrated many managers. Drucker (1993) puts the ever-increasing measurement dilemma; “...a traditional measure is not adequate for business evaluation. A primary reason why traditional measures fail to meet new business needs is that most measures are lagging indicators. The emphasis of accounting measures has been on historical statements of financial performance. They are the result of management performance, not the cause of it”.

In response to the dissatisfaction with traditional performance measurement systems, a number of performance measurements models have been developed in the recent past (Cross and Lynch, 1998; Fisher, 1992; Maskeell, 1991; Eccles, 1991; Hronec, 1993; Sink and Tuttle, 1989; Kaydos, 1991; Kaplan & Norton, 1996). Although

several approaches to designing and implementing a system to provide non-financial control have been proposed in the literature, the problem of integrating non-financial measures with financial measures effectively still remains an open question.

3.3.3 LACK OF PRESCRIPTION ON HOW TO IMPLEMENT THE MEASURES

A number of frameworks have been adopted by FM organisations of major companies in recent years as identified in section 2.10.3.2 of chapter two, and have concentrated on different aspects of the organisation including quality management, service management, process management and resource management. Many of the different approaches have been compared in literature (Doyle, 1992; Geaunuracos and Meiklejohn, 1993). Some models have been criticised because of their lack of non-financial indicators and the inappropriateness of their financial measures (Olve et al, 1999). The other models, although more flexible to accommodate different approaches to performance measurement, have been criticised for their lack of prescription on how to implement them (McFadzean, 1995).

3.3.4 LACK OF STRATEGIC FOCUS

For the most of the twentieth century, traditional management control systems have existed in an environment of mature products and stable technologies (Hally, 1994). The role of the management control system was to see that an organisation remained efficient; as a result, management concentrated on costs while paying less attention to revenues (Olve et al, 1999). Since 1940s, industries have undergone vast technological changes, and most organisations have become larger. Production processes have led to new demands on organisational systems of management control. Financial measures showed the effects of decisions already taken but failed to provide adequate guidance for long-term strategic development.

3.3.5 OTHER ISSUES

In practice, while managers are bombarded with literature about “successful” applications of performance measurement, gaining the promised benefits is not

guaranteed simply by following their promoters' prescriptions (Holloway, 2000). Holloway and Neilson (1992), Holloway (1994) and Holloway et al (1999) highlight some key problem themes:

- The priority areas of strategic importance to the organisation to target for performance measurement systems may be strongly contested;
- Selecting relevant and valid approaches which are so culturally and politically acceptable to the organisation can be highly problematic;
- The provision of resources for systematic implementation can be resisted from above and below;
- What works well in some organisations may fail to deliver in apparently similar ones; and
- Evaluation of performance measurement activities is often constrained by a lack of understanding of causal links between performance measurement and performance improvement.

These issues are rarely acknowledged in literature (Holloway, 2000). Choosing appropriate approaches to performance measurement for the needs of the organisation, implementing them systematically, and evaluating their impacts are some of the processes which managers have to grapple with while being under increasing pressure to deliver optimum performance. Some other associated problems are:

- Impact of performance measurement on actual performance;
- Causal relationships are often unknown;
- Many approaches to performance measurement lack a theoretical basis; and
- Provision of resources is limited

Rare examples of empirical research which address some of the above scepticism felt by such managers may nonetheless also promote performance improvement fashions uncritically (Oakland, 1999; Ghobadian et al, 1998). While other authors take a more overtly critical and/or theory testing stance (Dinesh and Palmer, 1998; Minchington and Francis, 2000; Wilkinson and Willmott, 1995; Broadbent and Laughlin, 1997) most writing on this subject – and by implication, most research – pays little attention to the problematic side of performance measurement.

3.4 POSSIBLE DIRECTION OF FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT SYSTEMS

This section introduces the direction to encourage a more theoretically informed approach to performance measurement in FM research (as already identified in section 2.13.3 in chapter two) based on above identified problems and the theoretical gaps identified in section 2.11.2.1 of chapter two. In this context, this section identifies some priority areas to be considered.

3.4.1 THE RELATIONSHIP BETWEEN THE STRATEGY AND THE MEASUREMENT SYSTEM

Performance measurement has been already described as a process of assessing the progress towards achieving pre-determined goals, including information on the efficiency with which resources are transformed into goods and services, the quality of those outputs and outcomes, and the effectiveness of organisational operations in terms of their specific contributions to organisational objectives.

Performance management on the other hand describes the use of performance measurement information to effect positive change in organisational cultures, systems and processes, by helping to set agreed performance goals, allocating and prioritising resources, informing managers to either confirm or change current policy or directions to meet those goals, and sharing results of performance in pursuing goals, thus emphasising the relationship between the strategy and the measurement system (Procurement Executives Association, 1998). A leading-edge organisation seeks to create an efficient and effective performance management system to (Procurement Executives Association, 1998):

- Translate organisational vision into clear measurable outcomes that define success, and that are shared throughout the organisation and with customers and stakeholders;
- Provide a tool for assessing, managing and improving the overall health and success of business systems;
- Continue to shift from perspective, audit-and compliance-based oversight to an ongoing, forward-looking strategic partnership;

- Include measures of quality, cost, speed, customer service, and employee alignment, motivation, and skills to provide an in-depth, predictive performance management system; and
- Replace existing assessment models with a consistent approach to performance management.

Leading organisations agree on the need for a performance management system, which is a structured methodology for using performance measurement information to help set agreed-upon performance goals, allocate and prioritise resources, inform managers to either confirm or change correct policy or programme direction to meet those goals, and report on the success in meeting those goals, thereby creating links between the organisational strategy and its measurement system.

3.4.2 THE NEED FOR INTEGRATION

Integration refers to the ability of the performance measurement system to promote integration between various areas of the business (Bititci et al, 1997). Therefore, FM organisation as the player of the supporting role for the core business needs to identify how it could be integrated with other departments within the core organisation. Lawrence and Lorsch (1967) in their research to study differentiation and integration in organisations measured the effectiveness of integration by asking respondents for their evaluation of the state of interdepartmental relations. Kehoe et al (1992) discuss the measurement of integration and focus on the information systems. The work described considers the quality of information systems as a key aspect of integration. By referring to the above ideas, integration in the field of FM has to address the following two key areas:

- A best practice performance measurement framework should represent/stipulate the criteria the FM organisation should fulfil to be fully integrated with the rest of the organisation; and
- The measurement framework should represent the core organisation's position and therefore progress towards organisation-wide integration.

3.4.3 NEED FOR A DYNAMIC PERFORMANCE MEASUREMENT SYSTEM

The performance of FM is only of relevance to an organisation if it is viewed within the context of the overall achievement and success of the core business. The criteria by which the performance of the organisation is judged by its stakeholders are ultimately the criteria by which the contribution of FM will be judged.

Bititci et al (2000) identify that the performance measurement system needs to be dynamic by:

- Being sensitive to changes in the external and internal environment of the organisation;
- Reviewing and reprioritising internal objectives when the changes in the external and internal environment are significant enough;
- Deploying the changes to internal objectives and priorities to critical parts of the organisation, thus ensuring alignment at all times; and
- Ensuring that gains achieved through improvement programmes are maintained.

3.4.4 OTHER RELEVANT ISSUES

Lea and Parker (1989), among others (Hall et al, 1991; Atkinson & Brown, 2001), suggest that performance should be transparent and:

- Be simple to understand;
- Should have visual impact;
- Be focused on improvement rather than variance; and
- Be visible to all.

Globerson (1985) recommends that measures should:

- Be derived from strategy;
- Provide timely and accurate feedback;
- Relate to specific, stretching, but achievable goals (targets);
- Be based on quantities that can be influenced, or controlled, by the user alone or the user in co-operation with others; and
- Be clearly defined.

Other issues needed to be considered in developing theory in performance measurement issues relating to FM organisations are discussed in section 4.9 of chapter four. With reference to this, the following could be identified as some of the important issues:

- Performance measurement in FM being based upon how useful FM is to the business;
- It will have to involve the measurement of the whole of the FM function rather than merely summing the parts; and
- The challenge of measuring what is really important and not continuing the mistake of placing the emphasis on the importance of measurement.

3.5 IS THERE A NECESSITY TO BRING IN THEORY? – IMPORTANCE OF A THEORETICAL FRAMEWORK

Research traditions are many, and their procedures for research are well documented within books and articles. Some of these associated issues will be discussed in detail in chapter four. A few writers classify the traditions (Sayer, 1992; Remenyi et al, 1998; Easterby-Smith, 1991) and some authors mention their favourites (Yin, 1981a, 1981b, 1993, 1994; Miles and Huberman, 1994; Van Manen, 1977). Unquestionably, this research cannot be classified as one type, attested to by the multivocal discourse surrounding the research. Adding to this discourse are perspectives about philosophical, theoretical, and ideological stances. To capture the essence of this research, it is visualised as one comprised of interconnected circles. As shown in Figure 30, these circles include the tradition of enquiry, research design procedures, and philosophical and theoretical frameworks and assumptions. The interplay of these three factors contributes to a rigorous study.

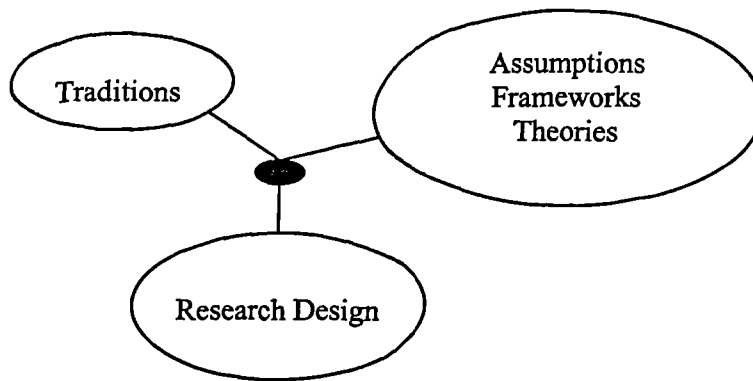


Figure 30: Visual image of the research [Source: Adapted from Creswell (1998)]

As described in section 4.20 of chapter four, theory development can be considered as a trajectory or, in other words, a process. Many methodologists (Eisenhardt, 1989; Yin, 1994) stress that, except perhaps for grounded theory (Glaser, 1992), all research processes aimed at theory development should start with an initial theoretical basis at least in broad terms and a few initial research propositions to focus the research. This is especially useful when the case study strategy is chosen. According to Nieto and Perez (2000), the theoretical framework of research undertaken should be taken into consideration for two reasons:

- The study should benefit from previous scientific contributions; and
- The starting point of the empirical research is going to be an initial combination of factors and its assumed relation with the phenomenon studies, resulting in a wide bibliographical revision

The first reason implies the need for an in-depth bibliographical revision that makes clear the current state of art (sections 2.6.6 & 2.10.3.2 of chapter two), as well as their contribution and gaps (section 2.11 of chapter two), suggestions (section 2.13 of chapter two), recommendations (section 3.4) etc. In accordance with the second idea, Eisenhart (1989), points out that when the objective of an investigation is to generate theory, it is very useful to have a previous combination of variables or elements. In this way, if these elements contribute significantly throughout the research, the empirical base resulting theory will grow. In this sense, previous studies as a resource of suggestions for the elaboration of the elements will be the starting point of the analysis. Figure 31 outlines this concept (adapted from Eisenhart, 1989).

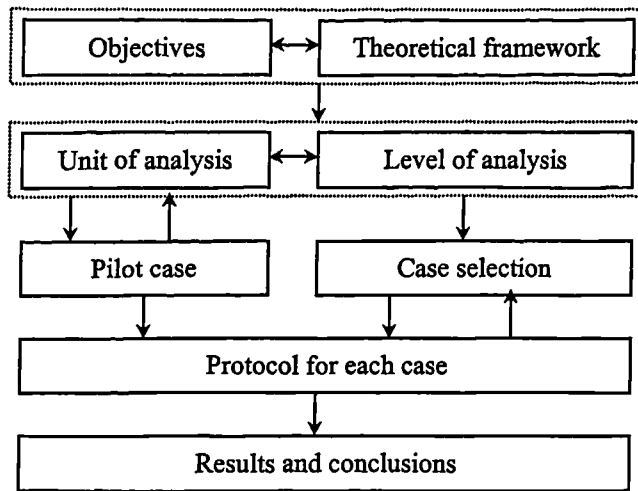


Figure 31: The role of the theoretical framework [Source: Adapted from Eisenhart (1989)]

According to Santos (1999), an explicit “theoretical framework” is the logic and necessary steps used in making sense of integrating and re-arranging the ideas. Without such a framework, it is virtually impossible to codify existing knowledge in the field in a coherent manner. According to Litchfield (1956) (cited in Santos, 1999), a theoretical framework can help the researcher discern the gaps between existing knowledge and ongoing research or their own individual needs. It is particularly important to identify such theoretical concepts due to the growing volume of cross-field/national/international research. Globalisation has brought a strong need for common theoretical terms, definitions and a coherent structure in order to allow better communication, and more precise detection of gaps within the existing knowledge of the performance measurement theory and practice across regions and nations.

One of the major problems with conventional performance measurement is the ease with which organisational totalities are carved up, and their interactions with their environments (Hollaway, 2000). This reductionism is associated with some of the problems experienced by managers when they seek to improve performance. Stepping back and viewing organisational performance in a more integrated way would seem intrinsically desirable and potentially useful to practitioners. Many bodies of theory have a contribution to make and some examples are presented

above. Issues already raised with reference to bringing in a theoretical framework in this research could be summarised as follows:

- Due to the above identified problems (section 3.3) associated with performance measurements, bringing in theory is appropriate to use as the basis in building up the required concepts;
- To explain experiences in performance measurement;
- To explore effectiveness of performance measurement;
- To improve efficient use of resources; and
- To increase benefits of performance measurement for stakeholders.

3.5.1 THE CONCEPTUAL FRAMEWORK

There has been much discussion about the amount of conceptual content or structure used to guide the initial stages of a research project (Eisenhardt, 1989; Strauss and Corbin, 1990; Glaser, 1992; Miles and Huberman, 1994). There are two extreme positions (Strauss & Corbin, 1990):

- *Effectiveness*, where pre-conceived notions are minimised and the researcher is maximally sensitive to concepts arising purely from the data; this implies a research design with little pre-defined structure; and
- *Efficiency*, where pre-conceived notions are used to focus the research and maximum benefit is gained from scarce research resources; this implies a research design with some kind of pre-defined structure.

An effective research approach may involve prolonged periods in the field collecting huge amounts of data (Strauss and Corbin, 1990; Glaser, 1992). On the other hand, an efficient approach may limit the researcher's ability to respond flexibly to themes and insights that emerge from the data. Accordingly, a researcher should strive to reach a balance between these two extremes (Marshall and Rossman, 1995), which is the theme behind identifying a theoretical framework for the research under consideration in this thesis.

All researchers bring some kind of conceptual structure to the research process (Carroll and Swatman, 2000). It would be unrealistic to suggest that researchers could or should enter the field devoid of a framework or ideas about the important

concepts in their area of interest. Indeed, the requirements of sound research suggest otherwise; a survey of the relevant literature develops the themes of the research and identifies gaps in existing research (see sections 2.10.3.2 & 2.11 of chapter two). By reading the literature (chapter two), however, this researcher gathered views of the research area and was exposed to a range of ideas, concepts and theories. More fundamentally, the researcher interprets the world through some sort of conceptual lens formed by beliefs, previous experiences, existing knowledge, and assumptions about the world and theories about knowledge and how it is accrued. In this way, when taking into consideration the theoretical framework, a combination of variables that are suspected as influencing factors for the phenomenon being studied could be specified. Section 3.8 deals with the identification of the core concepts in detail.

3.6 HOW TO BRING IN THEORY

It was necessary to articulate an overall theory in order to set up a “theoretical framework” to represent the best practice in performance measurement in FM. According to Remenyi et al (1998), case study research (see section 4.17 of chapter four) without the discipline of a theory can easily degenerate into an anecdotal story. In this context, a detailed theoretical framework was initiated from the outset of the empirical work. The literature review supporting this theoretical framework covered the performance measurement field in general, with a particular focus on the FM related material. The theoretical framework evolved along side the data collection since the observation of practice drove the researcher to bring it closer to the kind of problems encountered in practice. Issues under consideration relating to “how to bring in theory” could be summarised as listed below:

- Through examination of existing frameworks;
- Study practices;
- Look for theoretical explanations (see sections 2.6.2, 2.6.6 & 2.9 in chapter two); and
- Identify potentially useful theories and compare them with practice.

Setting up a theoretical structure based on existing literature and knowledge is a challenging task if it takes fully into consideration the complexity and eclectic content of existing performance measurement theories (see section 2.13 of chapter

two). Therefore, the strategy adopted in this thesis in understanding and developing the theoretical framework has been the classification and structuring of the core ideas underpinning the current performance measurement theories as described in section 2.6 of chapter two. The next section describes this strategy in some detail.

3.7 POSITIONING THE THEORETICAL FRAMEWORK

Making a set of observations lead to the development of new concepts or a new theory (de Vaus, 1991). As identified in section 3.6 above, any attempt to make sense of a set of observations will often use existing concepts and theories. If concepts and theories developed by others seem like reasonable summaries or accounts of what the research is looking for, then such concepts could be used as a basis in carrying out the research. A major problem in using existing theories is that the researcher may not be open to equally plausible interpretations of the observations. The problem is not so much in using existing concepts but in the level of commitment to them and in failing to examine whether they are the most appropriate ones. Section 2.13.1 in chapter two provides justifications to this issue. When the researcher is committed to a model, the researcher might ignore equally plausible alternative explanations and see everything as yet further evidence for the model. This is very much against the spirit of the theory construction approach where the aim is to let the concepts and ideas emerge from observations (de Vaus, 1991). Therefore, it is important to consider the commitments, biases and values when the observations are interpreted. Based on these arguments, the following section presents the core concepts that will be used as the driving force behind the theory development of this thesis.

3.8 INTRODUCTION TO CORE CONCEPTS

Based on the detailed literature review carried out in performance measurement in general (section 2.6 of chapter two) and particularly with reference to FM (section 2.10 of chapter two), this research identifies the following concepts as the leader in performance measurement and management in an attempt to identify an assessment methodology for FM organisational processes. As described in the preceding sections, these concepts identify critical success factors for improving organisational processes, and develop performance measures within their boundaries.

The four principles chosen for the study were among the most frequently mentioned in the performance measurement literature (see section 2.6 of chapter two) and they seemed to be more directly connected with the key problems faced within FM organisations. Furthermore, the amount of literature available covering these principles suggested the existence of a reasonable theoretical maturity (section 2.6.6.2 of chapter two). In addition, these principles seem to be strongly independent which could make this thesis more interesting concerning the integration of practices and, also, facilitate the data collection and analysis in subsequent chapters.

3.8.1 MEASUREMENTS OF CUSTOMER RELATIONS

3.8.1.1 DESCRIPTION

In the past, organisations could concentrate on their internal capabilities, emphasising product performance and technology innovation (Kaplan and Norton, 1996). But organisations that did not understand their customers' needs eventually found that competitors could make inroads by offering products or services better aligned to their customers' preferences.

Many FM organisations today have a mission focused on the customer, and how the organisation is performing its customers' perspective has become a priority to top management (adapted from Kaplan and Norton, 1996). Kaplan and Norton's Balanced Scorecard emphasises (section 2.6.6.2 of chapter two) this requirement. How the FM organisation is performing through the eyes of its customers has therefore become a priority issue for facilities managers. This captures the ability of the organisation to provide quality goods and services, the effectiveness of their delivery, and overall customer service and satisfaction (Procurement Executives' Association, 1998). It places importance on the organisation's ability to achieve its vision, and how it wants to be seen by its customers.

3.8.1.2 PRACTICAL IMPLICATIONS

Customer related performance measures describe the way in which value may be created for customers and how customer demand for this value is to be satisfied. As already noted, customer relations represents a significant area of concern for facilities managers and indicates a need for performance measures which can adequately reflect important customer oriented factors. Customers' concerns tend to fall into four categories: time, quality, performance and service (Kaplan and Norton, 1992) and consist of measures relating to the most desired customer requirements. This part of the process is considered as the heart of the organisation. If the organisation fails to deliver the right products and services for cost effectively satisfying customer needs on the both short and long term, revenue will not be generated, and the business will wither and die.

3.8.1.3 DISCUSSION

Facilities managers should have a clear idea of their customer and business segments, and should select a set of core outcome measurements for those targeted segments. These outcome measures should represent the targets for an FM organisation's product and service development process.

3.8.2 MEASUREMENTS OF FACILITIES MANAGEMENT INTERNAL PROCESSES

3.8.2.1 DESCRIPTION

The internal processes report on the efficiency of internal organisational processes and procedures, and reflects the organisation's core skills and the critical technology involved in adding value to the business. This perspective is primarily an analysis of the organisation's internal processes which focuses on the internal business results that lead to financial success and the satisfaction of customers' expectations (Olive et al, 1999). This involves describing all organisational processes from the analysis of customer needs through delivery of the product/service and identification of the resources and capabilities, which the organisation needs to upgrade. These can

include both short-term and long-term objectives as well as incorporating innovative process development in order to stimulate improvement.

The critical internal business processes enable the FM organisation to satisfy stakeholder expectations including excellent financial returns. Therefore, the measures should be focused on the internal processes that will have the greatest impact on customer satisfaction and achieving the organisation's financial objectives.

Internal process measurements reveal two fundamental differences between the "traditional" (section 3.3.1) and "measures incorporating non-financial elements" (see section 3.3.2) approach to performance measurement. Traditional approaches, as addressed in section 3.3.1, attempt to monitor and improve existing business processes, whereas an approach incorporating business process measurements will usually identify entirely new processes at which the organisation must excel to meet customer and financial objectives. Thus internal business process objectives highlight the processes most critical for the organisation's strategy to succeed.

3.8.2.2 PRACTICAL IMPLICATIONS

Customer based measures are important, but they must be translated into measures of what the organisation must do internally to meet its customers' expectations. Therefore, managers need to focus on those critical internal business operations that enable them to satisfy customer needs (Kaplan and Norton, 1992). Key processes are monitored to ensure that outcomes will be satisfactory. Organisations should decide which processes and competencies they must excel at and specify measures for each.

3.8.2.3 DISCUSSION

Conventional performance measurement systems focus only on monitoring and improving cost, quality, and time-based measures of existing business processes. In contrast, there is a need for (see sections 2.11.2.1.1 & 2.11.2.1.2 of chapter two) an approach to measure performance, which enables demand for internal process performance to be derived from the expectations of specific external constituencies. Managers need to decide which operations, processes, competencies and skills their

organisations must excel at if customer demands are to be met adequately. Moreover, it is essential that such internal measures relate to those areas which are most likely to have the greatest impact on customer satisfaction.

3.8.3 MEASUREMENTS RELATING TO LEARNING AND GROWTH

3.8.3.1 DESCRIPTION

Learning and growth issues identify the infrastructure that the organisation must build to create long-term growth and improvement (Kaplan and Norton, 1996). This looks at the ability of employees, the quality of information systems, and the effects of organisational alignment in supporting accomplishment of organisational goals (Procurement Executives' Association, 1998), and enables the organisation to ensure its capacity for long-term renewal, a prerequisite for survival in the long-run. Accordingly, the FM organisation should consider not only what it must do to maintain and develop the know-how required for understanding the customer needs, but also how it can sustain the necessary efficiency and productivity of the processes.

3.8.3.2 PRACTICAL IMPLICATIONS

Managers in several FM organisations have noted that (See section 2.11 of chapter two) when they were evaluated solely on short-term financial performance, they often found it difficult to sustain investments to enhance the capability of their people, systems, and organisational processes. The predominant element within learning and growth issues is whether FM organisations can continue to improve and create future value for their stakeholders. Expenditures on such investments are treated as period expenses by the financial accounting model so that cutbacks in these investments are an easy way to produce incremental short-term earnings (Kaplan and Norton, 1996). The adverse long-term consequences of consistent failure to enhance employee, systems, and organisational capabilities will not show up in the short run, and when they do, these managers reason, it may be on somebody else's "watch" (Kaplan and Norton, 1996).

Therefore, process will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them (Procurement Executives' Association, 1998). This takes on increased importance in organisations that are undergoing radical change, like FM. The organisational learning and growth comes from three sources: people, systems and organisational procedures. It is this structure within which long-term growth and improvement reside.

3.8.3.3 DISCUSSION

Ultimately, the ability to meet ambitious targets for financial, customer, and internal process objectives depends on the organisational capabilities for learning and growth. The customer and internal processes will have focused on the organisations' current competitive position. Issues relating to learning and growth are required in order to recognise that this is constantly changing. Intense global competition requires that organisations make continual improvements to their existing processes and have the ability to introduce entirely new processes with expanded capabilities (Kaplan and Norton, 1992). Strategies for superior performance will generally require significant investment in people, systems, and processes that build organisational capabilities. The organisation, its management, and all of its employees must continually seek to learn, to innovate and to improve every aspect of the organisation and its business just to maintain their competitive situation, let alone to improve it in the future.

If FM organisations are to be successful – and, it is to be hoped, remain successful – they must continually make improvements both to their existing services and to their operations and processes, as well as developing and introducing new ones. It is only by this continual process of improvement and innovation that FM organisations can grow.

3.8.4 MEASUREMENT OF FINANCIAL IMPLICATIONS

3.8.4.1 DESCRIPTION

The financial performance measures define the long-term objectives of the business unit (Kaplan and Norton, 1992) and provide superior returns based on the capital

invested (Kaplan and Norton, 1996). They indicate whether the organisation's strategy, implementation, and execution are contributing to bottom-line improvement. A well-designed financial control system can actually enhance an organisation's management system. The measures chosen will represent the relevant stage in the product or service life cycle as summarised by Kaplan and Norton (1996), and enables senior executives of business units to specify not only the metric by which the long-term success of the enterprise will be evaluated, but also the variables considered most important to create and to drive the long-term outcome objectives (Kaplan and Norton, 1996).

3.8.4.2 PRACTICAL IMPLICATIONS

In the government or non-governmental arena, the "financial" considerations differ from those of the traditional private sector (Procurement Executives' Association, 1998). Private sector financial objectives generally represent clear long-range targets for profit seeking organisations, operating in a purely commercial environment. Financial considerations for public organisations have an enabling or a constraining role, but will rarely be the primary objective for business systems. Success for public organisations should therefore be measured by how effectively and efficiently they meet the needs of their constituencies.

3.8.4.3 DISCUSSION

Many have criticised financial measures because of their inability to reflect contemporary value creating actions (Olive et al, 1999). Some critics go much further in their indictment of financial measures (see section 3.3.1). They argue that the terms of competition have changed over time and that traditional financial measures do not improve customer satisfaction, quality, timeliness and employee motivation. In their view, financial performance is the result of operational actions, and financial success should be the logical consequence of doing the fundamentals well. While most organisations will emphasise profitability objectives, other financial objectives are also possible. A well-designed financial control system can actually enhance management planning, control and decision-making. Moreover, they can serve to remind the management that any changes they seek to make - for instance in service

quality – will only ultimately benefit their organisation if they lead to improvements in the overall “bottom-line” view of their organisation.

3.9 STRATEGIC PERFORMANCE MEASUREMENT – LINKING MEASUREMENTS TO STRATEGY

3.9.1 DESCRIPTION

Over ninety per cent of organisations have not effectively aligned their strategy at all levels of the organisation (Fortune, 1997). The result represents an organisation that is not operating at maximum efficiency, typically leading to less than optimal performance as well as missed opportunities. Therefore, performance measurement in general should attempt to address a key management issue: that organisations often fail to turn strategy into action (Neely, 1998). The objective of any performance measurement should be to motivate all managers and employees to implement successfully the business unit’s strategy (Kaplan and Norton, 1996). Those organisations that can translate their strategy into their measurement system are far better able to execute their strategy because they can communicate their objectives and their targets. This communication focuses managers and employees on the critical drivers, enabling them to align investments, initiatives, and actions with accomplishing strategic goals.

3.9.2 PRACTICAL IMPLICATIONS

The fact is that a clear, action oriented understanding of an organisation’s strategy could significantly influence an organisation’s success. A major task facing an organisation in attempting to introduce a balanced performance measurement system, incorporating both financial and non-financial measures, is how to devise a set of measures explicitly linked to its strategy? Underlying this need is the essential condition that the strategy is widely understood and accepted within the organisation. The current thesis tries to address these issues based on the theoretical concepts illustrated above.

3.9.3 DISCUSSION

In Simon's (1990) criticism of strategic control systems, he relies on the definitions put forward by Schendel and Hofer (1979) who state that strategic control "focuses on whether the strategy is being implemented as planned, and the results produced by the strategy are those intended" and by Lorange et al (1986) who define a strategic control system as: "... a system to support managers in assessing the relevance of an organisation's strategy to its progress in the accomplishment of its goals and, where discrepancies exist, to support areas needing attention". As Simons (1990) points out, these definitions lead to a perception of strategic control systems as a process for keeping strategies on track and essentially parallel strategy formation of planning and strategy implementation with control.

Further, Simons (1990) argues that top management will place the emphasis on the particular type of system that "...addresses the critical uncertainties that top managers perceive could threaten the achievement of their vision for the future", suggesting that only one of these systems will be the focus of management attention at any one time. He also stresses the importance of identifying new ways of planning and control and their relations with strategy. This thesis tries to identify solutions to such strategic implementation issues of FM organisations through the implementation of performance measurement systems. The traditional view of planning and control and their relations with strategy formation and implementation with that of the process identified in this thesis are demonstrated in Figure 32.

The performance measurement systems that will be developed for FM organisation in this thesis (based on the theoretical concepts outlined in section 3.8) contains elements of a boundary control system in that it evolves from the vision, mission and strategic goals of the organisation. Its theoretical concepts depict limits in the organisation as it encourages employees to focus their attention on the key aspects of the business.

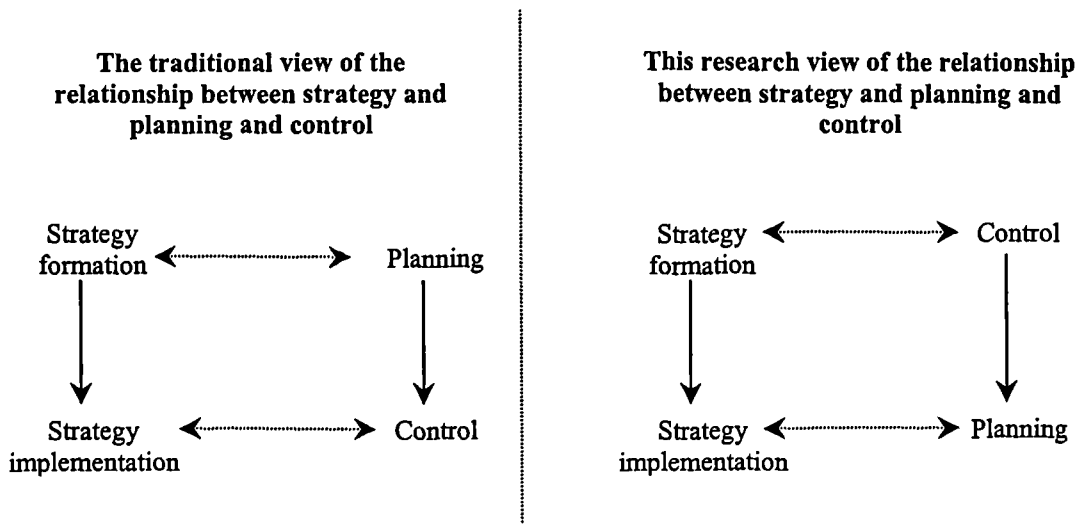


Figure 32: A comparison of the traditional view of the relationship between strategy and planning and control with that of current research [Source: Adapted from Mooraj et al (1999)]

3.10 PROSPECTS OF THE THEORETICAL FRAMEWORK

In an attempt to promote a more holistic interpretation and view of facilities performance, the theoretical framework identified in previous sections affords a number of perspectives which go beyond the hard metrics of finance, economics, market share, and productivity, which head the agenda in so many FM organisations today. The framework defined will be used to develop theory in performance measurement in FM organisations in chapter eight, by viewing facilities as an enabler for core organisational performance, rather than a constraint which impedes progress. The transcendent nature of FM offers opportunities for facilities performance links to be established at all levels and across the entire width of the organisation (Madeley, 1996). This profile, which FM occupies within the organisation, is dependent upon the perceived impact of its performance and its direct relevance to a particular business. Even those organisations which are less dependent on facilities for their operation will benefit to some degree. Therefore, the framework of elements already outlined in above sections is proposed as a suitable means by which facilities performance may be seen to directly and indirectly impact upon the wider aspects of organisational performance, underpinning sustainable success and requiring appropriate attention and recognition.

3.11 SUMMARY OF THE CHAPTER

In order to enable paradigm shifts, it is important to understand concepts underlying the theory and practice of performance measurement. This chapter sets out to examine a range of concepts which may be used to measure the contribution of FM performance. These concepts were derived based on the premise that relationships or links between FM and organisational performance are seen to be determined by the relevance of facilities to the core business operations, as argued in sections 2.10.4 & 2.10.5 of chapter two.

The theoretical framework identified in this chapter acts for the research rather like a structural steel or reinforced concrete frame used in a building as identified by Fellows and Liu (1997). It is essential that theories themselves be subject to the rigour of analysis. Bodies of theory must be examined and evaluated to arrive at a theoretical basis or framework appropriate to the research proposed. It may not be possible to decide the logical body of theory to use from the description of theory provided, and it will not be possible to weigh alternative and possibly competing theories (Fellows and Liu, 1997). Of course it is debatable whether competing theories can constitute basic “principles and laws”, or whether they are perspectives and beliefs which give rise to partly-supported hypotheses. Therefore, the theoretical framework acts as the basic structural framework to identify and explain facts and the relationships between them.

Since in a doctoral thesis it is necessary to explore ideas in sufficient depth to come to rigorous conclusions, it was not possible to address all the issues identified at the beginning of this chapter, due to resources restrictions etc. Thus, the researcher decided to use the above identified core concepts as the basis for theory development in performance measurement in FM organisations. These principles are summarised in section 3.8 which has reviewed the key concepts found in the literature regarding these principles.

Having identified the theoretical framework to use as the basis in developing theory in performance measurement in FM organisations, the next chapter details the

methodology adopted in this research. It further explains the reasons for choosing the “case study” as the main research strategy and describes, in some detail, the content of the research design, including data collection procedures, the data collection techniques, the unit of analysis, and the criteria for selecting the case study organisations.

Chapter 4

Epistemology and Methodology

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development:- Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

*“I can just see somebody asking with great frustration,
‘Yes, but which factors do you fish for? There’s got to be more to it than that’
.... But the answer is that if you know which facts you’re fishing
for you’re no longer fishing. You’ve caught them....”*
Robert Pirsig

4.1 CHAPTER OVERVIEW

Chapter three presented some core principles of performance measurement that will be used in this thesis as the theoretical framework when analysing FM performance measurement practices. It discussed in general terms the main features of the identified principles of the theoretical framework and corresponding implementation approaches that will be investigated.

The aim of this chapter is to outline the research strategy applicable to this study and to provide reasons for the decisions made during the developments of the research design. Part one of the chapter titled “Limitations” outlines the epistemological and methodological characteristics of the research area which have an impact on the research design. Part two of the chapter describes the objectives arrived at and the methods used throughout the research project.

The research objectives are derived from the gaps in the literature identified in chapter two and summarised in section 2.11 of chapter two. The research design uses both qualitative and quantitative methods, the former being the more prevalent and the latter providing statistical support for the qualitative findings. To this end, the research has incorporated both case studies and the surveys.

The output of the research included both descriptive and prescriptive findings. This difference, in the context of this research, was referred to in section 1.6 in chapter one as FM performance measurement as an important area to explore knowledge in the former case, and identification of performance measurement constructs/tools in FM in the latter case. Finally, it presents the research analytical strategy adopted, including the mechanism that link the empirical evidence to the theoretical propositions and the criteria for interpreting the findings.

PART ONE – LIMITATIONS

4.2 OVERVIEW

Although research is central to both business and academic activities, there is no agreement in the literature on how it should be defined. One reason for this is that research means different things to different people. However, from the many different definitions offered, there appears to be agreement that: research is a process of enquiry and investigation; it is systematic and methodical; and research increases knowledge (Fellows and Liu, 1997).

Research studies in FM have been criticised by their anecdotal approach when interpreting real world phenomena. In this sense, it is argued that the clear definition of a research strategy is a fundamental and necessary requirement for a sound empirical study in such a field. FM research has reached a stage that demands the validation of its heuristic principles within different “real world” situations in order to refine and integrate them (Nutt, 2000). Buckley et al (1975) suggest an operational definition of research that requires the satisfaction of the conditions:

- That it be an orderly investigation of a defined problem;
- That appropriate scientific methods be used;
- That adequate and representative evidence be gathered;
- That logical reasoning, uncoloured by bias, be employed in drawing conclusions on the basis of the evidence;
- That the researcher be able to demonstrate or prove the validity or reasonableness of his conclusions; and
- That the cumulative results of research in a given area yield general principles or laws that may be applied with confidence under similar conditions in the future.

Research is conducted in the spirit of inquiry which relies on facts, experience and data, concepts and constructs, hypotheses and conjectures, and principles and laws. Table 20 illustrates how together these concepts of research form a symbolic and rational system of inquiry (abstracted from Buckley et al, 1975). Additionally, they

constitute the language of research, enabling precision in the use of words and communication among those concerned.

Laws	Verified hypotheses; used to assert a predictable association among variables; can be empirical or theoretical
Principles	A principle is a law or general truth which provides a guide to thought or action
Hypotheses	Formal propositions which though untested are amenable to testing; usually expressed in causal terms
Conjectures	Informal propositions, which are not stated in a testable form, nor are a causal relationship known or even necessarily implied
Concepts	Concepts are inventions of the human mind to provide a means for organising and understanding observations; they perform a number of functions, all of which are designed to form logical and systematic relationships among data.
Facts	Something that exists, a phenomenon that is true or generally held to be true
Data	The collection of facts, achieved either through direct observations or garnered from records; observation is the process by which facts become data

Table 20: Basic elements of scientific research methodology [Source: Buckely et al (1975) (cited in Then, 1996)]

Research methodology refers to the procedural framework and it is useful to define research methodology and to put the issue of research and its methodologies into perspective within which the research is conducted (Remenyi et al, 1998). There are many factors to be considered when choosing an appropriate research methodology, the topic to be researched and the specific research question is one of the primary drivers in the choice of methodology (Remenyi et al, 1998).

The starting point in the research undertaking is to focus clearly on the fact that the ultimate purpose is to add something of value to the body of accumulated knowledge in the specific field. This means that an unanswered question or unsolved problem will be identified and studied and that the researcher will attempt to produce a suitable answer to the question or a solution to the problem. Therefore, a discussion of research philosophy is essential before embarking on the research project.

4.3 EPISTEMOLOGICAL FOUNDATION

Like any human action, research is grounded on philosophical perspectives, implicitly or explicitly. Ignoring the philosophical issue, while not necessarily fatal, can seriously affect the quality of research. According to Easterby-Smith (1991), understanding the philosophical positioning of research is particularly useful in helping researchers clarify alternative designs and methods for a particular research, and identifying which are more likely to work in practice.

Philosophers of science and methodologists have been engaged in a long-standing epistemological debate about how best to conduct research. This debate has centred on the relative value of two fundamentally different and competing schools of thoughts or enquiry paradigms. Logical positivism uses quantitative and experimental methods to test hypothetical-deductive generalisations. Among the major implications of this approach is the need for independence of the observer from the subject being observed, and the need to formulate hypotheses for subsequent verification. Positivism searches for causal explanations and fundamental laws, and generally reduces the whole into simplest possible elements in order to facilitate analysis (Easterby-Smith et al, 1991 and Remenyi et al, 1998). Phenomenological (interpretive science/realism) inquiry uses qualitative and naturalistic approaches, to inductively and holistically understand human experience in context-specific settings. This approach tries to understand and explain a phenomenon, rather than search for external causes or fundamental laws (Easterby-Smith et al, 1991 and Remenyi et al, 1998). This picture is set out in Table 21 :

Approach	Concepts	Methods
Positivism	<ul style="list-style-type: none"> • Social structure • Social facts 	<ul style="list-style-type: none"> • Quantitative • Hypothesis testing
Interpretative science (Phenomenological/realism)	<ul style="list-style-type: none"> • Social construction • Meanings 	<ul style="list-style-type: none"> • Qualitative • Hypothesis generation

Table 21: Two schools of thought [Source: Silverman (1998)]

4.3.1 POSITIVIST VERSUS REALISM APPROACH

As identified in Table 21, two distinct philosophical approaches for developing research have been the subject of a long-standing debate in science: the positivist and the realism (interpretative or phenomenological) approach.

The positivist approach, often designated as quantitative research, believes that the subject under analysis should be measured through objective methods rather than being inferred subjectively through sensation, reflection or intuition (Remenyi et al, 1998). Positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the researcher and his/her instruments (Orlikowski and Baroudi, 1991). Among the major implications of this approach are the need for independence of the observer from the subject being observed, and the need to formulate hypotheses for subsequent verification. Positivism searches for causal explanations and fundamental laws, and generally reduces the whole into the simplest possible elements in order to facilitate analysis (Easterby-Smith, 1991 and Remenyi et al, 1998).

The realism approach, also known as interpretative or phenomenological approach, understands reality as holistic, and socially constructed, rather than objectively determined. Interpretative researchers start out with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. The philosophical base of interpretive research is hermeneutics and phenomenology (Boland, 1985). Susman and Evered (1978) talk of an “epistemological crisis” in management research which has arisen out of the application of the positivist model of science in the social science. Hence realism, an approach which arose in the last half of the twentieth century. According to this philosophy, the researcher should not gather facts or simply measure how often certain patterns occur, but rather appreciate the different constructions and meanings people place upon their own experiences and the reasons for these differences (Pacitti, 1998). The realism approach tries to understand and explain a phenomenon, rather than search for external cause or fundamental laws (Easterby-Smith, 1991 and Remenyi et al, 1998). The contribution of realism centres on the

epistemological debate regarding the way in which knowledge and theory are developed. The realist perspective rejects other epistemological perspectives on the grounds that they produce knowledge, which is misrepresentative of its reality. The label given to this debate in the realist camp is “misconception of knowledge” (Sayer, 1992). One of the misconceptions of knowledge is that it can be evaluated independently of its context or social activity. Generalisations do not feature in the realist doctrine as an approach or as a means to prove or disprove theory. The possibility of discovering universally applicable generalisations, which is the aim of the positivist regime, is rejected in realism (Pacitti, 1998). The realism approach also rejects the positivists’ beliefs, which centre on the assumption that the objects of experience are atomic, independent events. This concept is central to the notion of deductivism which claims that generalisations can be made from a finite set of events in the past to predict future events. The use of regularities to ground generalisations and causations is rejected by phenomenologists. Causation does not refer to regularity between separate things or events but about what an object is likely to do and what it can do, and only derivatively what it will do in any particular situation. The goal under the realist doctrine is therefore the development of theories through explanatory methods rather than through the creation of generalisations (Tsoukas, 1996). Easterby-Smith et al (1991) summarise the main differences between the positivist and the realism viewpoints as illustrated in Table 22:

Theme	Positivist paradigm	Realism paradigm
Basic beliefs:	<ul style="list-style-type: none"> • The world is external and objective • Observer is independent • Science is value free 	<ul style="list-style-type: none"> • The world is socially constructed and subjective • Observer is part of what is observed • Science is driven by human interests
Researcher should:	<ul style="list-style-type: none"> • Focus on facts • Look for causality and fundamental laws • Reduce phenomena to simplest elements • Formulate hypotheses and test them. 	<ul style="list-style-type: none"> • Focus on meanings • Try to understand what is happening • Look at the totality of each situation • Develop ideas through induction from data.

Table 22: Key features of positivist and realism paradigm [Source: Easterby-Smith et al (1991)]

In research design therefore, the issue then becomes not whether one has uniformly adhered to prescribed canons of either logical positivism or phenomenology but whether one has made sensible methods decisions given the purpose of the study, the questions being investigated, and the resources available (Then, 1996). Therefore, it is crucial to know about the methodological paradigms debate in order to appreciate why methods decisions can be highly controversial. The paradigm of choices recognises that different methods are appropriate for different situations. Table 23 provides a pragmatic summary of some of the strengths and weaknesses of the two research paradigms:

Theme	Strengths	Weaknesses
Positivist (Quantitative paradigm)	<ul style="list-style-type: none"> • They can provide wide coverage of the range of situations • They can be fast and economical • Where statistics are aggregated from large samples, they may be of considerable relevance to policy decisions 	<ul style="list-style-type: none"> • The methods used tend to be rather inflexible and artificial • They are not very effective in understanding processes or the significance that people attach to actions • They are not very helpful in generating theories • Because they focus on what is, or what has been recently, they make it hard for policy-makers to infer what changes and actions should take place in the future
Realism (Qualitative paradigm)	<ul style="list-style-type: none"> • Data gathering methods seen as more natural rather than artificial • Ability to look at change processes over time • Ability to understand people's meaning • Ability to adjust to new issues and ideas as they emerge • Contribute to theory generation 	<ul style="list-style-type: none"> • Data collection can be tedious and require more resources • Analysis and interpretation of data may be more difficult • Harder to control the pace, progress and end-points of research process • Policy-makers may give low credibility to results from qualitative approach

Table 23: Comparison of strengths and weaknesses [Source: Adapted from Easterby-Smith et al (1991)]

4.3.2 THE BALANCED APPROACH ADOPTED IN THIS RESEARCH

Remenyi et al (1998) argue that both positivism and realism approaches are not totally different in terms of their impact on research, and in the generalisation of

findings. Both approaches need a convincing argument that the findings are valid before these findings are accepted as a valuable addition to the body of knowledge. Ultimately, it is more useful to see these two approaches as complementary to each other rather than as two opposite extremes.

In this context, the dominant philosophical approach underlying this thesis is a balance between the positivism and realism approaches. The implications of that may be seen in the way the research questions were formed. It was hypothesised that empirical evidence would be found to validate the theoretical principles identified. Objectives formulated were formulated consequently, aimed at identification of empirical evidence to match theoretical propositions.

However, this hypothetical-deductive method over-simplifies reality and usually strips out complicating factors that could be important to FM practitioners. Following the conclusions of Remenyi et al (1998), the world is essentially non-deterministic in any absolute sense and even repeated positivist research will also produce different results. A pure positivist approach therefore, could not be adapted to this thesis. Further, because understanding the holistic context of performance measurement practices in FM was the major intention, the realism approach would help to provide the means to interpret practice. Using a pure realism approach, the various different meanings that FM managers give to the content of the theoretical framework could be studied. On the other hand, a pure realism approach was not applied, as there was an expectation that, to a certain level, other FM researchers should be able to apply the same research methodology and obtain similar results. This assumption was incompatible with the basic fundamentals of a “pure” realism approach where establishing “different views” is one of the preferred research methods (Santos, 1999). [See Table 24, which was edited from Easterby-Smith (1991) to illustrate the principles of the mixed approach applied to the research]

Theme	Positivist paradigm	Realism paradigm
Basic beliefs:	<ul style="list-style-type: none"> • The world is external and objective • Observer is independent 	<ul style="list-style-type: none"> • The world is socially constructed and subjective • Observer is part of what is observed • Science is driven by human interests
Researcher should:	<ul style="list-style-type: none"> • Focus on facts • Look for causality and fundamental laws • Formulate hypotheses and test them 	<ul style="list-style-type: none"> • Focus on meanings • Try to understand what is happening • Look at the totality of each situation • Develop ideas through induction from data.
Preferred method in the research:	<ul style="list-style-type: none"> • Operationalising concepts so that they can be measured 	<ul style="list-style-type: none"> • Using multiple methods to establish different views of the phenomena • Cases investigated in depth

Table 24: Key features of positivist and realism paradigm and the chosen mixed approach [Source: edited from Easterby-Smith (1991)]

Therefore, a balanced (mixed) approach seemed to be the best description of the philosophical emphasis adopted in this research. It is true that in its “pure” interpretation, the positivist is different and quite incompatible within the realism approach. However, as Easterby-Smith (1991) states, the apparent incompatibility is blurred and the differences are by no means so clear and distinct when it comes to actual research.

4.4 QUALITATIVE AND QUANTITATIVE RESEARCH

According to the above schools of thoughts, research may be categorised into two distinct types: qualitative (intensive) and quantitative (extensive). The former concentrates on words and observations to express reality and attempts to describe people in natural situations. In contrast, the quantitative approach grows out of a strong academic tradition that places considerable trust in numbers that represent opinions or concepts. Over the past fifteen years, the debate over the relative virtues of quantitative and qualitative methodologies has gained considerable impetus (Fellows and Liu, 1997). While the exact constitution of the two methodologies varies somewhat from author to author or is defined with varying degrees of

specificity, there is substantial agreement about the fundamental antinomies and their practical implications for the conduct of research.

Perhaps as a response to the dominance of quantitative research, some qualitative researchers such as King (1994) seem to assume a fixed preference or predefined evaluation of what is good and bad research methodology. Such normative assumptions have, of course, been around for many years and are illustrated in Table 25:

Quantitative	Qualitative
<ul style="list-style-type: none"> • Inquiry from the outside • Is underpinned by a completely different set of epistemological foundations than in qualitative research. • Are simply different ways to the same end? • Involves the following of various states of the scientific research • The results are said to be 'hard generalisable data'. 	<ul style="list-style-type: none"> • Inquiry from the inside • An attempt to take account of differences between people. • Aim at flexibility and lack of structure, in order to allow theory and concepts to proceed in tandem. • The results are said to be, through theoretical generalisation, 'deep, rich and meaningful'. • Inductive - where propositions may develop not only from practice, or literature review, but also from ideas themselves. • An approach to the study of the social world, which seeks to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied.

Table 25: Claimed features of qualitative and quantitative method [Source: Adapted from King (1994)]

From the discussion under schools of thought, it is apparent that both qualitative and quantitative methods involve differing strengths and weaknesses. McGrath (1982) describes in his study of research choices in which it is clear that there are no ideal solutions, only a series of compromises. Patton (1990) expresses the same view: “research, like diplomacy, is the art of the possible”. This quote by Patton is perhaps a very poignant guide to any researchers contemplating the most appropriate avenue of successfully completing a sizable piece of research study.

4.4.1 QUALITATIVE RESEARCH: MEANINGS OR PRACTICES

Qualitative research is conducted through an intense and/or prolonged contact with a “field” or life situation. These situations are typically “Banal” or normal ones, reflective of the everyday life of individuals, groups, societies, and organisations (Miles and Huberman, 1994).

What is important about well-collected qualitative data? One major feature is that it focuses on naturally occurring, ordinary events in natural settings, so that there is a view on what “real life” is like. Another feature of qualitative data is the richness and holism, with strong potential for revealing complexity. Such data provides “thick descriptions” that are vivid, nested in a real life context, and have a ring of truth (Miles and Huberman, 1994). Furthermore, the fact that such qualitative data is typically collected over a sustained period makes it powerful for studying any process. Also the inherent flexibility of qualitative studies (data collection times and methods can be varied as a study proceeds) gives further confidence that what has been going on is really understood. Qualitative data, with the emphasis on people’s “lived experience”, is fundamentally well suited for locating the meanings people place on the events, processes, and structures of their lives: their “perceptions, assumptions, prejudgments, presuppositions” (Van Manen, 1977), and for connecting these meanings to the social world around them. There are three other claims for the power of qualitative data. It has often been advocated as the best strategy for discovery, exploring a new area, developing hypotheses. In addition the strong potential for testing hypotheses is underlined on seeing whether specific predictions hold up.

Richards and Richards (1987) outline four major perceived constraints which have traditionally mitigated against the use of qualitative approaches in practice despite the excitement about their potential in theory. These are:

- Volume of data;
- Complexity of analysis;
- Details of classification record; and
- Flexibility and momentum of analysis.

Further, it has long been recognised that a purely qualitative research may neglect the social and cultural construction of the variables studied.

4.4.2 QUANTITATIVE RESEARCH

In general, quantitative philosophy could be defined as an extreme of empiricism according to which theories are not only to be justified by the extent to which they can be verified but also an appeal to facts acquired. Quantitative research designs are characterised by the assumption that human behaviour can be explained by what may be termed “social facts”, which can be investigated by methodologies that utilise “the deductive logic of the natural sciences” (Horna, 1994). This process is directed towards the development of testable hypotheses and theory, which are generalisable across settings, and in contrast this methodology is more concerned with how a rich, complex description of the specific situations under study will evolve. It is a branch of thought which tried to find out the origins, justifications and progress of knowledge through observation, but is considered to have meanings only in so far as they can be derived (Charmers, 1976). Quantitative investigations look for “distinguishing characteristics, elemental properties and empirical boundaries” and tend to measure “how much” or “how often” (Nau, 1995). Hence, they are appropriate to examine the behavioural component of FM research.

A quantitative research design has always been concerned with defining an epistemological methodology for determining the truth-value of propositions and allows flexibility in the treatment of data, in terms of comparative analysis, statistical analysis, and repeatability of data collection in order to verify reliability. Easterby-Smith et al (1991) identify the ability of the observer to be independent from the subject being observed as one of the advantages.

The strengths of quantitative studies however, are not the sole prerogative of quantitative designs. Indeed, many of the arguments for the use of quantitative research, especially in an academic climate where resources are limited, have pragmatic origins in terms of allowing large-scale data collection and analysis at a reasonable cost and effort, as well as providing statistical “proof”.

The weaknesses of such quantitative research designs lie mainly in their failure to ascertain deeper underlying meanings and explanations even when significant, reliable and valid. Although quantitative methods can be used to measure such factors their appropriateness in explaining them in depth is more limited. A further weakness in quantitative approaches lie in their tendencies to take a “snapshot” of a situation, that is to measure variables at a specific moment in time. Some FM related aspects might be affected by temporal changes, which cannot always be identified within a single quantitative study.

4.4.3 THE MIXED (OR BALANCED) APPROACH

There is a strong suggestion within the research community that both quantitative and qualitative research are best thought of as complementary and should therefore be mixed in research of many kinds. Das (1983) states that, “qualitative and quantitative methodologies are not antithetic or divergent. Rather, they focus on the different dimensions of the same phenomenon. Sometimes, these dimensions may appear to be confluent: but even in these instances where they apparently diverge, the underlying unity may become visible on deeper penetration. The situational contingencies and objectives of the researcher would seem to play a decisive role in the design and execution of the study”. This emphasis has developed with the growing attention focused upon “triangulation” in research (Yin, 1994). Triangulation is the combination of methodologies in the study of the same phenomenon. The assumption in triangulation is that the effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another. This term is occasionally taken to refer to a broad approach which combines “multiple observers, theoretical perspectives, and methodologies” and are frequently used interchangeably to describe research strategies that incorporate a combination of quantitative and qualitative research methods in the study of the same phenomenon. It generally denotes a reference to a combination of research methods, thus the use of qualitative and quantitative techniques together to study the topic – which is very powerful to gain insights and results, and to assist in making inferences and in drawing conclusions, as illustrated in Figure 33:

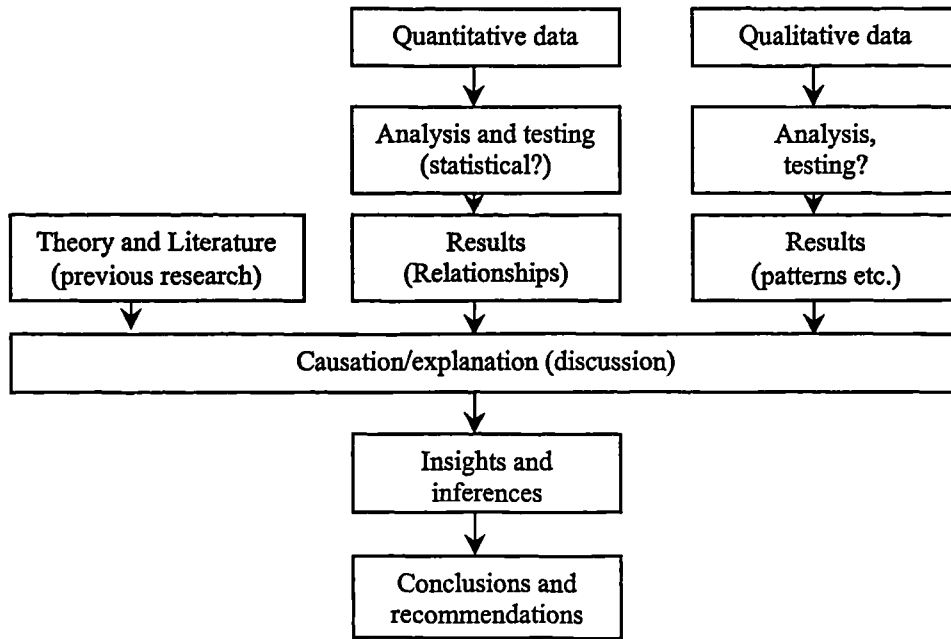


Figure 33: Triangulation of qualitative data [Source: Fellows & Liu (1997)]

Although the use of a single methodology has been advocated by a number of authors (Miles and Huberman, 1994; Eisenhardt, 1989; Yin, 1994), many of the supporting arguments are decidedly pragmatic, such as time constraints, the need to limit the scope of the study etc. Rossman & Wilson (1991) answer the question of why link qualitative and quantitative data?

- To enable confirmation or corroboration of each other via triangulation;
- To elaborate or develop analysis, providing richer details; and
- To initiate new lines of thinking through attention to surprises or paradoxes, "turning ideas around", providing fresh insights.

Quantitative data can help with the qualitative side of a study during design by finding a representative sample and locating deviant samples while qualitative data can help the quantitative side of the study during design by aiding with conceptual development and instrumentation.

The crucial aspect in justifying a mixed methodology research design in this study is that both single methodology approaches (quantitative only and qualitative only)

have strengths and weaknesses. The combination of methodologies, on the other hand, can focus on their relevant strengths. The researcher aims to achieve a situation where “blending qualitative and quantitative methods of research can produce a final product which can highlight the significant contributions of both” (Nau, 1994), where “qualitative data can support explicitly the meaning of quantitative research” (Jayaratne, 1993). By adopting the following assumptions, the researcher ensures that the final product maximises the strengths of a mixed method approach (adapted from Jones, 1997):

- Qualitative methods, especially observation, or unstructured interviews allow the researcher to develop an overall “picture” of the investigation;
- Qualitative analysis may be more appropriate to assess the behavioural or descriptive complements of management sciences;
- The descriptive analysis, such as capabilities of employers, may allow a representative sample to be drawn for the qualitative analysis;
- Management science research involves affective characteristics, as well as overall behavioural aspects. Thus a qualitative “core” is appropriate to investigate such aspects by examining the informants point of view;
- Much management science research is still largely exploratory. The use of qualitative methods allows for unexpected developments that may arise as part of such research;
- Quantitative analysis may compliment the findings of qualitative methods by indicating their extent within aspects of the management sciences;
- Quantitative analysis may confirm or reject any apparently significant data and their relationships that emerge from research. Quantitative methods can be used to enable statistical testing of strengths of such relationships; and
- If such relationships are determined, then quantitative methods are weaker in providing explanations. Qualitative methods may assist in understanding the underlying explanations of significance.

4.5 LIMITATIONS OF CASE STUDY RESEARCH

Case study research forms the main part of this research and is one type of the intensive research method as described in detail in section 4.17. Although there are many advantages to this method, there are also many criticisms. The aim of this section is to discuss some of those.

4.5.1 CASE STUDY DESIGN ACCEPTABILITY

Any review of research methods will be incomplete without considering the fundamental issues relating to evaluation of the value of any research outcomes. In many respects such an evaluation is often focused on measures to counteract the weaknesses inherent in the particular research strategy chosen (Then, 1996). In general, the value of any research stems from the validity of its results and the extent of its contribution to the body of knowledge. Yin (1994) discusses that any research study, for it to be valid, should conform to, and “pass”, certain design tests with regard to various levels of research validity. Yin (1994) refers to four design tests:

- *Construct validity* – establishing correct operational measures for the concepts being studied;
- *Internal validity* – establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships;
- *External validity* – establishing the domain to which a study’s findings can be generalised; and
- *Reliability* – demonstrating that the operations of a study - such as the data collection procedures – can be repeated with the same results.

The importance placed on judging the credibility of research results is also accentuated by the long-standing debate in science over how best to study and understand the world (Yin, 1994). This section provides an overview of the main research evaluation criteria considered in research methods literature.

4.5.1.1 CONSTRUCT VALIDITY

The extent to which the operational measure for a construct is generally identified as “construct validity”. It:

- Reflects all of the construct's observable effects:
- Appears to describe a single construct; and
- Correlates appropriately with operational measures of other related constructs.

Thus construct validity is the issue of establishing theoretical territory that goes with the defined construct and ensuring consistency between it and other recognised constructs.

4.5.1.2 INTERNAL AND EXTERNAL VALIDITY

A much cited definition of validity is that of Hammersley's (1987): "An account is valid or true if it represents accurately those of the phenomena, that it is intended to describe, explain or theorise". For a given problem, validity is one of the concepts used to determine how good is an answer provided by research (Then, 1996). It means in essence that a theory, model, concept, or category describes reality with a good fit. "A valid measure is one which measures what it is intended to measure. In fact, it is not the measure that is valid or invalid but the use to which the measure is put... the validity of a measure then depends on how we have defined the concept it is designed to measure", defines de Vaus (1991).

In research methodology literature, the measure of validity is often considered under either internal or external validity (Yin, 1994; Gill and Johnson, 1991). Internal validity refers to whether or not what are identified as the causes actually produce what has been interpreted as the "effect" or "responses" and checks whether the right cause-and-effect relationships have been established. External validity criterion refers to the extent to which any research findings can be generalised beyond the immediate research sample or setting in which the research took place, thus the extent to which findings drawn from studying one group are applicable to other groups or settings (the applicability of findings beyond the group). External validity could be achieved from theoretical relationships.

It is worth noting that there is a different perspective on validity when viewed within the context of qualitative and quantitative research (Then, 1996). Qualitative research identifies the presence or absence of a given feature in a given problem or situation, as opposed to quantitative research which measures the degree of presence of the feature it self.

4.5.1.3 RELIABILITY

Reliability is the extent to which a test or procedure produces similar results under constant conditions on all occasions (Yin, 1994). Another definition by Simon and Burstein (1985) (cited in Then, 1996) states that “reliability is essentially repeatability – a measurement procedure is highly reliable if it comes up with the same result in the same circumstances time after time, even employed by different people”. The goal of reliability is to minimise the errors and biases in a study. The object is to ensure that if a later investigator followed exactly the same procedures the same findings and conclusions would result.

From the above discussion, it can be seen that the basic difference between reliability and internal validity is that reliability deals with the data collection process to ensure consistency of results while internal validity focuses more on the way such results support conclusions (Then, 1996). It should also be noted that the above deliberation refers very much to the traditional evaluation criteria of validity and reliability that are governed by the convention of the quantitative research paradigm. Although early qualitative researchers felt compelled to relate to traditional notions of validity and reliability to procedures in qualitative research, later writers (Miles and Huberman, 1994; Yin, 1994; Easterby-Smith et al (1991) developed their own language to describe the quality criteria in a qualitative research paradigm. Miles and Huberman (1994) concentrate on improved and rigorous techniques for data gathering and analysis as the best way to enhance credibility and acceptance.

The design tests, which this research references, are detailed in Table 30, along with those measures implemented to ensure design test acceptability, in section 4.17.2.2. It can be seen therefore, that a number of key design checks have been incorporated within the performance of this research in order to best ensure that the research conforms to and repeats good academic practice. In addition, the measures implemented help ensure that the research is also as relevant to the market and practice environment which it references.

4.5.1.4 CREDIBILITY OF RESEARCHER

Another issue that can affect the way research findings are received is the credibility of the researcher. While consideration of validity and reliability are concerned with methodological issues in research design, this factor is concerned with the researcher as the instrument in research (Glaser, 1978). He applies the term “theoretical sensitivity” to the personal qualities of the researcher in the context of research. Theoretical sensitivity is the ability to recognise what is important in data and to give it a meaning.

4.5.2 LIMITATIONS

The main criticism of the case study method is that it suffers from a lack of rigour and excess of bias (Yin, 1994). With case studies, the danger of ad hoc theorising and neglecting to test data become greater. Failing to develop a sufficiently operational set of measures and the use of “subjective” judgements during data collection stages usually renders construct validity poor. According to Bromley (1986), researcher bias has an impact on the internal validity of the data. Becker (1986) agrees with this saying that researchers may have “feelings” for the subjects and conclusions that are drawn suffer from a lack of reliability. A further problem is that of external validity which is very difficult to measure in the case study setting (Berger, 1983). It is impossible to generalise findings to different settings, as phenomenon and context are necessarily dependent.

The evidence from multiple case studies as described in section 4.17.5, however, is often considered more compelling and the overall study is regarded as more robust. For theoretical generalisability, the important consideration is related to the complexity of external validity, that is, whether external conditions are thought to produce much variation in the phenomenon being studied.

In the context of this research, perhaps the most critical aspects of the case study approach are the fact that it provides a limited basis for the traditional ‘scientific generalisation’ (Yin, 1994; Remnyi et al, 1998). Notwithstanding, like all experimental observations, case studies results can be generalised to theoretical

propositions (analytical generalisation) but not to populations or universes (statistical generalisation). Thus, the aim of case studies cannot be to infer global findings from a sample to a population, but rather to understand and articulate patterns and linkages of theoretical importance. In support of the above, Santos (1999) states that it is important to emphasise that case studies deal with unique situations and, because of that, it is not possible to elaborate detailed and direct comparisons of data.

According to Yin (1994), the quality of any given design can be judged according to the following four previously mentioned tests: construct validity, internal validity, external validity and reliability (Table 26). The application of these principles to this research is illustrated in Table 30:

Tests	Case study tactic	Phase of research in which tactic occurs
Construct validity	Use of multiple sources of evidence	Data collection
	Establish chain of evidence	Data collection
	Have key informants review draft case study report	Composition
Internal validity	Do pattern matching	Data analysis
	Do explanation building	Data analysis
	Do time-series analysis	Data analysis
External validity	Use replication logic in multiple case studies	Research design
Reliability	Use case study protocol	Data collection
	Develop case study data base	Data collection

Table 26: Validity and reliability in the case study research [Source: Yin (1994)]

These validity and reliability tests were re-visited in the description of the case study design in section 4.17.2.2. To overcome limitations in case study research methods, some authors propose the use of combined or multiple methods, such as triangulation techniques.

4.6 TRIANGULATION

The origins of triangulation can be found in Campbell and Fiske (1959) (cited in Pacitti, 1998) who developed the idea of ‘multiple operationism’. They argue that more than one method should be used in the validation process to ensure that the variance reflected is that of the trait and not of the methods. The fundamental notion

of the triangulation technique is that qualitative and quantitative methods should be viewed as complementary rather than as rival camps (Jick, 1979) (cited in Pacitti, 1998). Hence, it is the combination of qualitative and quantitative methods in the study of the same phenomenon. Stoecker (1991) concludes that when the same results are found through different methods, there is a much higher degree of confidence in the results.

Stake (1995) states that the protocols that are used to ensure accuracy and alternative explanations are called triangulation. The need for triangulation arises from the ethical need to confirm the validity of the processes. Denzin (1984) identifies four types of triangulation: -

- *Data source triangulation* - when the researcher looks for the data to remain the same in different contexts;
- *Investigator triangulation* - when several investigators examine the same phenomenon;
- *Theory triangulation* - when investigators with different view points interpret the same results; and
- *Methodological triangulation* - when one approach is followed by another, to increase confidence in the interpretation.

The effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another. That is, it is assumed that multiple and independent measures do not share the same weaknesses or potential bias. In a single case, triangulation essentially involves crosschecking for internal consistency or reliability, while in multiple cases; triangulation tests the degree of external validity.

Triangulation or multiple methods were used in this research for two purposes. Firstly, to use quantitative methods to support the findings of the qualitative research and, secondly, to use the quantitative findings to uncover formal relationships between the constructs, which will be derived from the qualitative research. This provides extra impetus to the direction of the qualitative analysis.

The specific methods and techniques utilised for this research are described in the remainder of this chapter. Prior to this, however, the reader is provided with a summary of the nature of the research area outlined in the previous chapters.

4.7 THE NATURE OF THE RESEARCH AREA

The subject of this research is performance measurement in the FM organisation. The concept of performance measurement has been reviewed in chapter two and opens up some interesting areas for research, which will be re-visited in section 4.15.

The main area of debate that emerged from the literature seems to centre on the theme of performance measurement in FM organisations. Performance measurement concepts have been developed mainly by or for practitioners who develop definitive, quintessential views of how the process should be, that is, structure, method, strategy and implications. In the light of the preceding epistemological discussion, several criticisms can be made of this theme in the literature. Firstly, most of the models for performance measurement disregard the context in which different organisations operate. To some extent, most of the models presume operational improvement and do not consider long-term strategic developments and innovation issues. Furthermore, most of these models do not explain the mechanisms through which a FM organisation can contribute towards the success of the core organisation and thereby to become a learning organisation by utilising the performance measurement data. Most of the concepts, which are developed, have been found to be difficult to operationalise and contribute little to explaining the interactions between different measures. The question of how a FM organisation learns from its performance measurement system also provides scope for studying FM organisations in their different contexts rather than striving for an ultimate, prescriptive model which compounds the problems associated with positivism described in section 4.3.1.

4.8 PERFORMANCE MEASUREMENT IN PRACTICE

Although the literature on performance measurement is vast, very little of it provides firm evidence that the concepts are operational in FM organisations. The majority of journal articles on performance measurement are academic with a lack of empirical

evidence to support the theoretical application in FM. Performance measurement in FM organisations literature is, therefore, somewhat deviated from reality.

Nutt (2000) recognises the lack of rigorous scientific research in performance measurement field in FM aimed at improving the validity and reliability of a theory. In other words, the majority of papers in the prescriptive, performance measurement in FM, strand of literature lack proper empirical and research support whilst descriptive studies fail to generate useful guidelines for facilities managers. Tsang (1997) (cited in Pacitti, 1998) suggests that researchers integrate the two streams of research, as described in section 4.3.1, starting from the descriptive-prescriptive continuum. That is, to conduct in-depth descriptive researches to understand the relationships among major variables and then to formulate prescriptions based on the descriptive findings.

4.9 PERFORMANCE MEASUREMENT PRACTICES IN FACILITIES MANAGEMENT

It has been mentioned in the introductory chapter that the context of this study is performance measurement in FM organisations. The criticism was made that FM researchers do not use the concepts of performance measurement in as rigorous a manner as, for example, production management researchers. Furthermore, they make no use of the more general discussions of performance measurement, and the difference between different types of measurement models and add performance measurement onto models of FM processes. The study of performance measurement in the FM setting has therefore been somewhat under developed.

4.10 SUMMARY – PART ONE

There are several factors, which derive from the epistemological and methodological specific features of the research areas, which should be taken into account in the design of the research strategy for this project.

It became clear throughout the literature review that FM research is generally affected by its general management origins, where the positivist “scientific research

method” was first applied. Researchers in the management field usually try to follow a hypothetical-deductive method. However, the need to consider human aspects in FM performance measurement research demands the inclusion of the interpretative ideas in order to obtain meaningful results that reflect the holistic reality of measurement systems. Furthermore, as emphasised in section 4.3.1, rather than contradict, the realism approach usually reinforces the findings of positivist methods, and vice-versa. Hence, the adoption of a balanced philosophical approach follows a course of ideas set by the Human Relations School, presented in chapter two.

Furthermore, the study of performance measurement in FM organisations should take place within the context in which it occurs, and should aim, for example, to describe the processes of performance measurement and related performance measurement constructs rather than to produce generalisations between cases. This points to the use of qualitative research methods, such as the case study approach, to uncover the explanatory descriptions of the phenomenon.

The mixed approach supports the use of qualitative research as the dominant method in this research design. However, quantitative research will play a part by detecting formal relationships between constructs, as described in chapter seven.

In this part, the limitations of qualitative and quantitative research too have been discussed. For example, qualitative research suffers a lack of generalisability and quantitative research suffers from a lack of consideration of contextual difference in the sample. The limitations of one method are actually strengths of the other. Hence, whereas a strength of quantitative research is that it introduces generalisable results, a strength of intensive research is that it takes into account contextual differences.

The practice of combining qualitative and quantitative methods, as described in section 4.4.3, aims to overcome limitations of one approach by undertaking the other. It is often referred to as triangulation and was used in this research to provide further reliability and validity to the findings.

The above review highlighted a variety of potential problems that the researcher is likely to face in trying to come up with a sound research design. These problems, if

overlooked, increase the risk of invalid or erroneous design. In order to avoid any potential problems, it was suggested that an adequate research strategy must guide the research process from the beginning to conclusion. Therefore, the success of the research project is largely dependent on the robustness of the research strategy. The next section will present a focused discussion of the research approach in the chosen field of study, and concludes with a research design for the study of the performance measurement in the FM organisation.

PART TWO – OBJECTIVES DEVELOPED AND THE METHODS USED THROUGHOUT THE RESEARCH

4.11 OVERVIEW

This section presents the research method and data collection techniques adopted in this research. Initially it presents an overall view of the research design based on the philosophical approaches discussed in Part one of this chapter. The reasons for choosing the case study as the research strategy is then followed together with a view of some of its critical aspects, as identified in section 4.17.2 of Part one. It proceeds with a description of the protocol adopted in the data collection and a general presentation of the eight case studies in this research. Finally, it presents the analytical strategy adopted; including the logic that links the empirical evidence to the theoretical propositions identified in chapter three and the criteria for interpreting the findings.

4.12 OVERALL RESEARCH DESIGN

The research objectives and methods for this thesis were developed from the conclusions of the literature review (section 4.15) and the initial survey (section 2.10.3.1 of chapter two) taking into account the epistemological, methodological and subject specific features of the research outlined in part one of this chapter and the findings from the pilot study. Table 27 outlines the main phases of the research strategy:

Research phase	Output
Literature review and the initial survey	Research objectives; performance measurement constructs in FM and relationships
Pilot study	“Operationability” of research aims
Research aims and objectives	Research strategy
Choice of research strategy	In support of case study methodology
Case studies	In-depth explanations of performance measurement in FM organisations using the theoretical framework as the basis
Phase one analysis	Initial qualitative findings to provide feedback to case study organisations; Identification of performance measurement tools which formed the survey questionnaire
Survey	Quantitative support for qualitative data and some direction for second phase of qualitative analysis
Phase two analysis	In-depth analysis of qualitative and quantitative research; Theory building in performance measurement research in FM; Performance measurement tool applications
Theory verification	Verification of developed theory

Table 27: Outline of research strategy

4.13 LITERATURE REVIEW

The review of the literature included an in-depth examination of literature relating to performance measurement in organisations in general and performance measurement in FM organisations in particular. The results of the literature review are presented in chapter two. The main purpose and outcome of this was to identify theoretical gaps in the literature which pointed to potential research topics. Although the area of performance measurement is not new, the constructs are neither well established nor standardised across and even within FM organisations. There are, therefore, an abundance of areas that require further investigation.

The literature review reveals the established and generally accepted facts of the situation being studied, and enables one to identify and understand the theories or models, which have been used by previous researchers in the field. The literature review assisted the researcher in identifying an unsolved problem in the field being studied and which will become the focus of the research study. Initial fact finding

survey as detailed in section 2.10.3.1 of chapter two has further justified the identification of the research need.

4.14 PILOT STUDY

Pilot case studies help researchers to refine their data collection plans with respect to both the content of the data and the procedures to be followed. The pilot test is used more formatively, assisting an investigator to develop relevant lines of questions. In contrast, a pilot study is a "dress rehearsal", in which the intended data collection plan is used as faithfully as possible as a final test run (Then, 1996).

In this research a pilot case was conducted before the field data collection was initialised. The conduct of a pilot case is seen as a crucial step in order to improve the quality of the case study research, especially concerning the data collection phase (Miles and Huberman, 1994; Easterby-Smith et al, 1991; Yin, 1994). The pilot case was chosen on the basis that it supported the criteria mentioned above, that is, it was FM intensive. Convenience and access were the criteria for selection. The inquiry for the pilot study was less focused than the ultimate data collection plan. The purpose of the pilot study was to generate discussion around how the organisation managed FM performance. Contact with the organisation was made through face-to-face meetings and the organisation was sent a letter outlining the objectives of the research and the amount of time and resources required to undertake the case study which, at this stage, involved interviews only. The pilot site could assume the role of a "laboratory" for the researcher, allowing the opportunity to observe different phenomena from many different angles or to try different approaches on a trial basis.

The pilot case referred to in this study is a FM organisation of a University situated in the North West of England. The study was undertaken to achieve the following objectives:

- To understand the context contingencies in FM organisations;
- To test the "operationability" of the literature "gaps" and constructs identified in the literature;

- To discover the type of activity supported in the pilot organisation which can be regarded as part of its performance measurement process; and
- To provide the focus for the research project by helping to refine the data collection plans with respect to both the context of data and the procedures to be followed.

Due to the number of topics addressed by the theoretical framework in chapter three, the refinement of data collection and procedures was of paramount importance and this was addressed by the pilot case.

The inquiry for the pilot study was less focused than the ultimate data collection plan. The pilot data provided considerable insight into the basic issues being studied even though it was done prior to the selection of specific technologies for the final data collection. This information was used in *parallel with an ongoing review of* relevant literature so that the final research design can be informed both by prevailing theories and by a fresh set of empirical observations. The dual sources of information helped to ensure that the study to be done reflected significant theoretical or policy issues as well as questions relevant to contemporary cases. Further, the work at the pilot site provided information about relevant field questions and about the logistics of the field inquiry.

The collected data was analysed using techniques which are discussed in detail in section 4.17.10. The findings from the pilot case study are not presented here as this case is presented later in this thesis as a full supporting case study in chapter six. (CASA FM case, section 6.8 of chapter six). The findings of the pilot case study can also be found in Amaratunga and Baldry (1999).

In attempting to find a relationship between the level of FM practice and its impact upon performance, the pilot study assumed that performance measurement in FM is basically governed by the user focus, measurement framework, management involvement, communication and tools and techniques (Amaratunga and Baldry, 1999).

4.14.1 PILOT STUDY CONCLUSIONS

The pilot study provided a point of departure for the data collection phase and formed the foundation from which decisions regarding the research strategy were based. The study also helped the researcher to refine overall research design on issues such as cost and time as identified by Pacitti (1998). In fact, the study proved the protocol to be sound and this resulted in a reduced number of changes.

The most important findings from the pilot case were:

- That the FM organisation conducted performance measurement using some form of milestone process;
- That the FM organisational performance measurement process components were understood by the interviewees and are therefore used in the interview schedule during data collection phase; and
- There are various activities identified in the case study which are primarily performance measurement instruments. One aim of the research strategy is therefore to continue to identify similar performance measurement activities or tools to form the prescriptive part of the research.

4.15 RESEARCH OBJECTIVES

From the conclusions of the literature review and the initial survey reported in chapter two and from pilot study findings (section 4.14.1), the research objectives and the strategy were derived. The ultimate goals of this research are based on two main themes of the literature of FM organisation on one hand, and performance measurement on the other. The aim of the performance measurement theme takes into account the methodological recommendations of Neely (1999) by trying to produce descriptive accounts of performance measurements in FM intensive organisations from which theory can be built and to provide prescriptive findings from these descriptive accounts. The following sections further elaborate these issues in detail.

4.15.1 RESEARCH PROBLEM DEFINITION

Problems are the catalysts for research. The need for research is indicated primarily where the existing fund of knowledge is insufficient to solve a problem (Then, 1996). The nature of the problem and the manner in which it is defined bear crucially upon every aspect of the research which follows. Hence, it is important to give careful consideration to problem construction before starting the research process. Buckley et al (1975) (also cited in Then, 1996) listed five attributes they considered characterised an appropriate research problem:

- The problem is defined properly and is labelled and described accurately;
- The problem is posed in solvable terms;
- The problem is connected logically to the environment from which it is drawn – and the solution can be applied within that environment;
- The problem has been screened against existing body of knowledge to assure its uniqueness, that is, it has not been solved previously; and
- The solution to the problem must be viewed as making a potential contribution to the body of knowledge, that is the problem must be significant.

The starting point to the research problem in this research is issues identified in section 2.11 in chapter two, highlighting the gaps in the existing literature; that is the extent of the deployment of general performance measurement applications in FM. The critical observation in practice, allied to a careful reading of the literature suggested the emergent need to determine, verify and integrate the axioms of modern performance measurement in the context of FM. In this process, it also became clear there is a need for better understanding of the issues, that is how to transfer knowledge from theory to practice. The research therefore, aims to provide a clear understanding of the role of facilities performance measurement and how this corporate perception impacts on and influences the management of facilities within an organisation in playing the supporting role to the core business.

In this context, the researcher decided to investigate the following three key questions with respect to the practice and theory of performance measurement in FM:

- *Question one* – Are the general axioms of performance measurement applicable in FM?
- *Question two* – If so, to what extent could this performance measurement theory could be deployed within FM? and
- *Question three* - How could a performance measurement framework be created in FM organisations in order to effectively transfer modern performance measurement principles in FM practice, thereby to demonstrate the links that exist between the furtherance of the prime organisational goal and the FM support mechanism?

Above questions forms the basis for the theory development in performance measurement in FM organisations and answering these questions offer great potential for bringing performance measurement theories into FM as they will touch on deeply rooted paradigms of thinking and acting within the sector.

The motivation for the research problem identified has developed from a number of sources:

- As identified in sections 2.10.1 & 2.10.3 of chapter two, detailed literature analysis highlighting the growing awareness of the critical role and need for more effective performance measurement within FM organisations;
- The growing concerns by the senior management of the raising trend towards the strategic importance of facilities and the need for more strategic consideration of its role in strategic business planning as identified by Then (1996);
- Continual developments within the FM sector in general mean that many established facilities practices are being re-aligned to best meet the needs of new, and evolving, FM practices. The need to examine how this transposition can be implemented and managed, thereby fostering a pro-active, supportive, and flexible FM process;
- For any FM process to be valid it must add value to the prime organisational goal. Thus, there is a need to demonstrate the links between the prime organisational goal and the FM support mechanism; and
- The personal interest in the areas of FM, performance measurement and management, and strategic management held by the researcher.

4.15.2 RESEARCH PROPOSITIONS

Careful analysis of the literature suggested the emergent need to determine, verify and integrate the axioms of modern performance measurement in the context of FM,

as described in section 4.15. In this process, it also became clear the need for better understanding of the issues of how to transfer knowledge from practice to theory.

The objectives for this research were established based on the research problem identified in the above 4.15 section. Additionally, working research propositions were constructed for each of these objectives, as follows:

Objective one - To determine the degree to which FM applies to some key principles of performance measurement

- *Research proposition* – FM organisations will represent the need for performance measurement deployment

The current research therefore examines the context of FM within the core organisation in terms of key organisational goals and main strategic influences and identifies the contribution that can be made to the effective delivery of the core business through the application of general and organisational specific FM techniques. Also it demonstrates the links that exist between the furtherance of the prime organisational goal and the FM support mechanism.

Objective two - To interpret and refine some key principles of performance measurement based on empirical evidence obtained within FM organisations.

- *Research proposition*: there will be empirical evidence indicating key principles of performance measurement to be used in FM

The question intends to couple the concepts, “General Performance” and “Organisational Performance” into “Integrated Facilities Performance”, a holistic perspective to acquire greater representation of factors influencing organisational success. Based on the above research proposition this research intends to build theory to assess performance in FM based on some core performance measurement concepts identified as the theoretical framework in chapter three.

As with the majority of performance measurement principles, it is unlikely that all principles and correspondent implementation approaches will be fully attained in a

single FM organisation. The use of multiple case studies, as described in section 4.17.5, will resolve this problem in this research.

Objective three – To understand how to create a theory of performance measurement in FM organisations

- *Research proposition:* A general frame of clusters of performance measurement matrix for FM can be set up.

There is a clear lack of integration, appropriate structuring and clear definitions of existing ideas within a common theoretical framework. Therefore, this research intends to make a contribution in this respect by investigating the applications of some core principles of performance measurement within FM context and, thereby emphasising the need for better knowledge transfer.

By achieving these objectives, the researcher expects to give a positive contribution to the FM field by consolidating the performance measurement theory in a language the FM organisations could understand, by examining the context of FM within the core organisation in terms of key organisational goals and main strategic influences and identifying the contribution that can be made to the effective delivery of the core business through the application of general performance measurement techniques.

4.16 CHOICE OF RESEARCH STRATEGY

McGrath (1982) uses the term “dilemmatic” to describe the study of research choices in which it is clear that there are no ideal solutions, only a series of compromises. Patton (1990) expresses the same view: “research, like diplomacy, is the art of the possible”. The above quote by Patton is perhaps a very poignant guide to any researchers contemplating the most appropriate avenue of successfully completing a sizeable piece of research study (Then, 1996). In this respect, this research is no exception.

Research strategy is about organising research activity. At an abstract level, Simon and Burstein (1985) (cited in Then, 1996) provide a hierarchy upon which knowledge is built; facts, assumptions, deduction, theories, hypotheses and law. At a

general level, Pelto and Pelto (1979) (cited in Then, 1996) consider the main elements of a research study as comprising: operational definitions and concepts, propositions, and theories and hypotheses as illustrated in Figure 34:

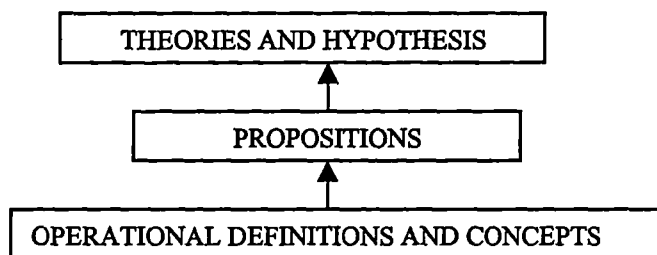


Figure 34: Elements of research methodology [Source: Pelto and Pelto (1979) (cited in Then, 1996)]

Having identified the research objectives it is now important to describe the research strategy. The strategy defines the overall configuration by which data collection and analysis will be conducted, “what kind of evidence is gathered from where, and how such evidence is interpreted in order to provide good answers to the basic research question” (Easterby-Smith et al, 1991). As Allen (1996) states, strategy sets the amalgamation of tools, procedures, methods, etc., which are used to collect and analyse data.

The literature review on research methods revealed a wide variation in the classification of research approaches. Esterby-Smith et al (1991) provide a simple classification of research by outcomes that are assumed to emerge: pure, applied and action research. Mauch and Birch (1989) (cited in Then, 1996) identify fourteen common types of research: analytical, comparative, correlational-predictive, design and demonstration, developmental, experimental, historical, opinion polling, status, theoretical, trend analysis, case study, quasi-experimental and evaluation. The above list is by no means exhaustive, but it does highlight to any potential researcher the complexity of choice when embarking on research.

According to Yin (1994), a research strategy should be chosen as a function of the research situation. Each research strategy has its own specific approach to collect and analyse empirical data, and therefore each strategy has its own advantages and disadvantages. Although each strategy has its own characteristics there are

overlapping areas, which brings complexity to the process of strategy selection. In order to avoid gross misfits between the desired outcome and the chosen strategy, Yin (1994) stresses that the type of question posed; the control over actual behavioural elements; and the degree of focus on historical or contemporary events, are the conditions which should provide the grounds to strategy choice. Table 28 depicts the outcome of the intersection between most common research strategies and the three conditions identified above:

Strategy	Form of research question	Requires control over behavioural events?	Focuses on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	How, why	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

Table 28: Research strategies vs. characteristics [Source: Yin (1994)]

Galliers (1992) (cited in Remenyi et al, 1998) provides a list of approaches or tactics. Table 29 summarises this list according to the general philosophical base underpinning the different research tactics. It is important to note that most research tactics listed in the table can be used, at least to some extent, as either positivistic (quantitative) or phenomenological (qualitative) devices.

Research approaches	Positivistic (Quantitative)	Phenomenological (Qualitative)
Action research		Strictly interpretivist
Case studies	Have scope to be either	Have scope to be either
Ethnographic		Strictly interpretivist
Field experiments	Have scope to be either	Have scope to be either
Focus groups		Mostly Interpretivist
Forecasting research	Strictly positivistic with some room for interpretation	
Futures research	Have scope to be either	Have scope to be either
Game or role playing		Strictly interpretivist
In-depth surveys		Mostly Interpretivist
Laboratory experiments	Strictly positivistic with some room for interpretation	
Large scale surveys	Strictly positivistic with	

	some room for interpretation	
Participant observer		Strictly interpretivist
Scenario research		Mostly Interpretivist
Simulation and stochastic modelling	Strictly positivistic with some room for interpretation	

Table 29: Research tactics and philosophical bases [Source: Galliers (1992) (cited in Remenyi et al, 1998)]

Performance measurement has reached a stage of theoretical maturity that demands to see the applicability of its heuristic principles within different “real world” situations. An FM organisation provides such a “real world” condition and in particular, the principles under study needed to be assessed in the FM environment. There was a strong need to understand how these approaches described in chapter three support each other in order to enable the achievement of optimum results, within the FM context. In this context, as Table 29 shows, “case study” is the research strategy that matches better with these characteristics. The preference of the case study strategy derives from the fact that the main research question in this work is in the form of “how”, and the case studies provide the ability to examine contemporary events – the development of performance measurement theory in FM by dealing with a wide range of evidence – documents, interviews, and observations, but where the relevant behavioural aspects cannot be manipulated (adapted from Yin, 1994). This allowed an in-depth investigation of the concepts of performance measurement issues in FM in its real life context.

4.17 CASE STUDY RESEARCH

The history of case study research is marked by periods of intense use and periods of disuse. The earliest use of this form of research can be traced to Europe, predominantly France (Tellis, 1997). This methodology in the United States was most closely associated with The University of Chicago Department of Sociology. From the early 1900’s until 1935, the Chicago School was pre-eminent in the field and the source of a great deal of the literature (Tellis, 1997).

The literature contains numerous examples of applications of the case study methodology. The earliest and most natural examples are to be found in the fields of Law and Medicine, where “cases” make up the large body of the student work. Case studies have been increasingly used in Education. While law and medical schools have been using the technique for an extended period, the technique is being applied in a variety of instructional situations. Schools of business have been most aggressive in the implementation of case based learning, or “active learning” (Boisjoly and DeMicjiell, 1994). Case studies have been used to develop critical thinking (Alvarez et al, 1990). There are also interactive language courses (Carney, 1995), courses designed to broaden the students’ horizons (Brearley, 1993), and even for technical courses (Greenwald, 1991), and philosophical ones (Garvin, 1991).

The need for a case study approach in this research is supported by previous epistemological discussions. That is, there is a need to study performance measurement in its FM organisational context and more importantly, to uncover the mechanisms through which performance measurement has diffused within FM organisations. The next sections discuss the procedures used for collecting, analysing and drawing conclusions from the case study data taking into account the validity and reliability measures as discussed in section 4.5.1.

4.17.1 CASE STUDY RESEARCH STRATEGY

The case study, like any other research strategy listed in Table 28 & Table 29 above, is a way of investigating an empirical inquiry by following a set of pre-specified procedures. The case study is a research strategy, which focuses on understanding the dynamics present within single settings (Amaratunga & Baldry, 2000b) and usually refers to relatively intensive analysis of a single instance of a phenomenon being investigated. Yin (1994) provides a technical definition of case study strategy: “a case study is an empirical inquiry that investigates contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. It is particularly valuable when there is not a clear definition between the phenomenon and the context itself. Case study research is a heterogeneous activity covering a range of research methods and techniques, a range of coverage, differing lengths and levels of involvement in organisational functioning

and a range of different types of data (Hartely, 1994). In the management field, Remenyi et al (1998) define the case study as: “a detailed investigation of the context and processes that affect a phenomenon within organisations”. According to Zonabend (1992), case studies are done by giving special attention to completeness in observation, reconstruction, and analysis of the case under study. According to Feagin et al (1991), case study is an ideal methodology when a holistic, in-depth investigation is needed.

The key feature of the case study approach is not method or data but the emphasis on understanding processes as they occur in their context. The investigator interviews individuals or studies life history documents to gain insight into behaviour and attempts to discover unique features and common traits shared by all persons in a given classification. Much case study research, because of the opportunity for open-ended inquiry, is able to draw on inductive methods of research which aim to build theory and generate hypotheses rather than primarily to test them.

As a working definition, a case study may be characterised as a detailed examination of an event (or series of related events) which the analyst believes exhibits (or exhibit) the operation of some identified general theoretical principle (Mitchell, 1983). A very important advantage of the case material lies in the richness of its detailed understanding of reality. This meant it could work as an effective mnemonic device. Zonabend (1992) states that case study research is done by giving special attention to complexities in observation, reconstruction, and analysis of the cases under study and is done in a way that it incorporates the views of the ‘actors’ in the case under study.

An empirical investigation of a contemporary phenomenon within its real life context is one situation in which case study methodology is applicable. Yin (1994) presents at least four applications for a case study model:

- To explain complex causal links in real life interventions;
- To describe the real life context in which the intervention has occurred;
- To describe the intervention itself; and

- To explore those situations in which the intervention being evaluated has no clear set of outcomes.

4.17.2 CRITICAL ASPECTS OF CASE STUDY RESEARCH

The definitions listed in section 4.17.1 are particularly useful in understanding case study as a research strategy and also to distinguish it from other research strategies listed in Table 29. Given the dichotomy in views between qualitative and quantitative research paradigms, as discussed earlier, it is inevitable that there are critics of case study research (Then, 1996). Traditional prejudices against the case study strategy can be summarised as the following (Adapted from Yin, 1994):

- Lack of rigour of case study research;
- Case studies provide very little basis for scientific generalisation; and
- Case studies research takes too long and result in massive, unreadable documents.

However, as Hakim (1987) states, since Yin (1981), thoroughly structured and widely accepted generic design guidelines have been put forward which provide researchers with a sound framework for a case study strategy. These issues will be addressed in detail in preceding sections, however, it is still important here to review and explain some of the main criticisms of case studies.

4.17.2.1 GENERALISATION

The issue of generalisation has appeared in the literature with regularity (Tellis, 1997). It is a frequent criticism of case study research that the results are not widely applicable in real life. Yin (1994) in particular refuted that criticism by presenting a well-constructed explanation of the difference between analytic generalisation and statistical generalisation. Grilo (1998) confirms the possibility of making scientific or statistical generalisations as probably the source of the biggest criticism of case studies. In positivist approaches, it is often considered that conclusions of case studies cannot be considered valid unless they can be proved to be “typical” of the phenomenon under study which can only be achieved by a representative survey (Smith, 1991; Easterby-Smith et al, 1991; Bryman, 1989). Obviously, this is not considered to be a problem in interpretive approaches. Thus, case studies are used in

this research on an exploratory basis to support theoretical development from which results will be validated by extensive surveys.

Yin (1994) along with other positivist authors (Hartley, 1994; Carrol and Johnson, 1992), argues that within case studies the type of generalisation which should be sought is analytical rather than statistical. Yin (1994) refers that: “the method of generalisation is “analytical generalisation”, in which a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication may be claimed”. Hence, theory development in this thesis is based on the theoretical framework identified in chapter three. This facilitates not only the data collection phase but also the level at which the generalisation of the case study occurs. In this sense, the multiple case study design in this work focused on generalising the theoretical framework of the performance measurement model and not on statistical generalisation.

4.17.2.2 RESEARCH QUALITY

Yin (1994) has suggested that the criticisms identified in section 4.5 are misdirected, and suggested appropriate “tactics” that can be taken to ensure the validity and reliability of case studies research against four common tests cited in research literature, as listed in section 4.5.1 of Part one of this chapter. Table 30 re-visits Yin’s case study tactics for the four research design tests along with those measures implemented to ensure design test acceptability:

Tests	Case study tactic	Phase of research in which tactic occurs	Measures implemented in this research
Construct validity	Use multiple source of evidence	Data collection	Literature reviews, document reviews, surveys, interviews, focus groups, meetings etc.
	Establish chain of evidence	Data collection	Establish case study database, production of formal case review reports, mapping of research data according to the case ‘template’. Regular research supervisor

	Have key informants review draft case study report	Composition	meetings, production of conference and refereed journal articles based on case reports (feedback received), testing of survey findings through interviews and focus groups, formal review of the draft thesis, discuss the issues raised with experts both from the industry and within academia
Internal validity	Do pattern matching	Data analysis	Cross comparison of literature review (theoretical framework) and case study findings, cross trend analysis between the cases
	Do explanation building	Data analysis	Theory building and verification, correlate key research findings
	Do time series analysis	Data analysis	Not applicable in this research
External validity	Use replication logic	Research design	Establishment of the concept of performance measurement as the primary research domain and FM as the specialist market sector
Reliability	Use case study protocol	Data collection	Development of a case study framework (consisting; overview, field procedures; case study questions and a guide to case study report)
	Develop case study database	Data collection	Establishment of case study database, reference literature for case study findings, setting up a research indexing system by using NUDIST software package.

Table 30: Case study tactics for four design tests [Source: Adapted from Yin (1994)]

It can be seen, therefore, that a number of key design checks have been incorporated within the performance of this research in order to best ensure that the research conforms to and repeats good academic practice. In addition, the measures implemented help ensure that the research is also as relevant to the market and practice environment which it references.

4.17.3 MAKING A CASE

Some of the early criticisms of the case study as a research methodology were that it was unscientific in nature, and replication was not possible (Tellis, 1997). To

overcome this, the first stage in the case study methodology recommended by Yin (1994) is the development of case study protocol. The literature contains major refutations by Yin (1994), Stake (1995), Feagin et al (1991), and others whose work resulted in a suggested outline for what a case study protocol could include. Yin (1994) reminds the researcher that there is more to a protocol than the instrument. He asserted that the development of the rules and procedures contained in the protocol enhance the reliability of case study research. While it is desirable to have a protocol for all studies, Yin, (1994) states that it is essential in a multiple case study. The protocol should include the following sections:

- *An overview of the case study project* – this includes project objectives, case study issues, and presentations about the topic under study;
- *Field procedures* – reminder about procedures, credentials for access to data sources, location of those sources;
- *Case study questions* – the questions that the investigator must keep in mind during data collection; and
- *A guide for the case study report* – the outline and format of the report.

A case study protocol contains more than the survey instrument, and it should also contain procedures and general rules that should be followed in using the instrument. The discipline imposed on the researcher by the protocol is important to the overall progress and reliability of the study. It helps keep the researcher's focus on the main tasks and goals, while the process of development brings out problems that would only be faced during the actual investigation.

4.17.4 SELECTING CRITERIA FOR CASE STUDIES

The criteria to select the cases were a matter of discretion and judgement, convenience, access and to be those which were FM sensitive for the purpose of this research, as described by Yin (1994). The selection of case studies must be purposeful rather than random to achieve the desired literal and theoretical replication objectives, and therefore avoid biased results that are likely when dealing with a small number of cases (Yin, 1994; Miles and Huberman, 1994). However, the selection process is often critically limited by the access that the researcher has to the

cases and, once gained, the level of detail that access is able to be obtained to (Carroll and Johnson, 1992).

For the purpose of this thesis an important criterion was the presence of some sort of performance measurement procedures within the FM organisation. This emphasis on measurement principles made it unnecessary to consider in the selection criteria, organisational characteristics such as the organisational size or type. The level of FM practice was another criteria for choosing the host organisations as it is intended to compare the “best practices” of the “best FM organisations” to ensure fair comparisons.

It is important to acknowledge that some of the case studies were obtained through a network of previous and evolving contacts within the industry and academia, as advocated by many authors (Easterby-Smith et al, 1991; Miles and Huberman, 1994).

4.17.5 MULTIPLE CASE STUDIES

Case studies can be either single or multiple case designs. Single cases are used to confirm or challenge a theory, or to represent a unique or extreme case (Yin, 1994). Single cases are also ideal for revelatory cases where an observer may have access to a phenomenon that was previously inaccessible. Single case designs require careful investigation to avoid misinterpretation and to maximise the investigator’s access to the evidence. Multiple case studies follow replication logic (Tellis, 1997), where each individual case consists of a “whole” study, in which facts are gathered from various sources and conclusions drawn on those facts.

In this work, a multiple case study design was adopted in order to add confidence and achieve more robust conclusions. Thus, by looking at a range of similar and contrasting cases it was expected to strengthen the precision, validity, and the stability of the findings of the research (Miles and Huberman, 1994). The rationale behind the multiple case studies design was that of replication, that each case is selected so that it either produces similar results, or for theoretically predictable reasons produces contrary results (Yin, 1994).

Thus, by choosing logic of “replication” for case studies rather than of “sampling” it was possible to achieve analytical generalisation, which is the core of the case study strategy. Yin (1994) confirms that generalisation of results, from multiple designs, is made to theory and not to populations. Multiple cases strengthen the results by replicating the pattern matching, thus increasing confidence in the robustness of the theory. Further, the use of multiple cases in this study underlines the complexity of the topic under investigation and develops the empirical evidence to support and sharpen the theory. The approach to the case studies is a theory building and verification rather than testing theory one, as will become apparent.

4.17.6 DEFINING THE NUMBER OF CASES

A frequent criticism of case study methodology is that its dependence on a single case renders it incapable of providing a generalising conclusion. Yin (1993) presents the view that considered case methodology “microscopic” because it “lacked a sufficient number” of cases. Hamel et al (1993) and Yin (1993) forcefully argue that the relative size of the sample whether 2,10 or 100 cases are used, does not transform a multiple case into a macroscopic study. The goal of the study should establish the parameters, and then should be applied to all research. In this way, even a single case could be considered acceptable, provided it met the established objective. Nieto and Perez (2000) argue that there are no defined criteria to determine the number of necessary cases. It has been stated that it does not matter how small the sample is (Mintzberg, 1979), that the number of cases could vary from one to eight (Yin, 1981), that although there is no ideal number, between four and eight is appropriate (Eisenhart, 1989 and other opinions).

The selection of number of cases for literal and theoretical replication is discretionary and judgemental, depending of the level of certainty that is wanted about the results (Yin, 1994). Overall, the number of cases is conditioned by the scarcity of time and other available resources, and explained by the tension that arises when the following two opposing criteria are applied to this limitation: case studies versus depth of study. Generally, the more cases are analysed, the greater opportunity of detecting errors, of obtaining more general results and of achieving a wider perspective as one phenomenon is analysed in different contexts.

The number of case studies becomes a secondary issue in respect to the selection criteria, a decisive aspect in the quality of the research. These should be adapted as much as possible to the objective and theoretical framework, and should be made explicit before the selection, which will enable different researchers to reach similar conclusions. The goal is to describe the characteristics of the ideal case, that which best allows analysing the phenomenon studied and then select, between those available, the one closest to the archetype (Then, 1996). In this way, a selection of appropriate cases from the suitable criteria enables the control of external variations in the phenomenon researched and helps in defining the limits of generalisation of the findings.

4.17.7 UNIT OF ANALYSIS

The definition of what is the “case” or “unit of analysis” is of paramount importance to any research design (Yin, 1994). Miles and Huberman (1994) stress that in abstract terms, the “case” is a phenomenon of some sort occurring in a bounded context. However, the clear definition of the unit of analysis is often problematic (Grilo, 1998). Yin (1994) suggests that in general terms, the definition of “case” is much linked to the way research questions have been posed. Similarly, Miles and Huberman (1994) advocate that the case is where the focus is. It is typically a system of action rather than an individual or group of individuals (Tellis, 1997). Dubin (1978) stresses that only when these units are put together, with their corresponding interactions, do they enable the generation of “laws” as the term law is usually employed in science. Case studies tend to be selective, focusing on one or two issues that are fundamental to understanding the system being examined. Different types of units of analysis can be considered, from individuals, to organisations, small groups, roles, events etc. (Miles and Huberman, 1994; Yin, 1994; Smith, 1991). As a general rule, the definition of the unit of analysis is related to the way the initial research has been defined. The definition of the appropriate unit of analysis in research design is fundamental as it is the primary focus of data collection (Then, 1996). Patton (1990) advises that: “the key issue in selecting and making decisions about the appropriate unit of analysis is to decide what is it you want to be able to say something about at the end of the study”.

In case studies, the unit of analysis is important. It is not merely a sample of a large population and a single case has to be considered independently. Each case constitutes a whole study in which facts are gathered from various sources and conclusions drawn on these facts. The boundary of the case is also important to define as it determines the limits of data collection and analysis (Yin, 1994). Boundaries can be defined by the propositions set up in the theoretical framework (Yin, 1994), or by what will not be studied (Miles and Huberman, 1994).

This thesis has generated a critical reflection on the basis of the heuristic performance measurement approaches presented in the theoretical framework. Their boundaries were established in the theoretical framework, allowing conclusions representing logical and true deduction about their propositions.

4.17.7.1 UNITS OF THEORY

Dubin (1978) suggests that the unit of a theory may be represented either by attributes or variables. An attribute is a property of element of practice (material, method, equipment, human management practice) distinguished by the quality of being present. In other words, it deals with limiting the scope of the study. This section identifies such variables associated with this research.

4.17.7.1.1 CONTEXT OF THE ORGANISATION

The pilot case provided general information regarding organisations and how performance of the FM function is managed, whereas the unit of analysis of the case studies is the FM organisation. The decision to focus on the FM organisational level of analysis is based on the specific characteristics of the research context need identified in chapter two.

4.17.7.1.2 FACILITIES MANAGEMENT ORGANISATIONAL CONTEXT

A multi-dimensional case study survey was carried out across a number of sectors as identified in Table 32 in section 4.17.9. This was influenced by the fact that the process will strengthen external validity and to understand if there were any differences in the way in which they managed their FM activities. As identified in

section 2.3.6 of chapter two, FM consists of a number of activities and processes within organisations. Barrett's (1995) model for FM depicts (as in Appendix one) FM as a function comprising a complex set of relationships, both between the facilities side and the core side, as well as within the facilities side itself. How might the "manner of quality of functioning" of FM be explored, using the above argument? According to Simpson's (1998) identification of the nature of FM performance (see section 2.10 of chapter two), this could be done in three ways. Based on his levels of identification, this thesis looks at the whole of the FM function as a system whose performance can be explored. (That is, it considers FM as an integrated function rather than dealing with the total of number of FM activities)

4.17.7.1.3 LEVEL OF PERFORMANCE MEASUREMENT

Within the FM organisation, Barrett's model (section 2.3.5.3 of chapter two) shows both strategic and operational level activities. Continuing with Simpson's (1998) discussion on divisions of FM performance, it has been shown that a division between strategic and operational is possible. At the strategic level, performance of FM matches with the definition of FM performance identified in the above section: "whole of FM function as a system", and particularly at the operational level, the whole service can be divided into a variable set of separate support services. Revisiting section 4.17.7.1.2 above in this thesis deals with strategic level FM issues, rather than issues at the operational level. In this sense, assessment of FM performance covers:

- The effectiveness of its own FM arrangements;
- Its contribution to the core business of the organisation; and
- Its support to business operations and productivity

4.17.7.1.4 CHARACTERISTICS OF PERFORMANCE MEASUREMENT

Kay (2000) identifies purposes of performance measurement as for: internal control, internal analysis and external control. Garvin (1994) reviewed the strategic management literature and found three broad categories of managerial processes: direction setting, negotiation and bargaining, and monitoring and control. Because of the long dominance of, as Mintzberg and Lampel (1999) call it, the prescriptive

schools of strategy (design, planning, and positioning) the only managerial process which was considered to be strategically important was direction setting. Performance measurement issues cannot be disassociated with this argument and Alher (2000) considers internal performance control as one of the distinctive senior management processes that have a direct impact on the evolution of operational performance. He further defines performance control as the process through which managers develop and use metrics and systems in the process of transforming the operations function. In the time frame of a doctoral study, it is not possible to assess all levels of performance issues and therefore, according to Kay's definitions, only internal control issues of performance measurement are considered in this thesis, as internal control leads to internal analysis leading the pathway to external control.

4.17.7.1.5 RESOURCING ISSUES

Limited resources, particularly time available between work and funding of travel and ancillary expenses were another important issues when dealing with the boundaries of the unit of analysis. Access to senior management in respondent organisations is another problem that is not uncommon in management research. As identified by Then (1996), the general apathy by senior management to the purely functional role of facilities is clearly reinforced by current financial conventions of treating facilities related costs as a cost to business, rather than as a business resource which can be potentially harnessed to improve the corporate effectiveness and image, both externally and internally.

4.17.8 PROTOCOL FOR DATA COLLECTION

A multiple case study demands a formulation of a protocol for data collection that reduces the chances of missing important data and, thus, facilitates subsequent analysis (Robinson, 1993; Yin, 1994). The protocol is the document that helps the design of the investigation and contains the general rules and particular specifications that should be followed; although it is always desirable it becomes essential when the study consists of multiple cases (Nieto and Perez, 2000). Protocolising the activities of the research will also result to an increase in its quality. The most relevant aspects of the protocol are the sources of evidence, the gathering of data and the analysis of

evidence of each case. In this research, the developed protocol for data collection followed the structure illustrated in Figure 35:

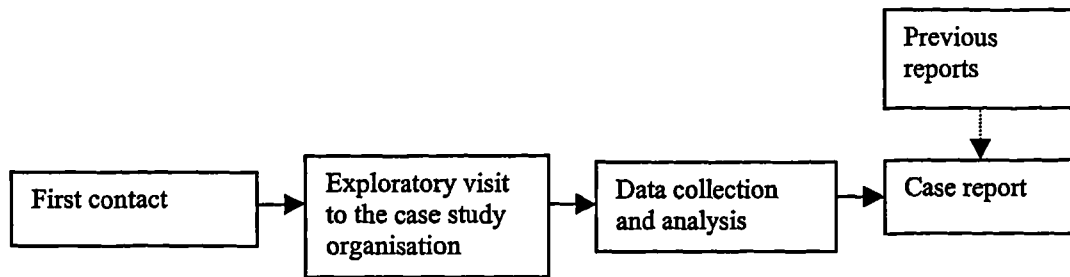


Figure 35: Protocol for data collection

The first stage of the protocol was the establishment of first contact with an organisation. The second step consisted of an exploratory visit where the researcher would explain the aims and objectives of the research in detail. The third step was the data collection itself and it involved the use of different data collection techniques listed in section 4.17.8.2. Many different data collection techniques were adopted in the research to ensure robustness of observation and analysis. This standard protocol for data collection restricted data collection to the issues relating to performance measurement of the FM organisation.

Semi-structured interviews were carried out throughout the research and formal meetings at the end of data collection exposed the researcher's findings to debate and the organisation's validation. As described in section 4.17.8.2, multiple sources of evidence can substantially help to improve validity and reliability in this type of research as it enables the assessment of the same phenomenon from different perspectives.

As described in section 4.3.2 of Part one of this chapter, the detailed observational approach was to be balanced between the positivism and realism approaches. The positivist approach included collecting numerical evidence and the application techniques that allowed statistical analysis (see section 4.19). On the other hand, case study methodology required qualitative evidence in order to allow the researcher to understand actual performance measurement practices and their relationship with the theoretical framework of the study.

4.17.8.1 FIRST CONTACT

Researcher's supervisor and other academic colleagues acted as the source for majority of "first contacts" with the host organisations. All case study organisations received documentation containing background information and an overview of the study, the research description and objectives, research methodology, expected outcome of the research and contribution to theory and practice resulting from the research.

4.17.8.2 DATA COLLECTION

An essential characteristic of the study of cases is the combined use of diverse sources of evidence. Yin (1994) suggests three principles of data collection for case studies:

- Use multiple sources of evidence;
- Create a case study database; and
- Maintain a chain of evidence

The rationale for using multiples sources of evidence is the triangulation of evidence as described in section 4.6. Triangulation increases the reliability of the data and the process of gathering it. In the context of data collection, triangulation serves to corroborate the data gathered from other sources.

Stake (1995) and Yin (1994) identified at least six sources of evidence in case studies. The following is not an ordered list, but reflects the research of both Yin and Stake:

- Documentation;
- Archival records;
- Interviews;
- Direct observation;
- Participant observation; and
- Physical artefacts.

Not all sources are essential in every case study but the importance of multiple sources of data to the reliability of the study is well established (Yin, 1994; Stake, 1995). No single source has a complete advantage over the others; rather, they might be complementary and could be used in tandem (Tellis, 1997). Table 31 indicates the strengths and weaknesses of each type:

Source of evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> • Stable – repeated review • Unobtrusive – exist prior to case study • Exact – names etc. • Broad coverage – extended time span 	<ul style="list-style-type: none"> • Retrievability – difficult • Biased selectivity • Reporting bias – reflects author bias • Access – may be blocked
Archival records	<ul style="list-style-type: none"> • Same as above • Precise and quantitative 	<ul style="list-style-type: none"> • Same as above • Privacy might inhibit cases
Interviews	<ul style="list-style-type: none"> • Targeted – focuses on case study topic • Insightful – provides perceived causal inferences 	<ul style="list-style-type: none"> • Bias due to poor questions • Responsive bias • Incomplete recollection • Reflexivity – interviewee expresses what interviewer wants to hear
Direct observation	<ul style="list-style-type: none"> • Reality – focuses on case study topic • Contextual – covers event context 	<ul style="list-style-type: none"> • Time-consuming • Selectivity – might miss facts • Reflexivity – observer's presence might cause change • Cost – observers need time
Participant observation	<ul style="list-style-type: none"> • Same as above • Insightful into interpersonal behaviour 	<ul style="list-style-type: none"> • Same as above • Bias due to investigators' actions
Physical artefacts	<ul style="list-style-type: none"> • Insightful into cultural features • Insightful into technical operations 	<ul style="list-style-type: none"> • Selectivity • Availability

Table 31: Types of evidence [Source: Yin (1994)]

In this research, the last three types of sources are not relevant, since they are related to direct sociological investigation, and are not used. The data collected needed to be organised and documented just as it is in experimental studies (Tellis, 1997). All types of relevant documents was be added to a database, as well as tabular materials, narratives, and other notes. In recommending that a chain of evidence be maintained, Yin (1994) provided an avenue for the researcher to increase the reliability of the study. The procedure was to have reviewers for case study findings.

4.17.8.3 SEMI-STRUCTURED INTERVIEWS

The semi structured interview with open answers is of interest as it is a technique that combines the advantages of the use of closed questionnaires with those of a qualitative research interview, which can be a result perfectly suitable to capture the latest relationships between the factors studied (King, 1994). It is a highly flexible method, it can be used almost anywhere, and is capable of producing data of great depth (King, 1994). Kvale (1996) defines the qualitative research interview as “ an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena”. The goals of any qualitative research interviews are therefore to see the research topic from the perspective of the interviewee, and to understand how and why he comes to have this particular perspective. The guidelines below suggest the kinds of circumstances in which a research interview is best suited (King, 1994):

- Where a study focuses on the meaning of particular phenomena to the participants;
- Where individual perceptions of processes within a social unit are to be studied prospectively, using a series of interviews;
- Where individual historical accounts are required of how a particular phenomenon developed;
- Where exploratory work is required before a quantitative study can be carried out; and
- Where a quantitative study has been carried out, and qualitative data is required to validate particular measures or to clarify and illustrate the meaning of the findings.

At each of the case study organisations data was collected primarily through this mechanism. All interviews were taped and transcribed. The individual level data is collected by interviewing employers and other stakeholders. Constituents other than the senior management may be the best source to overcome the potential for bias (Flynn et al, 1994). The interviews at the case study organisations were focused on the activities, processes and outcome and its measurement of the FM function. The interviews incorporated the following topics:

- Core organisational information;
- FM organisational information (FM structure, FM activities and responsibilities etc.)
- Employee information;
- FM process information;
- FM and core business relationship; and
- Performance measurement issues in FM together with FM development initiatives

Other secondary data sources described in the preceding sections were also accessed, including organisational reports and other FM related documentation.

4.17.8.4 DOCUMENT EVALUATION AND ARCHIVAL RECORDS

The search for additional documentation was another source of evidence. One of the most important uses of documents was to corroborate, verify and even produce inference from other sources of evidence (Yin, 1994; Remenyi et al, 1998). The most useful documents for understanding the FM process were the organisational business plans and the written standards. Other documents of relevance included, for instance, letters, memoranda, proposals etc.

4.17.8.5 REPORTING

Each case study organisation received a report containing the main findings of the case study observations and a summary of data collected. The findings presented in the report included the outcome of interviews with the senior and middle management and operational staff. Their contribution was acknowledged although specific names were avoided throughout the text following an agreement about the confidentiality of information. These case study reports were the main basis for many refereed journal publications and presentations made at various international conferences during the process of the research. (Appendix four outlines the list of publications and presentations made during this research by the researcher).

Most of the organisations provided feedback on the practical validity of case study findings. This feedback was incorporated into the final case study reports, which

were the basis for theory development outlined in chapter eight. The accumulation of case material focusing on the same phenomenon progressively strengthened the quality and depth of the final theory development, outlined in chapter eight.

4.17.9 PRESENTATION OF CASES

This section outlines the justification for the way in which the case studies are presented in chapters five and six of this thesis. The aim of this research at the FM organisational level was to study performance measurement issues and to observe if these activities had a positive impact on the effectiveness of the core organisational objectives.

Table 32 outlines the eight case studies which were investigated (it is worthwhile to note that the abbreviations listed in the following table were used throughout this thesis to refer the relevant case studies due to confidentiality of information associated with the case studies):

Organisation	Industry sector
CABO FM	Public sector – Health
CAMA FM	Public sector - Health
CACE FM	Public sector - Health
CASU FM	Public sector – Higher Education
CASA FM	Public sector – Higher Education
CALA FM	Public sector – Higher Education
CAAB FM	Financial sector
CALO FM	Semi government sector

Table 32: Case study organisations

The decision to carry out a multi-dimensional case study survey across a number of sectors as identified in Table 32 was influenced by evidence from the literature survey that management perceptions of the role of facilities can vary considerably according to the type of business and the environment of the particular business sector. There is also the possibility that by confining the study to a particular sector not enough cases would be found to develop theory. The decision to extend the study to cover multi sector case study applications is also influenced by the fact that the process will strengthen external validity.

4.17.9.1 CENTRAL CASE AND SUPPORTING CASES

Of the eight cases, CACE FM is considered to be the most central to the development of the theory. The CACE FM case provided the basis upon which the theory development was initiated. All the other cases are used to support the findings from the CACE FM case. According to the theory developed in this thesis, the CACE FM case illustrates the best practice.

It will seem to the reader that the data collection in this case was more thorough than in the other cases. This is not so. A number of interviews were conducted for each case study and the fact that this case has been deemed the central case is because more relevant data was uncovered during the data collection and is therefore worthy of more in-depth discussions. The supporting cases either support, or build upon, theory which emerges from the CACE FM case. In addition, CACE FM case will be re-visited in chapter nine (section 9.6) in illustrating the prescriptive component of the research.

Sections 8.2.3.2, 8.3.3.2, 8.4.3.2 & 8.5.3.2 in chapter eight summarise the contribution of each case to the thesis.

4.17.10 CASE STUDY ANALYTICAL STRATEGY

Any review of research methods will be incomplete without considering the fundamental issues relating to an evaluation of the value of any research outcomes. In many respects an evaluation is often focused on measures to counteract the weaknesses inherent in the particular research strategy chosen to carry out a particular piece of research (Then, 1996). The technical language of such research evaluation includes terms such as validity, reliability and generalisability (see section 4.17.2.2). The debate is rooted in philosophical differences about the nature of reality and takes the form of qualitative versus quantitative methods, as described earlier. In general, the value of any research stems from the validity of its results and the extent of its contribution to the body of knowledge. Research into FM is no exception. These results are the outcomes from the collection, interpretation, analysis and evaluation of data.

The aspect of data analysis of the case study methodology is the least developed and hence the most difficult (Tellis, 1997). Data analysis consists of examining, categorising, tabulating, or otherwise recombining the evidence to address the initial propositions of a study (Yin, 1994). Miles and Huberman (1994) suggested analytic techniques such as re-arranging the arrays, placing the evidence in a matrix of categories, creating flowcharts or data displays, tabulating the frequency of different events, using means, variances and cross tabulations to examine the relationships between variables, and other such techniques to facilitate analysis.

Miles and Huberman (1994) further define qualitative data analysis as consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing and verification. Yin (1994) suggests that every investigation should have a generic analytical strategy so as to guide the decision regarding what will be analysed and for what reason. He presented some possible analytical techniques: *pattern matching, explanation building, and time series analysis*. The analysis of the qualitative data in this research was conducted in four phases, as illustrated in Table 33 and is discussed in detail in the following sections together with problems associated with data analysis.

Part One Analysis	Part Two Analysis
Open coding Data reduction and display	Pattern matching - Forming propositions Testing propositions (literature comparison, real life case study and assessment by experts)

Table 33: Methods of qualitative data analysis

4.17.10.1 OPEN CODING

This process began during the pilot study and subsequent data collection phases and consists of breaking down data into codes to which it pertains as described by Strauss and Corbin (1990). Hence, after the transcription of each interview, the data was arranged into categories. The codes which emerged from the open coding procedure of the case study data are shown below (Figure 36):

<p>General information (parent/core organisation and its mission and business objectives, organisational structure)</p> <p><u>FM organisational issues</u></p> <p>Its structure (within the core business and within its own organisation)</p> <p><u>FM processes</u></p> <p>Background/history</p> <p>Objectives, mission and vision</p> <p>Members</p> <p>Activities (functions carried out, its contribution to the core business of the organisation, contracting out activities)</p> <p><u>Performance measurement initiatives</u></p> <p>History</p> <p>Processes</p> <p>Critical success factors in performance measurement</p> <p>Respective performance measures</p> <p>FM and external influences</p> <p>Potential problems</p>

Figure 36: Open coding procedure for the case study data

As the open coding process took place during data collection, it was possible to identify where, from each case study, there was missing data and to address this in subsequent interviews at the case study organisations.

4.17.10.2 DATA REDUCTION AND DISPLAY

Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appears in written up field notes or transcriptions. Data reduction is not something separate from analysis. As Tesch (1990) points out, it also can be seen as “data condensation”. Data reduction occurs continuously throughout the life of any qualitatively oriented project. Even before the data is actually collected, anticipatory data reduction is occurring as the researcher decides which conceptual framework, which cases, which research questions, and which data collection approaches to choose. As with data reduction, the creation and use of displays is not separate from analysis, it is a part of analysis.

This is another technique which highlighted missing data (Miles and Huberman, 1994) and this procedure forced the researcher to reduce the content of the data by omitting those categories which were not relevant to the emergent theory and by summarising the content of the categories for each case study. Table 34 below is an extract from data display of one of the case study organisations:

Unit of information	Information collected on
General information	Parent/core organisation and its vision, mission and business objectives, its organisation structure
FM organisation	Its structure (within the core-business and within the FM organisation itself), the FM processes: background, history, objectives, vision and mission, members, activities, its contribution to the core-business of the organisation
Performance measurement initiatives	History, processes, identification of key processes in performance measurement
Performance measures	Identification of respective performance measures: the services received by the customer, cost efficiency, internal processes, and learning and growth issues.
Information management	FM and external influences, potential problems and innovation issues.

Table 34: Data display for a case study organisation

A problem with the data reduction process is that much of the in-depth, underlying explanations from the interview data are lost during the process. Therefore, it was necessary to continuously refer to the actual interview transcriptions. The data reduction and displays, therefore, had a role of summarising rather than replacing the actual interview transcriptions. The open coding, data reduction and display forms the first phase of the qualitative data analysis. It was after this stage that the survey questionnaire was developed.

4.17.11 CRITICAL ASPECTS OF THE ANALYTICAL STRATEGY

Qualitative data focuses on “words” deriving from the interviews and documentation obtained during the data collection phase of the research and, according to Yin (1994), one of the most difficult and least developed aspects of case studies is precisely the analysis of the data. The major problem is that data centred on “words” is likely to be subject of interpretation. As Miles and Huberman (1994) stress: “the apparent simplicity of qualitative ‘data’ masks a good deal of complexity, requiring plenty of care and self-awareness on the part of the researcher”. Often, the lack of hard data leads to biased interpretations, for example, interviewees own quantitative interpretation; what people say is not always what they do; the processing of information is influenced by the researcher’s treatment etc. Although this problem may be partly addressed by the use of multiple sources of evidence as discussed in

section 4.6, there is also a considerable effort to be made in the data analysis phase if it aims to achieve objective results.

Data reduction, data display, and conclusion verification were described as identified before, during, and after data collection in parallel to make up the general domain called “analysis”. The three streams can also be presented as shown in Figure 37 (Miles and Huberman, 1994). In this view, the three types of analysis activity and the activity of data collection itself form an interactive, cyclical process.

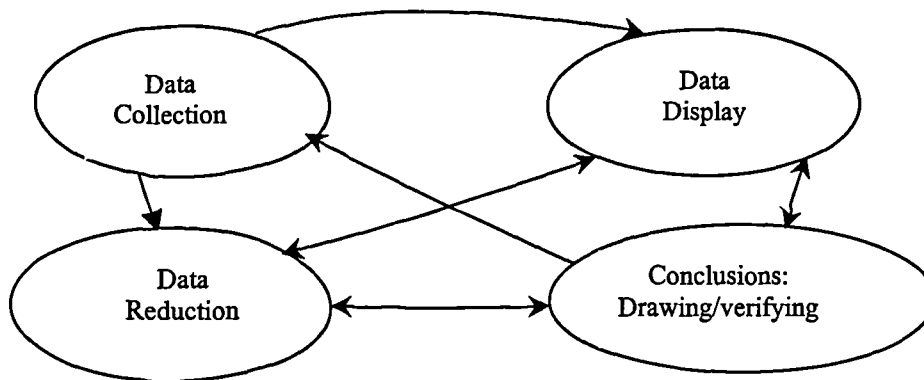


Figure 37: Components of data analysis: Interactive model [Source: Miles and Huberman (1994)]

However, there is some criticism in the literature concerning the lack of precision of the pattern matching approach. Yin (1994) alerts that there is a risk of some interpretive discretion on the part of researchers. They may be overly restrictive in claiming a pattern to have been violated or overly lenient in deciding that a pattern has been matched. Since there is no precise way of setting the criteria for interpreting these types of findings, the present research searched for sufficiently contrasting examples of empirical observations as a criteria for accepting, or not accepting, a replication of the theory.

The overall quality of the pattern matching was improved in this thesis by using quantitative indicators as described in chapter seven. Additionally, non-structured discussions with practitioners and academics, continuous publications in referred academic journals and in international conferences, visits to research institutes and the researcher’s own network of contacts helped to refine further the interpretations

of theory and practice. The corrections made through this continuous process enhanced the accuracy of interpretations, hence increasing the construct validity of the study, as recommended by Yin (1994).

4.18 PHASE ONE ANALYSIS – PERFORMANCE MEASUREMENT CONSTRUCTS

The purpose of phase one was “exploratory” investigation, “to investigate a little understood phenomenon” (Marshall and Rossman, 1995) which was ultimately used to look at “salient themes, patterns, categories...” which the study highlighted as being important to the performance measurement process. The theoretical propositions put forward were that developments in management theory would not be found to have fully permeated the world of practice.

The case study data collection process was brought to an end when the data collected satisfied two criteria: that there was no important missing data and constructs were well enough established to begin the theory development. Furthermore, at the end of the phase one analysis (that is, open coding and data reduction and display) those activities which represented “best practice”, were incorporated into the survey questionnaire. It is to the quantitative research that the discussion now turns.

4.19 SURVEY RESEARCH

To reiterate the epistemological discussions in section 4.3, the merits of quantitative research were mainly attributed to the minimisation of “observer bias”. Sayer (1992) says that the fundamental differences between quantitative and qualitative research designs are the types of questions being asked. Qualitative research questions are aimed at exploring the causal processes in particular situations and quantitative research, on the other hand, is concerned with discovering formal relationships.

Data display is generally an organised, compressed assembly of information that permits conclusion drawing and action. In this context, quantitative data analysis often deals with statistical data analysis techniques. Some of the most commonly used techniques are: Chi-square analysis, correlation analysis, factor analysis etc. A

quantitative data analysis plan generally consists of: raw data assessment; data entry and transfer; data processing; communicating findings; data interpretation; and completing data analysis.

No matter what is the nature of data collected, it is appropriate to begin analysis by examining the raw data to search for patterns. Many analyses of quantitative data concern searching the data patterns of various types, so that hypothetical relationships can be established as most quantitative type information yields data which is suitable for statistical analyses. The purpose of analysing the data is to provide information about variables and, usually, relationships between them. Hence, quantitative studies are undertaken to yield statistical evidence of relationships and their strengths, as statistics are very useful in determining directions of relationships when combined with theory and literature.

For this research, the quantitative research supports the qualitative research, that is case study research, which is the more dominant method applied in this research. Chapter seven discusses in detail, the process the researcher went through in quantitative analytical aspect of the research.

4.20 PHASE TWO ANALYSIS - THEORY BUILDING AND VERIFICATION

This research is best described as a study which analyses FM performance measurement issues against the theoretical framework developed based on “best practice” general performance measurement practice. One of the outcomes of this study will be a sharper and more insightful questioning of what is known about performance measurement in FM. Using Dubin’s (1978) phrase: “This should add knowledge to the field by increasing the realms of the known and the knowable and by pointing out more accurately the realms of unknown”.

4.20.1 THEORY BUILDING AS AN ITERATIVE PROCESS

As described in the previous section, theory building can be considered as a process. Many methodologists (Yin, 1994; Eisenhardt, 1989) stress that, except perhaps for

“grounded theory”, all research processes aimed at theory development should start with an initial definition of the research question in at least broad terms and a few initial propositions operationalised in a “research protocol”. This definition, as described in section 4.5, and the associated propositions, are necessary to focus the research, which is especially useful when the case study strategy is chosen.

In terms of the steps in the theory-building process, this approach can be typified by a gradual shift in emphasis from exploration to explanation, followed by an explicit verification phase. However, Schuring (1997) subsequently posed the question as to whether the final step of theory verification is actually necessary if the researcher has properly documented his previous research activities, findings and arguments for adapting the theory (see chapter three). This view coincides with Miles and Huberman (1994) and Eisenhardt (1989), who have described the development of theory from case study research as an iterative process which ideally ends when theoretical saturation is reached. Thus, theory is built during the case study process, not in advance, and validation is integrated in the process. In this thesis, this is detailed in sections 4.20.1.1 and 4.20.3.. Eisenhardt (1989) further noted that such an approach is especially appropriate, “when little is known about a phenomenon, current perspectives seem inadequate because they have little empirical substantiation or they conflict with each other or common sense”.

4.20.1.1 PATTERN MATCHING

For qualitative data analysis, one of the most desirable strategies is to use a pattern-matching logic (Yin, 1994). Trochim (1989) considers pattern matching as one of the most desirable strategies for analysis. Such logic compares an empirically based pattern with a predicted one. Campbell (1975) describes pattern matching as a useful technique for linking data to the propositions and asserted that pattern matching is a situation where several pieces of information from the same case may be related to some theoretical proposition.

In this process, when similar results happen and for predicable reasons, the evidence produced is seen to involve the same phenomena described in the theory, and is called “literal replication” (Pacitti, 1998). In contrast, when the qualitative data

analysis produces contrasting results, but also for predictable reasons, it is called, “theoretical replication”. However, there is some criticism in the literature concerning the lack of precision of the pattern matching approach. Yin (1994) alerts that there is a risk of some interpretive discretion on the part of researchers. Thus, the overall quality of pattern matching could be improved by using quantitative analytical strategies.

4.20.2 FORMING PROPOSITIONS

The second phase of the data analysis was the formation of performance measurement constructs aiming at building theory. This was done through the pattern matching process, as described in section. 4.20.1.1. This strategy is in fact a special type of pattern matching, but the procedure is more difficult and therefore deserves separate attention. Here, the goal is to analyse the qualitative data by building an explanation about the situation. To “explain” a phenomenon is to stipulate a set of causal links about it. Increasing the accuracy of the pattern matching described above and explanation building analysis is one of the key strategies in searching for the typical behaviour and practical boundaries of quantitative indicators. This satisfies the requirements laid down by Pacitti (1998) on forming propositions.

4.20.3 TESTING PROPOSITIONS

Conclusion drawing and verification, in Miles and Huberman’s (1994) opinion, is only half of a Gemini configuration. “Final” conclusions may not appear until data collection is over, depending on the size of field notes; the coding, storage, the retrieval methods used; and the sophistication of the researcher, but they often have been prefigured from the beginning, even when a researcher claims to have been proceeding “inductively”.

Therefore, the final phase of this theory building process as outlined in Eisenhardt (1989) and in Table 35 is that of testing propositions where those statements developed for each case are compared. It was at this stage that CACE FM case emerged as being the strongest in terms of developing theory around the subject area of performance measurement in FM. Hence, the other case study organisations were

compared to the CACE FM case to identify which propositions were supported either through congruence and improved performance or divergence and lesser performance. Those statements which were neither found to concur with or differ from the CACE FM case were also included in the final analysis as they indicate contextual differences. According to Strauss and Corbin (1990), non confirming or falsifying statements should be included as: “ we are trying to capture as much of the complexity and movement of the real world as possible, while knowing we are never able to grasp all of it. Recall, we are not counting numbers, though we are looking for evidence to support and qualify our statements of relationship regarding the data. The discovery of differences among and within categories, as well as similarities, is crucially important”.

The analysis techniques outlined above form an iterative process of proposing and checking statements, that is, of induction and deduction (Turner, 1983).

4.20.4 THEORY GENERATION VERSUS THEORY TESTING

It is important to emphasise the difference in approach in a research strategy that is driven by “theory generation” to the one that is governed by “theory testing”. The generation of theory is very much an attempt to find new ways of approaching reality, the need to be creative and receptive in order to improve the level of understanding (Then, 1996). De Vaus (1997) holds the view that the development of good explanations involves the related processes of theory building and theory testing. He suggests that, in practice, there is constant interplay between constructing theories and testing them. For the current research, the research strategy is very much driven by theory generation. The generation of theory is grounded in empirical data gathered in descriptive case studies and via the postal survey questionnaire. This theory generation process will be discussed in the next section, as summarised in Table 35:

Step	Activity	Reason	Action taken
<p>DATA DESIGN</p> <p>Getting started</p> <p>Selecting cases</p>	<p>Definition of research question</p> <p>Possibility of prior constructs</p> <p>Possibly a priori constructs</p> <p>Specified population</p> <p>Theoretical and not random sampling</p>	<p>Focuses on efforts</p> <p>Provides better grounding of construct measures</p> <p>Retains theoretical flexibility</p> <p>Constrains extraneous variation and sharpens external validity</p> <p>Focuses efforts on theoretically useful cases, i.e., those that replicate or extend theory by filling conceptual categories</p>	<p>Research objectives defined from literature review and pilot study findings</p> <p>A priori constructs (a theoretical framework) developed from literature review</p> <p>Different case studies among disciplines selected to extend the theory</p>
<p>DATA COLLECTION</p> <p>Crafting instruments and protocols</p> <p>Entering the field</p>	<p>Multiple data collection methods</p> <p>Qualitative and quantitative combined</p> <p>Overlapping data collection and analysis</p> <p>Flexible data collection methods</p>	<p>Strengthens grounding of theory by triangulation of evidence</p> <p>Synergistic view of evidence</p> <p>Fosters divergent perspectives and strengthens grounding</p> <p>Speeds analyses and reveals helpful adjustments to data collection</p> <p>Takes advantage of emergent themes and unique case features</p>	<p>Interviews, document evaluation and archival analysis</p> <p>Feedback provide to organisations throughout research to validate constructs and findings</p> <p>Grounded theory techniques of overlapping collection and analysis of qualitative data</p> <p>Missing data was easily identifiable at the data collection phase and new ideas are developed</p>
<p>DATA ANALYSIS</p> <p>Forming propositions</p>	<p>Tabulation of evidence for each construct</p> <p>Replication, and not sampling logic across cases</p> <p>Search evidence for 'why' behind relationships</p>	<p>Sharpens construct definition, validity and measurability</p> <p>Confirms, extends and sharpens theory</p> <p>Builds external validity</p>	<p>Pattern matching</p> <p>Forming propositions</p> <p>Testing propositions</p> <p>Explanation building</p>

<p>LITERATURE COMPARISON Enfolding literature Reaching closure</p>	<p>Comparison with conflicting literature Comparison with similar literature Theoretical saturation when possible</p>	<p>Builds internal validity, raises theoretical level, and sharpens construct definitions Sharpens generalisability, improves construct definition and raises theoretical level Ends process when marginal improvement becomes small</p>	<p>Findings compared with literature framework Coding and data display techniques (pattern matching) made data saturation very visible (The richness of this was further envisaged by the questionnaire survey)</p>
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Table 35: Process of building theory from case study research [Source: Edited from Eisenhardt (1989)]

4.20.5 PROCESS OF BUILDING THEORY FROM CASE STUDY RESEARCH

Eisenhardt (1989) discusses methods and techniques, which can be used in the design of case study research, including data collection and analysis, specifically to build theory. In a review of literature, which includes authors such as Yin (1981), Miles and Huberman (1984) and Eisenhardt (1989) developed a process for building theory from qualitative data, taking into account the problems of validity and reliability. Table 35 illustrates the strategy described by Eisenhardt (1989). The table was edited to incorporate an extra column to incorporate the methods, which follow in this research study to describe the activities undertaken to satisfy each criterion. The activities can be regarded as falling into three categories of data design, data collection and data analysis as shown in Table 35. These three categories formed the format of the sections already discussed above.

For ultimate success, there has to be a reciprocal flow of theory to practice and, of new ideas, from practice to theory (Santos, 1999). Based on this argument, this study could therefore be described as a combination of theory building and verification. It is “theory building” in the sense that it uses modern principles and concepts of performance measurement as the theoretical basis and tries to develop performance measurement constructs in FM environments. Therefore, the research will hopefully improve the content of the theory itself. On the other hand, the work is also about “theory verification” since it is an investigation of the practical validity, in FM, of a number of existing general theoretical propositions of performance measurement, as described in chapter nine. (This process has further increased the external validity of the theory development) In this reciprocal way, the present research aims to contribute to expanding the sphere of industries where the theoretical propositions are valid.

4.20.6 LITERATURE COMPARISON

After cross case comparison of propositions, the emergent theory is compared with the relevant theories outlined in literature review stage and others which were not

included but which emerged as being important during the research. This discussion takes place in section 10.3.4, in chapter ten.

4.20.7 PERFORMANCE MEASUREMENT TOOL -VALIDATION AND PRACTICAL APPLICATIONS

Developed performance measurement theory in FM and the theoretical framework taken together was validated through a workshop. The participants of the validation were drawn from the participants of the SPICE FM (Structured Process Improvement Framework for Construction Enterprises – Facilities Management) research project that Salford University was undertaking during the period of 1999-2001, comprising practitioners in the field of FM and academics with an expert knowledge in the field. The outcome of this process became part of what was called a “performance measurement tool”. This “tool” was then used to promote the creation of a “performance management philosophy” in one of the case study organisations. Chapter nine describes this process in detail.

4.21 SUMMARY – PART TWO

This section has described the thesis design mechanisms through which the primary thesis questions will be answered. Yin (1994) states that: “Every type of ... research has an implicit, if not explicit, research design. In the most elementary sense, the design is the logical sequence that connects the.... data to a study’s initial research questions and, ultimately to its conclusions.”

From a philosophical point of view the research design must be defined so as to circumscribe the research to be undertaken (Featherstone, 1999). Otherwise an unintelligible void can emerge leading to an uncoordinated and disparate research programme. Lees (1975) refers to the emergence of this void, which, if left unfilled through the absence of clear cognitive endeavour to define the research programme to be undertaken, can result in vague and meaningless research. Therefore, it is suggested that the basic steps of the research strategy must include:

- An understanding of the fundamental research issues likely to affect the investigation and measures to overcome them;

- An understanding of research methods and justification for selection; and
- A clear definition of all the elements and components that comprise the investigation.

The aim of this research design, as described in this section is therefore, to enable the research to be intelligible and generally recognised within the total framework of the chosen subject area.

4.22 CHAPTER SUMMARY – FROM DESCRIPTIVE TO PRESCRIPTIVE RESEARCH

The epistemological discussion at the beginning of the chapter in Part one concluded that this research has not adhered to any specific philosophical doctrine and is a combination of positivism and realism in its aims and objectives which are characterised by theory building and theory verification rather than a hypothesis testing process, incorporating the triangulation method of combining qualitative and quantitative research. The research strategy and journey of the research process is summarised in Figure 38:

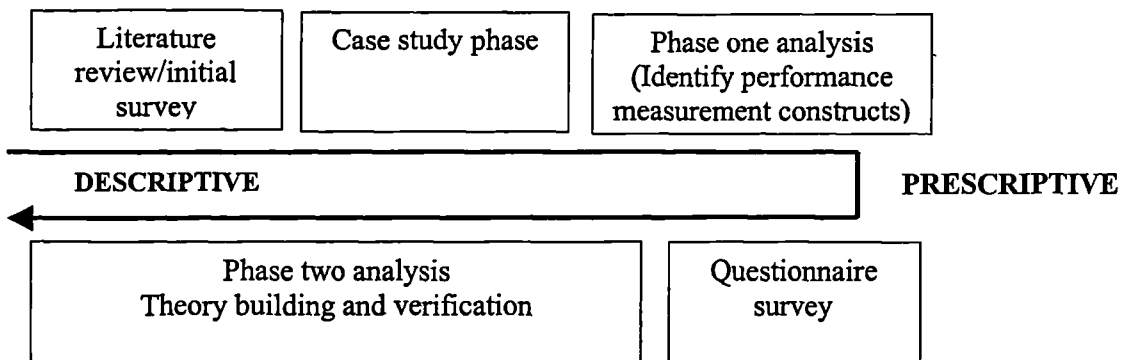


Figure 38: Journey of the research strategy

The first stage of research is the literature review phase, which is aimed at identifying potential research topics. Although this marked the beginning of the research, it was a continuous process throughout the last three and a half years.

The pilot study was conducted to uncover the operationalisability of the constructs identified in the literature review and to more fully understand the context within which the research takes place. From the pilot study and literature review the research objectives and case study strategy were developed. The qualitative fieldwork consists of eight case studies which are described in section 4.17.8.2. The case study findings are presented in chapters five to six. The CACE FM case is presented in chapter five and is the central case of the thesis as it represents best practice in terms of performance measurement in FM. The other cases are referred to as supporting cases as they either replicate or build upon the theory emerging from the CACE FM case.

The analysis of the qualitative data was conducted in two stages: the first stage uncovered the main performance measurement constructs used by the case study organisations and these constructs formed the basis for the survey questionnaire described in section 0 in chapter seven. The distribution of the questionnaire did not allow rigorous inter industrial comparison but the quantitative analysis that was conducted suggested that there were no major differences between the represented industries, although the wide spread of industries did not yield a sample on which to base such analysis. The quantitative findings are presented in chapter seven.

The second stage consisted of the detailed analysis of the qualitative data-using proposition forming techniques and of the quantitative data using statistical techniques. The statistical findings indicated relationships in the qualitative data that may otherwise have gone unnoticed. The findings from this second stage are presented in chapter eight.

Findings from the second phase analysis led to the creation of the “performance measurement tool” for FM. This tool was tested through a working panel. The process is described in chapter nine.

The stages of the research outlined in this chapter represents a methodology which embraces both descriptive and prescriptive research, as recommended by Pacciti (1998). The literature review phase of the research marked the beginning of the

descriptive research. As the case studies progressed and the performance measurement constructs emerged from the initial analyses there was a definite move along the prescriptive-descriptive spectrum. The second phase of analyses involved an iterative investigation of the qualitative and quantitative data, which encompassed the theory building process. Hence, output of the research ends where it began, at the descriptive end of the spectrum as suggested by Pacitti (1998).

The findings from this research are presented in chapter eight. They are derived from a rigorous research design which has taken into account the shortcomings of quantitative and qualitative research, using one method to overcome the limitations of the other. The findings present both descriptive accounts (chapter eight) and prescriptive tools (chapter nine) thereby contributing both to theory and practice.

In this context, next chapter, chapter five details the central case of this thesis, CASE FM case. General information and FM specific information together with information on performance measurement approaches in FM are followed.

Chapter 5

Central Case Study

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

“There is no more difficult art to acquire than the art of observation”
W.Osler

5.1 OVERVIEW

Chapter four described the different aspects of methodological issues of this research such as the philosophical approach and the reasons for case study as the research strategy. It also included a description of the research design, the observational protocol and the criteria for selecting the case studies.

This chapter outlines the central case study of the thesis, the CACE FM case. The CACE FM case represents the case which forms the basis of the theory as emerged from the research. CACE FM represents an FM organisation of a NHS (National Health Service) Trust situated in the Northwest of England. In particular, this case is the starting point for the discussion in chapter eight surrounding performance measurement in FM that was introduced in chapters one and two. CACE FM case is a good example of a reasonably good practice in performance measurement in a FM Organisation. (Due to the nature of the information involved in the study, abbreviation “CACE FM” is used without disclosing the real identity of the case organisation. This too applies to other supporting cases described in chapter seven)

The data for the case study was gathered from a wide number of internal documents and from several discussions with various representatives within the organisation. Initial contact was made with the Facilities Director through the Regional NHS Estates Director. (The researcher acknowledges that this case study formed a part of a project carried out by the University of Salford around the same time. This helped the researcher to collect information from this organisation for the researcher’s doctoral studies). Interviews were conducted with several managers to collect data regarding the organisational structure, recent changes, and generally the way in which FM is delivered at CACE. The majority of the documents contained information which is confidential to the organisation but has been made available to the researcher for the purpose of this case study. Accordingly, there are no specific references within the text to identify the discrete sources of information, and no documents are listed in the bibliography.

The chapter sections are separated into areas based on descriptions of the organisation. The information is presented from the FM perspective although employees from other functional areas were interviewed as and when appropriate. The in-depth interpretation of the data is presented in chapter eight although at the end of the case description in this chapter, some preliminary information relating to the data analysis is given.

5.2 BACKGROUND INFORMATION – CACE IN GENERAL

CACE FM is the Estates and Facilities Directorate of a Healthcare Trust located within the centre of the North West of England and provides a wide range of service to a multi-cultural and diverse population. The Trust recognised that the cultural and economic diversification of its patients and visitors requires services that were timely and sensitive in approach, ensuring the delivery of appropriate local and regional healthcare services.

The CACE Trust, as a major service provider, was renowned as a national and, in some cases, international centre of excellence for healthcare and research. As a Trust, it had a proven track record both in the delivery of quality care and in the development of students from all professions engaged in health. This was ultimately achieved through closely fostered relationships with the Universities within the area. In partnership with the Universities the Trust had an excellent academic record and was committed to providing the highest standards of education, teaching, research and development (CACE Internal Document, 2000).

The CACE Trust, as a major service provider, endeavours to ensure that work by clinical and managerial staff continuously develops clinical services in order to remain at the forefront of healthcare delivery, research and teaching. Figure 39 provides information on the Trust “at a glance”:

- Employs 5,500 staff
- There are 101 buildings covering 67 acres
- The annual budget is £ 190 million
- There are 796 inpatient and 97 day case beds currently available on site
- On average, 500,000 patients are treated each year
- Provides a number of community services, including Macmillan Nurses, Dietetics, Clinical Psychology, Physiotherapy, Occupational Therapy and Genito-Urinary Medicine Nursing. Last year, there were over 140,000 community contacts.

Figure 39: Trust at a glance

5.2.1 ORGANISATIONAL STRUCTURE AND STRATEGY

To facilitate the implementation of the Trust Corporate Agenda, a review of the organisations structure was recently undertaken. The Trust Board ratified the management re-structuring following an extensive consultation process within the trust. The changes included the realignment of Trust Board Directors portfolios to ensure that the Trust Corporate objectives are met and that key tasks are achieved within the next twelve months and beyond. The management arrangement of the Trust board is illustrated in Figure 40:

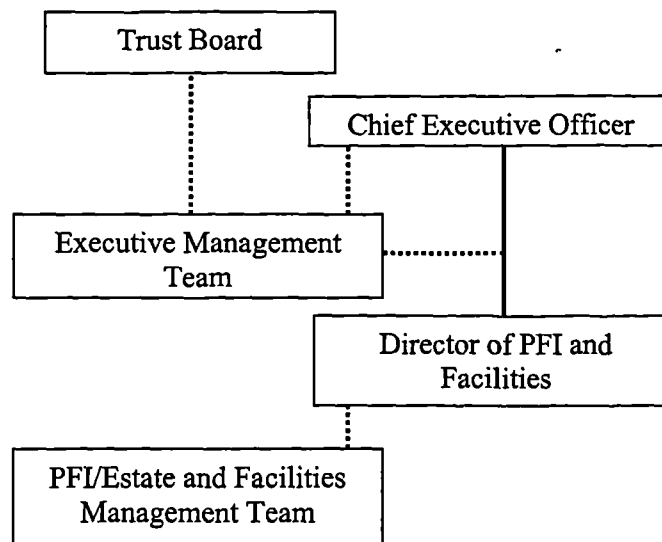


Figure 40: Management structure

The Identification of the organisational structure created an understanding of the relationships that CACE FM had with the rest of the Trust. This further helped to

understand and communicate the Trust strategy as a whole, throughout the Facilities Directorate of the Trust.

5.2.1.1 ORGANISATIONAL STRATEGY

Strategies are the statements of the organisation's highest-level purpose, desired end-state, and methodology for achieving that end-state from its business systems. The Trust's business strategic aims which were seen to be response to change, and to which FM must align itself, include (CACE Internal Document, 2000):

- To provide the highest quality comprehensive acute and chronic care for those who live and work in and around North-West of England;
- To develop partnership arrangements with health commissioners, health agencies and other trusts to agree the strategic direction for services;
- To deliver a wide range of robust and appropriate clinical services whilst demonstrating that resources are used as efficiently and effectively as possible;
- To provide facilities that are appropriate for the delivery of the Trust's core services;
- To ensure that the Clinical and Corporate Governance standards are implemented and are continuously monitored to show demonstrable improvement in the effective delivery of clinical services;
- To create an environment where inquiry and review of practice thrive and where adjustments to practice and service development are promoted in a culture that has a strong evidence-base;
- To be a major centre for the development of teaching and research, working in partnership with other professional bodies;
- To ensure that the Trust continues to meet and improve on patient waiting time targets and other applicable quality standards;
- To ensure that there is a balance between primary and secondary care to ensure that services can be effectively delivered to patients;
- To provide facilities that are appropriate for the delivery of the Trust's core business; and
- To ensure the services are of the highest standard by recruiting, retaining and investing in the most precious resource – the staff.

5.2.2 INFLUENCING THE FUTURE

The Trust recognised that, over the next few years, its services will be delivered in a challenging environment where a range of political, economic, social and technological demands, both inside and outside the NHS, will shape the future service. The Trust's long-term partnership with the neighbouring universities continued to be a key to its continued development. The Trust had contributed to the University's recent review of research and looked forward to integrating its R&D activity into mainstream services. The Trust had also strengthened its relationships with other healthcare organisations in order to improve the continuity of care and develop a seamless service for patients. Thus, the Trust benefited considerably from a close collaboration with both healthcare organisations and voluntary organisations.

5.2.3 PUBLIC ACCOUNTABILITY

The CACE Trust has welcomed the renewed emphasis on the values of Corporate Governance to ensure openness and accountability in the public service. Trust Board meetings have been held in public since 1997. As part of the continued commitment to openness, local Members of Parliament and councillors were briefed on the policies and key operational issues, and the Trust values their comments and input, particularly when acting on behalf of the general public in regard to the business of the Trust.

The Trust was committed to exploring other opportunities presented by the policies of the Government, such as the National Framework for Health and the development of Health Improvement Programmes. The Trust was keen to work with other healthcare organisations and related agencies to develop the partnership culture necessary to tackle the health issues facing the North West Region.

The Trust has been successful in collaborating in the bid to be one of the five centres in the country to establish new clinical research facility funded by the Wellcome Trust. The design of this new building encompassed major facilities including a dynamic Human Performance Laboratory. Building works for this exiting project were underway at the time of the study.

5.3 FACILITIES MANAGEMENT STRATEGY AND CONCEPTS

Estates and facilities are essential elements in the success of modernising the NHS (Pike, 2000). The NHS Plan (Department of Health, 2000a) emphasises the need for adequate capacity to treat and care for patients, by providing a modern high quality environment with modern systems of care. It also stresses the importance of the NHS becoming a better employer including providing a modern working environment with good quality facilities for staff employed. Thus, FM issues are vital to the success of the NHS plan.

5.3.1 FACILITIES MANAGEMENT STRATEGY

The government's overall aim for the Department of Health is to improve the health and well being of the population through the resources available, and the government is determined to modernise health and social services and has developed a clear, linked set of policies to do so. In this context, an estate and facilities strategy plays a vital role. A robust estate strategy is essential to ensure that there are high quality well-located buildings which are in the right condition to facilitate the delivery of modern patient care services. The benefits to a Trust and the wider health economy of having a formal facilities and estates strategy include the provision of (Department of Health, 2000b):

- An assurance that the quality of clinical services provided will be supported by a safe, secure and appropriate environment;
- A method of ensuring that capital investments reflect services strategies and plans;
- A plan for change that enables progress towards goals to be measured;
- A strategic context in which detailed business cases for all capital investment can be developed and evaluated, however funded;
- A clear statement by the Trust to the public and staff that it has positive plans to maintain and improve services and facilities;
- A means by which a health authority can identify capital investment projects which will require its formal approval;
- A clear commitment to complying with sustainable development and environmental requirements and initiatives;

- An assurance that asset management costs are appropriate, and that future investment is effectively targeted;
- Assurance that risks are controlled and that investment is properly targeted to reduce risk; and
- A clear commitment that surplus assets are and will be identified over time, and will be either disposed of or used for future service needs.

In this context, CACE FM's main strategic objectives could be listed as follows:

- *Obtaining best value* - agree, implement and deliver the facilities contribution to the relevant phase of the financial recovery plan;
- *Developing the estate* - the long-term investment to re-develop the site;
- *Developing the estate via PFI (Private Finance Initiatives)* – “Health care in Partnership” programme;
- *Minimising risk/controls assurance* – to deliver upon corporate governance requirements, which have been set by the NHS Executive, including progress in controls assurance;
- *Operational services* – continue to provide and develop high quality hotel and estate operational services in support of clinical care; and
- *Training and development* – secure the renewal of the Investors in People Award

The CACE FM as outlined above, was one of the largest most diverse Directorates within the Trust. It also has one of the largest PFI developments within the NHS to deliver upon. Clearly, the CACE FM had an immense and important role to play over the next few years in developing the estate and supporting clinical care.

CACE FM's estates and facilities strategy contributed to the implementation of high quality health improvement programme and in turn to improving patient care in the context of modernising the NHS (Figure 41).

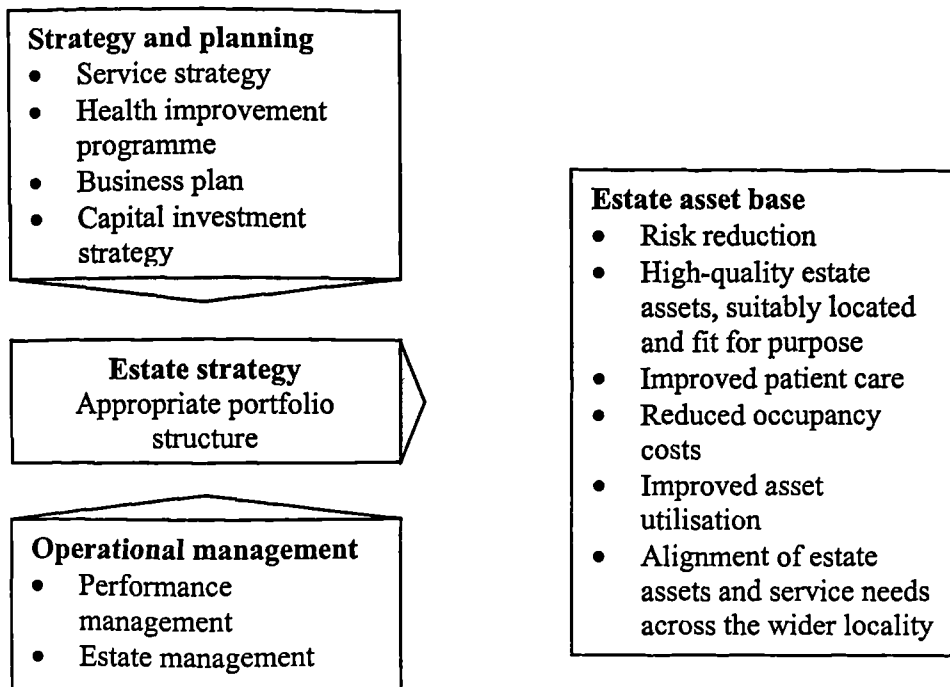


Figure 41: Outcomes of CACE’s facilities and estate strategy [Source: CACE Internal Document (2000)]

5.3.2 NATURE OF THE FACILITIES MANAGEMENT MODEL AND SIZE OF OPERATION

Section 2.3.5 of chapter two has demonstrated that FM organisations vary considerably from one organisation to the other. This is due to the fact that they have developed in response to the particular needs of their organisation. In this context, CACE FM represented the “single site model”. According to this definition, CACE FM tends to own the buildings that they occupy and therefore were prepared to spend more time and money on them, hence the establishment of a separate department to deal solely with facilities issues.

The Trust was undertaking an extensive programme of reconstruction to its outdated buildings that will serve to enhance the clinical services located on the site through Healthcare in Partnership. The developments included the transfer of accident and emergency services from a neighbouring hospital, requiring the expansion of the

accident and emergency department, and the building of a new ward and day case theatre block to accommodate the transfer of services.

5.3.3 STAFFING AND STRUCTURE OF THE FACILITIES MANAGEMENT ORGANISATION

PFI, Estate Development and Facilities Directorate (CACE FM) had a total budget of £ 13.6 million, with 637 staff members. Accordingly, within the Trust, CACE FM was made up from three departments and these were:

- PFI and Interim Strategy Project Management;
- Property and Estate Development; and
- Hotel and Estate Operational.

The recently configured Directorate structure provided a firm basis to move forward and deliver the Trust's new Estate Strategy; "Healthcare in Partnership", whilst at the same time providing and developing high quality supporting services for clinical care as the Trust's estate is reconfigured over the next few years (CACE business plan, 2000). Following are the sub-departments within the Facilities Directorate:

- Domestic/linen/accommodation;
- Porterage/transport/receipt despatch;
- Medical electronics and maintenance;
- Operational estates;
- Printing services;
- Security;
- Catering services; and
- Car parking

5.3.4 FACILITIES MANAGEMENT PROCESSES

Following are the major processes and functions that the Directorate carried out within the Trust:

- Design and execute projects (minor projects, capital and property services (inc. PFI, design services);

- Estate services (estates information -IT/ asset register/ property appraisal, property services - energy/maintenance/property – residential services);
- Hotel services (catering, portering, premises, security services – car parking, telecommunications, domestic services) ;
- Administration (business and contracts, accounts and purchasing, office management – including clerical support);
- Medical electronics (electronic equipment, bio-medical equipment);
- Quality management (equipment, building, internal audit, health and safety, controls assurance);
- Transport services;
- Patient services (hairdressing, chaplaincy);
- Reprographic services; and
- Receipt and distribution

5.3.5 PRIVATE FINANCE INITIATIVES AND ITS INVOLVEMENT WITH FACILITIES SERVICES

In the immediate future, CACE FM will be involved in the development of the new hospital. As part of this process, detailed output specifications for all the FM services have been prepared and agreed. Mechanisms for activity related costs, service performance monitoring and service failure penalties have also been determined. One area that was recognised, as being significant to all of these plans was the impact that service failure could have on a building's availability. This point has been addressed fully between the CACE FM and the consortium.

The new arrangement will aim to provide a range of traditional FM services but these will not include any clinical services. All FM services will be based on the output specification and will encourage generic workers who have the ability to undertake any reasonable tasks within the realms of FM. The generic team approach has been developed for the future to maximise operational efficiency through multi skilling at the margin of the traditional service boundaries. This merging of cultures aims to ensure that FM staff becomes fully integrated members of ward and departmental teams.

The CACE board had recognised that the success of these plans depend completely on the full support of all their employees. To achieve this they have defined the following strategies:

- The establishment of clear lines of communication and liaison at all levels;
- A process of task rationalisation to re-engineer the traditional practices;
- A total review of the workforce skill base and the establishment of a planned approach for initial and ongoing re-training needs;
- The marketing of culture change with the emphasis on enhancing patient stay experience; and
- The re-modelling of the measurement criteria and practices used to assess the level of quality and customer satisfaction with services.

Within the basic FM culture that was emerging at CACE, there appears to be the very strong desire to concentrate their activities on patient-focused care and fully adopt the quality, value and risk-led initiatives. Through this, there may well be a way of achieving a better healing environment as well as an improved working environment for CACE Trust for the future.

5.3.6 MANAGEMENT OF FACILITIES MANAGEMENT SERVICES

Some of the functions described in section 5.3.4 above were retained in-house due to the constant demand for those services. Each of the in-house functional units was responsible for carrying out work in their own area of expertise. Other facilities related services were contracted out due to their specialist nature or fluctuating demand, such as cleaning and major building work. Regular checks were carried out to ensure that the work is consistent with the specified requirements.

5.3.7 MEETING CURRENT CORE BUSINESS NEEDS

The Trust was embarking on a long-term investment to significantly redevelop the site and facilities available for patients. This redevelopment was in two phases, these being an interim strategy, predominantly linked to the transfer of activity and services from a neighbouring hospital, and a major redevelopment of the site through the PFI. Accordingly, the following were planned for the immediate future:

- Accommodate transfer facilities from the neighbouring hospital;
- Redevelopment of laboratory medicine facilities;
- Multi-story car park development; and
- Redevelopment of the site through the Private Finance Initiative

5.4 PERFORMANCE MEASUREMENT IN FACILITIES SERVICES

Performance management theory is clear that to be truly relevant, performance measures must not only be derived from the organisation's strategy, they ought to be a key part of its active implementation. NHS Plan (Department of Health, 2000a) stresses the need for such a system within NHS Trusts. According to its press release, the NHS Plan: "will create a NHS in which the patient is the most important person..... care and treatment will be redesigned around their needs and at their convenience". The Plan was drafted after consultation with healthcare professionals, managers and academics, general staff and the public.

Accordingly, the need to monitor performance and progress of the Facilities Business Plan both within CACE FM and externally was of paramount importance. Any measures that CACE FM used should be such that they inform management as to the progress being made towards the NHS Plan aims and allow immediate correction when deviation occurs.

In this context, CACE's estate and facilities strategy was the starting point for the implementation of performance management measures to improve performance and utilisation of the estate. In this, consideration was given to procurement and disposal issues as well as operational issues. The performance measurement programmes were initially introduced "to provide CACE with a common language that would help its people understand the focus on shared business objectives and drive through the re-structuring process", commented Facilities Development Manager. Initially, it was revealed that both the concepts of NHS Plan and Controls Assurance have been used as a basis for CACE FM's "measurement journey".

5.4.1 PERFORMANCE APPRAISAL AND DEVELOPMENT REVIEW

This was a formal process, taking place at planned fixed intervals, usually annually within CACE FM. The following statements describe some of the characteristics of the process (CACE Internal Document, 2000):

- *A review and planning process* – certainly the past is appraised, but not to apportion blame. The purpose is to understand the factors that caused past performance and to plan to change them so that current performance be improved in the future;
- *Objective-based* – these are the standards which individuals set themselves and strive to achieve. Performance is appraised against last years' objectives and the key outcome is a new set of objectives for the next year;
- *A development opportunity* - two of the major variable affecting the performance are skills and knowledge. One of the key outcomes of appraisal is the development of a plan to give the extra skills and knowledge needed, both to achieve the new objectives and to prepare for additional responsibilities;
- *Participative* – operatives usually know more than their manager about the reasons for past performance and what could be achieved for the next year. Managers therefore need maximum input from these operatives in the formulation of the objectives; and
- *Empowering* – it involves operatives in the management process, problem analysis, what objectives should be and how they will be achieved.

Further, comparing the CACE FM performance with similar facilities directorates within Trusts and against regional and national averages allowed the identification and targeting of the areas where performance should be improved. It enabled more effective prioritisation, allocation, and targeting of resources and management effort to secure improvements.

5.4.2 CONTROLS ASSURANCE PERFORMANCE MONITORING

Controls assurance is a holistic concept based on best governance practice and is a crucial aspect of performance management within NHS (Department of Health, 2000b). It is a process designed to provide evidence that NHS organisations are doing their “reasonable best” to manage themselves so as to meet their objectives and

protect patients, staff, the public and other stakeholders against risks of all kinds (Department of Health, 2000b).

Fundamental to the process was the effective involvement of people and functions within CACE FM through the application of self-assessment techniques to ensure objectives are met and risks are properly controlled. Risk management and internal control were firmly linked with the ability of CACE FM to fulfil clear objectives.

At CACE FM, a number of key controls assurance standards relating to risk management and organisational control have been developed and are described in chapter eight (see section 8.3.2.2.1.4 of chapter eight). Assurances were given with reference to independent audit (internal and external) and the achievement of satisfactory outcomes, or results. The desired outcome of CACE's activities were obtained by:

- Establishing an appropriate *accountability* framework within which the internal control system operates and which encompasses management structures and practices;
- Ensuring that the core *processes* required to produce the desired outcomes are in place - this includes a risk management process which is required to ensure that all risks which could, potentially, threaten the ability of CACE to meet any or all of its objectives, are systematically identified, assessed and treated;
- Having the necessary *capability* to ensure the processes and internal controls work effectively;
- Management continuously *monitoring* and *reviewing* the system of internal control to ensure that it is working properly and to *learn* and, where necessary, *improve* the accountability arrangements, processes or capability in order to deliver better *outcomes*; and
- Ensuring proper *communication* and *consultation* at all levels within the organisation and with external stakeholders

Self-assessment enabled CACE FM to measure and therefore improve performance based on the controls assurance standards. It involved getting the right people and functions together to openly and honestly examine the workings of CACE FM against the standards. Wherever possible, objective evidence was produced to verify compliance with the standards. Strengths and weaknesses were identified and from the weaknesses, opportunities for improvement are determined and an action plan

was produced. With the controls assurance standards, scores were generated as benchmarks for performance improvement. This concept at CACE FM is illustrated in Figure 42:

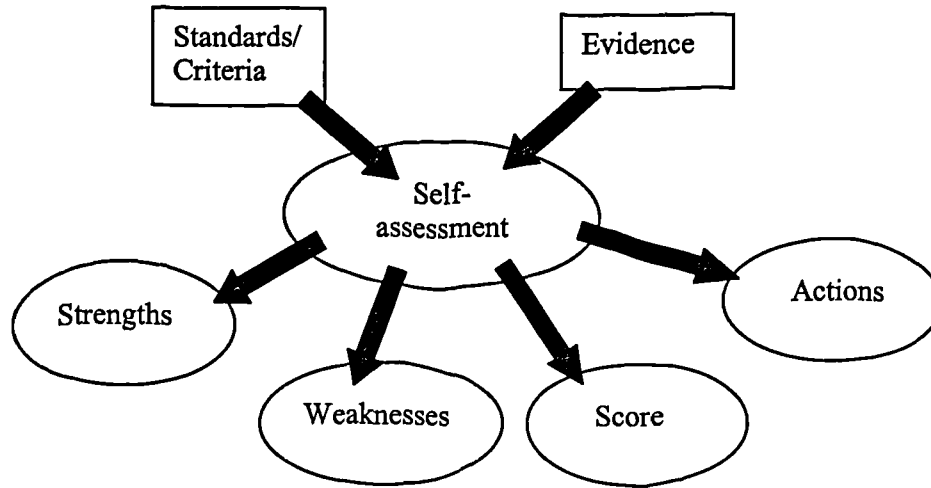


Figure 42: The concept of self-assessment [Source: CACE Internal Document (2000)]

5.4.3 PATIENT PERCEPTION OF THE ENVIRONMENT

Buildings within the Trust should provide safe, stable and predictable environments, which enable better care and treatment for patients. From entering the site, the first impressions of the physical appearance and layout of the healthcare facilities are important because they influence the behaviour of all the people who use it: patients, staff and visitors. A physical environment that supports the psychological needs of patients and visitors were considered a positive environment at CACE.

A toolkit developed by NHS (NHS Executive, 2000a) was used at CACE FM to assist in identifying those areas which require improvement for assessing the quality of the patient environment. The toolkit used the patient surveys to give high-level indications of people’s satisfaction in 13 main categories.

5.4.4 INVESTORS IN PEOPLE

CACE first achieved this award three years ago (in 1997) and has worked hard towards re-accreditation in November 2000. It was continuously seeking to improve the processes and practices and specific improvements have included revisions to the

Corporate Induction Programme, the publication of the course guide and revisions to the appraisal system to make it better suited to the organisation's changing requirements.

CACE FM continued to train and develop a wide range of FM professional staff. Management development had taken a high profile as it seeks to equip key people with the change management skills they will require, given the agenda ahead. Particular emphasis has been placed on the role of the CACE FM's managers in developing their change management skills, and an action learning set involving facilitation with the University associated with the Trust has actively pursued a number of initiatives to enhance skills in the area of facilities.

5.4.5 FINANCIAL PERFORMANCE

The Trust budgeted for a deficit in the last financial year and by so doing realised that it was at the start of a recovery programme to return the Trust to financial balance. The NHS required overspending Trusts to return to a financial balance in three years or in certain circumstances five years. The Trust's deficit in the last financial year (1999) was £ 4.6m. This therefore needed to be recovered and a recovery plan has been produced. This was equally applicable to CACE FM too, as the Trust's facilities directorate.

This recovery plan formed the basis of the financial strategy in future years as the Trust endeavours to bring back a balanced financial position. It has been produced by reviewing financial benchmarking data from other large acute and teaching Trusts and setting very challenging saving targets. Functional areas of spend have been targeted and lead Directors appointed to ensure management time is focused on delivering the required reductions in expenditure.

The CACE FM budget setting process had taken into consideration the recovery process but is also identifying new financial issues that need to be addressed. Inflation within the organisation, including 1% increase in employers' superannuation cost and effects of the EU Working Time Directive, had been

estimated at 4.6% of annual turnover. This included recently announced Review Body Pay Awards.

CACE had been set an efficiency target of 4.6% and must deliver this as well as ensuring sufficient activity is undertaken to achieve the objectives stipulated by the organisation.

5.5 THE MEASURING SUCCESS

Performance measures must be capable of assisting management in meeting CACE FM's strategic objectives. These objectives flew from the strategic vision expressed in the Trust mission statement and translating through the Trust into divisional, departmental and personal goals. If the choice of performance measures in CACE FM can affect its progress towards its strategic goals, then by implication there seems to be significant behavioural aspects of performance measurements. Individual divisions were encouraged to use it and to generate complementary objectives – although initially there was a “wide range of attitudes” towards its continued use. When asked the question, “*Are you satisfied with your Directorate's performance measures?*”, participants at the case study stage were generally negative. One response was that, “*They don't measure the issues we want to measure.....many of them are based on 'what we can measure' rather than what we want to measure*”; another that “*There are still some gaps or some inconsistencies*”.

The benefits of performance measurement in FM activity were put to one participant: “*Well, if you don't have any measurement, you don't know what's going wrong, or going right*”. Another elaborated further: “*...It starts from what you believe an excellent organisation looks like. And for me, an excellent FM organisation has to satisfy all its stakeholders – it is a criterion for survival. If any of your stakeholders withdraw their goodwill – be it your customers or your people then you will disappear....*”.

“*If the benefits of performance measurements are understood properly, employees will take a more positive attitude to the process and will work hard to make it a success*”, commented one interviewee. Some of the benefits identified were:

- *Planned performance* – if objectives are set appropriately, there is a very high probability of achieving them successfully. Employees will find this a rewarding and encouraging experience;
- *Improved performance* – measurement is an opportunity to identify obstructions to the performance and potential for further development. If such obstructions are reduced and removed capabilities will be developed and subsequently performance will be improved;
- *Planned development* - to an extent, measurement is a negotiation; and
- *Problem solving* – appraisal is a formal opportunity to apply joint problem solving to eliminate barriers to an organisation's achievements.

CACE FM provided one of the best ways of summing up what performance measurement within FM can mean for the NHS: “There should be a move away from the damaging NHS culture of performance assessment viewed as something used by the tier above to ‘name and shame’ towards performance assessment as a valuable tool used by clinicians and managers locally to improve their corporate performance. This will require better and more relevant comparative information and the development of a culture of performance assessment that expects rigorous self assessment against agreed corporate objectives” (CACE FM Internal Document, 2000).

The historical focus of the organisation had been on financial value, with FM being the neglected group. It was believed that the unlocking of facilities potential is one of the keys to competitive advantage, as it was “about how your services support the core business”, according to the Facilities Director of CACE FM.

5.5.1 CONTINUOUS IMPROVEMENT

The strategic planning and management process recently introduced at CACE FM was a model for continuous improvement. It was recognised that CACE FM's measures were good in comparison to other FM organisations' systems. Answers were given in the true spirit of continuous improvement - “*I guess that answer will always be ‘no’ to that question, because we’ll always see something that we can do better*”.

There was a moderate response during the case study data collection phase that economic value had been added to the Trust as a whole as a result of efforts to improve “Facilities”, although no evidence was available to support this. Confidence was high at the case study phase, although the activity still remains “an act of faith”. Just about every manager spoken to has that as part of their value set: *“I believe that if facilities available within the organisation are good and my processes work better, then my customers are more satisfied, and we do better financially achieving value for money.....”*.

Models produced within CACE FM related facilities standards to customer satisfaction, but there was no specific CACE FM based research, which attempts to correlate the two. It was a very difficult relationship to monitor at CACE FM due to the interdependence of its many units, and also in the light of the impact of financial constraints.

5.6 DISCUSSION – THEMES EMERGING FROM THE CASE STUDY

Table 36 summarises the performance measurement activities within CACE FM, the Facilities Directorate of the NHS Trust under consideration:

Surveys to capture user information had been used on annual basis in the CACE FM
The Director of the CACE FM initiated the survey process, and surveys were designed and implemented by the Facilities Directorate.
Issues addressed included performance measurement, training, reward and recognition, communications, working environment, customers and “your organisation”
The process was carried out: “as an aid to senior management decision-making”, “to indicate concern”, and “as an aid to middle management decision making”
The data was used extensively: results were communicated widely, and were used to influence change at the corporate level, and within different administrative units.
Indices/benchmarking data were derived from collected information. These were used to determine trends and are also fed into relevant strategy revisions
Perceived benefits of this activity included improvements to facilities which impact upon the level of customer service – thus making it a criterion for survival

Value to the bottom line was perceived as “moderate” to “large”, although no evidence was available to support this, and the process remains an “act of faith”.

Table 36 : Summary of performance measurement activities within CACE FM

The evolution of CACE FM and its behaviour may be seen to be characterised by both an adaption to events and also by a shaping of the future by evolving the whole. The role of FM within CACE was itself once characterised as reactive, representative of an older bureaucracy, with stale values, and its own agenda perceived as a constraint on progress and an expensive overhead. But as the culture of the organisation changed so did the culture within FM. New relationships developed across each of the business functions and new facilities strategies emerged to align with the objectives of the organisation, underpinning performance at all levels, and raising the profile of facilities to one of strategic enabler.

The findings outlined above from the CACE FM study revealed some features of the performance measurement process and mechanisms, which are used within the organisation to manage facilities. The CACE FM case description also provided evidence of some of the trends of the FM organisation as outlined in chapter two in section 2.3.4 using four generations of FM model, particularly the trends towards strategic integration. Within the FM functions, there was a great deal of cross-functionality which can, to some extent, be attributed to the way in which the FM function is managed.

The leadership style and functional management techniques at CACE FM resulted in a high degree of enthusiasm, commitment and cross-functionality between the employees. This is illustrated in the following quote from an employee who has since moved into another business unit: “ *You would often get people from different disciplines working on different problems with different angles. Throughout the CACE FM, there was a high degree of motivation. I notice it now I have moved onto a different group. I have gone to a long established business unit where the communication pathways are not there. They are too busy worrying about day-to-day. There was a feeling in CACE FM to take a bit of time out*”.

CACE FM illustrated that, if properly undertaken, performance assessment is one of the most powerful tools that a FM organisation can adopt. It provided an elusive link between strategy and action, the Trust board and the individual employee. It was not just a question of establishing certain key measures and investigating variances from target, it is about fundamental cultural change that sees corporate and individual behaviour move profoundly from traditional command management to a modern delegated and empowered workforce. This required a full understanding of the organisation and its processes as it stands now and a clear statement of where the Trust sees itself in the future together with an outline as to how it intends to get there. Establishing the culture by which everyone understands and plays their part and in which performance is measured appropriately will make sure that deviations from the agreed path can be corrected at the right time and at the right level. Ultimately corporate success will be due to and owned by every member of the Trust because that will be the goal of each individual and they will know that their contribution has made a difference.

5.7 SUMMARY OF THE CHAPTER

The information collected from the CACE FM case study provided exemplary insights into the generation of performance measurement and management culture, cross functionality, the alignment of FM functions to the core business and an overall organisational learning process.

To summarise, the CACE FM case has provided evidence for the emergence of the trends in the FM organisation pertaining to the increase in performance measurement applications within FM and a focus on continuous development. The discussion also indicated that these trends have implications for the management of performance in the FM organisation.

Transformation within the core operation demanded a similar transformation within FM, one that would reinforce the performance links and enable the organisation to gain competitive advantage. An internal service culture evolved and new facilities strategies emerged, more closely aligned with the objectives of the core organisation, and more visibly connected with performance. The evolution of FM within CACE

needed to match the pace of change elsewhere within the organisation. The degree of success achieved by the facilities team in turning around the performance of the core organisation, brought about a recognition of the potential for further gains in other areas. It was now realised that FM could influence organisational performance in more ways than just financial outturn.

The facilities strategies described in section 5.3.1 illustrate the benefits which may be derived from the adoption of vision for change which transcends other functions within the organisation. FM was seen to be a core management activity and not confined to the traditional boundaries of property and specialist support services. Successful performance measurement required an ability to think beyond the immediate needs and to consider solutions in terms of life cycles, characterised by increasingly uncertain durations.

The CACE FM case study presented in this chapter forms the central case study of the thesis. The findings of this case, together with the findings of rest of the supported cases described in the next chapter, provided insights into performance measurement in FM organisations. These cases form the basis for the theory development and the findings will therefore be revisited in detail during the discussions in chapter eight.

Chapter 6

Supporting Cases

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

*“Knowledge is of two kinds. We know a subject ourselves,
or we know where we can find information upon it”*
S. Johnson (1775)

6.1 OVERVIEW

This chapter outlines the seven case studies, which were used to support the findings from CACE FM case which emerged from the in-depth analysis presented in chapter five. A short introduction to each of these seven cases is given in this chapter. Access to respondent organisations varies to interviews and completion of questionnaires by both senior management and operational management representatives.

As described in section 4.5 of chapter four, the potential problem of access to senior management was recognised at the outset and had influenced the use of purposeful sampling in identifying potential respondents. Further, the decision to include multi-sector case studies was influenced by evidence from the literature survey which suggested that strategic management perceptions of the role of the facilities performance can vary considerably accordingly to the type of business and the environment of the particular business sector.

A large proportion of practice observed in the case studies reflected the application of some form of performance measurement. Although FM personnel seemed to understand the implications of performance measurement in FM, their actions concentrated mainly on keeping the processing activities (as discussed in section 2.3.6 of chapter two) in pace with the day-to-day FM operations. The lack of understanding of the benefits of the performance measurement process appeared to influence their behaviour in this respect.

As section 4.17.9 of chapter four has already identified, the seven cases that will be analysed is listed below (Table 37):

Organisation	Industry sector
CAAB FM	Financial sector
CAMA FM	Public sector - Health
CASU FM	Public sector – Higher Education
CALO FM	Semi government sector
CALA FM	Public sector – Higher Education
CABO FM	Public sector – Health
CASA FM	Public sector – Higher Education

Table 37: List of supporting cases

The CAAB FM case provided evidence to support the findings from the CACE FM case in key performance indicators, particularly internal FM processes. The CAAB FM and CALO FM cases provided further examples of the practice of FM performance measurement, some of which supported the findings of the CACE FM case and some of which added to them as new evidence.

The format of these cases was the same as in the CACE case and included organisational background information, FM processes, and some indication of performance measurement initiatives at each organisation.

6.2 CAAB

Before CAAB converted to a plc status in 1989, it was a building society owned by its members, who subsequently became shareholders following the conversion. In 1989, CAAB made a substantial pre-tax profit. With more money to build the business and fewer restrictions on its activities, CAAB's conversion to a bank meant that it could expand faster, both organically and through acquisitions. It branched out into a number of different areas and built a whole range of new products. These ranged from private medical insurance, life and general insurance to pensions, endowments and unit trusts. Although CAAB has said it will never abandon its mortgage and savings business, today nearly half the CAAB's profits come from non-traditional markets such as consumer credit, life insurance and treasury operations. At the end of year 2000, institutional shareholders constituted over 60% of the shareholder register. As the proportion of institutional shareholders has grown, so has the role of investor relations. Figure 43 shows the business areas that make up the CAAB group:

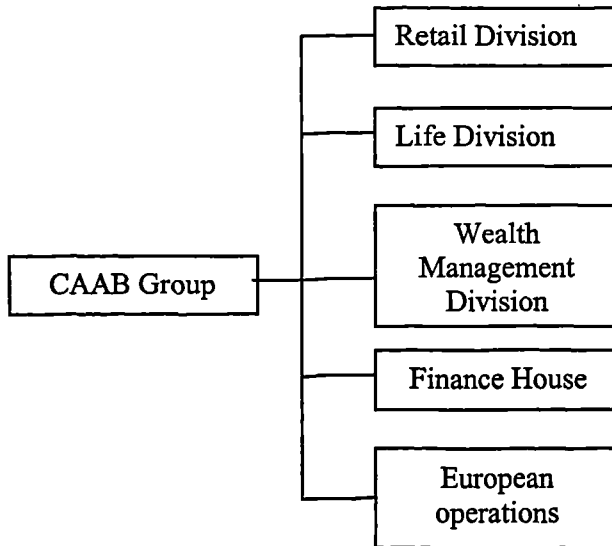


Figure 43: Structure diagram [Source: CAAB Internal Publication (1999)]

Since its 1989 conversion to plc status, CAAB has achieved what is illustrated in the Figure 44 below:

Never made a loss
Almost doubled its customer base
Increased its market capitalisation
Added 120 more branches to its network
Bought seven more companies
Formed four major commercial alliances
Launched a number of substantial new business operations
Increased pre-tax profits
Increased its assets

Figure 44: CAAB's achievements so far.... [Source: CAAB Internal Document (1999)]

6.2.1 CORPORATE OBJECTIVES

The vision of CAAB was to be the outstanding financial services organisation in the UK with a purpose to achieve above average growth in shareholder value over the long-term by meeting stakeholder's needs. The objectives of CAAB are listed below (CAAB Internal Document, 1999):

- To strengthen CAAB's market position in UK personal finance services;
- To win and hold competitive advantage through superior customer service;

- To continue to diversify profit streams away from traditional mortgage and savings activities;
- To remain a low cost operator;
- To maintain strong management of risks;
- To promote brand strength;
- To develop synergies between its mutually supporting businesses; and
- To achieve above average growth in shareholder value over the long-term by meeting the needs of customers, staff and all their stakeholders in the business.

This means that CAAB's aim was to position the organisation into the 21st century by continuing to grow the business both organically and by acquisition – that is its priority and, it is claimed, CAAB will continue to diversify, offer a wide range of products, acquire other organisations where appropriate, and keep costs down.

Diversification is essential in a competitive market where concentrating too heavily on one sector can be disastrous. The main challenge for CAAB in years to come was to continue to diversify in order to avoid the potentially devastating effects of market cycles. CAAB was making efforts to ensure that it is capable of meeting these market challenges and for this reason it continues to diversify its business away from its traditional mortgage and savings markets. In fact, it now derives more than half its business from non-traditional activities which should help to protect the organisation's future earnings.

6.2.2 FACILITIES MANAGEMENT STRATEGY

The development of CAAB's FM department began following a review of CAAB's risk management of its extensive property portfolio, and it was recognised that there was a need to integrate increasingly changing demands of the business with professional management of property and facilities. FM became an integral part of CAAB business strategy and was expected to develop and grow in line with business needs and customer expectations well into the next decade. FM strategy within CAAB emphasised the need "to promote and develop business partnerships which deliver property and facilities solutions to the CAAB group and create shareholder value and thereby to provide a customer focused total FM service to internal business

units, in a fully integrated way” (CAAB Group Property, 1999). Based on the above mission statement, CAAB group property and facilities role was to develop and deliver a property and facilities strategy which was consistent within the business strategy of CAAB and to manage CAAB’s corporate real estate and facilities effectively by using skills as procurement and resource managers.

CAAB’s property and facilities department aimed to play its part in helping CAAB to run more efficiently by:

- Working with businesses in the development of their business plans to incorporate property and facilities options;
- Meeting on a regular basis with the business to share information on business plans and to review service levels;
- Delivering the appropriate amount of accommodation to meet corporate objectives, in the most business efficient manner;
- Providing options which aim to match the quality and functionality of accommodation occupied with business needs;
- Consistently seeking options to improve efficiency in accommodation and life cycle costs;
- Continually seeking ways to package and procure property and related facility services effectively;
- Investigating and introducing leading practice initiatives where appropriate; and
- Maximising the value of the corporate real estate by sales, lettings and developments.

Adapting a FM strategy has allowed CAAB to undergo a fundamental review of its service procurement and tackle quality and delivery performance of its suppliers as well as providing major cost benefits. The levels of commitment and financial investment within CAAB reflected the view that an effective FM strategy is fundamental in matching its efforts in “enhancing shareholder value and stimulating economic growth” to that of consistent organisational support for “environmental and social responsibility” (CAAB Internal Document, 1999).

CAAB group property and facilities organisational chart looked as follows (Figure 45):

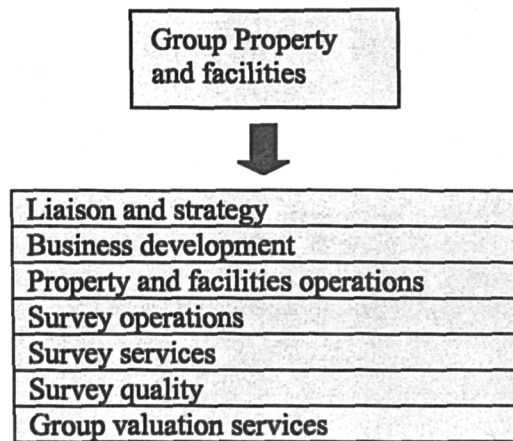


Figure 45: CAAB’s property and facilities organisational structure [Source: CAAB Internal Document (1999)]

As identified in section 2.3.5.1 of chapter two, the above FM arrangement within CAAB represented a “multiple sites” model. CAAB “Group property and facilities” was primarily concerned with policy and providing guidance to subordinate regional headquarters. Accordingly, CAAB’s Group property had four regional offices, north, south, west and east, each of which had its own regional facility manager and assistants, located at the regional office. The principle function of the group property was to allocate resources whilst planning and operational issues tended to be de-emphasised and dealt with at regional level.

6.2.2.1 MANAGEMENT OF FACILITIES FUNCTION

At CAAB “Group property and facilities”, FM function was identified as the total of three component parts: strategy, management and delivery as depicted in Figure 46:

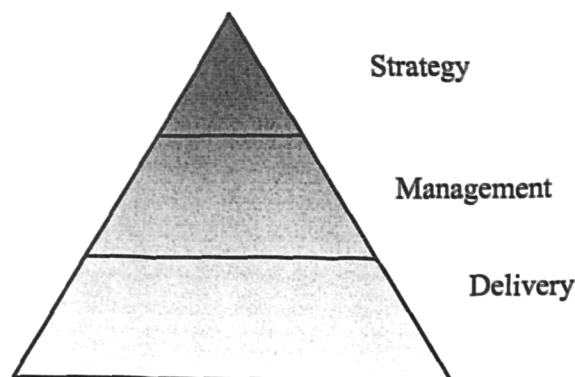


Figure 46: FM operation within CAAB

Strategic issues were dealt with at the CAAB's group property and survey department and was part of the management function. The whole of the delivery function had been totally outsourced and the management of these was being monitored at the regional level. The CAAB group had a professional group property and facilities department, as illustrated in section 6.2.2 above, which acted as the "intelligent client" at the interface between customers and external suppliers, in the provision of a total FM service.

6.2.2.2 FACILITIES PERFORMANCE ASSESSMENT

CAAB's group property had chosen performance measures that were specific to the nature of their particular business. Service quality was measured in a number of ways. As well as customer satisfaction surveys, *period audits of suppliers (technical and performance)* was carried out to ensure standards are being met and maintained. These measures ensured that the available resources, both financial and non-financial, were used efficiently for the achievement of the objectives of the core business of CAAB. The performance measures which covered CAAB's FM and property services, addressed the following key objectives:

- Identify the strategic objectives of the business and integrate, monitor and communicate them;
- Focus on the core processes of the business;
- Focus on the critical success factors of the business;
- Signal where performance is headed; and
- Provide a basis for recognition when targets are achieved.

The minimum performance standards achievable by business were usually specified as either an industry average or benchmark.

6.2.2.2.1 CUSTOMER FOCUS

The "customers" were the CAAB business units, housed in a wide range of building types, which varied greatly in the needs and demands that they presented in terms of FM. This diversity drove the FM team to be not only innovative and flexible but also

aware of the tools, techniques and procedures available to them in meeting the challenges they face.

The department had a well established “customer focus” approach to total FM and evidence of this could be found in the detailed information contained in their service level agreements. When customers were not satisfied with the service they had received, a customer relations unit was available to help resolve issues. The CAAB endeavoured to understand the consequences of its actions on customers, to treat them as individuals, and to take into consideration their unique circumstances. Accordingly, there were mechanisms in place to capture user information about the services being provided by the FM organisation, but it is worth noting that surveys to capture external user satisfaction were not in place within CAAB group property and facilities. As external customers were the major important stakeholder group who use the CAAB products extensively, research suggested, through the case study report, the importance of having such systems in place.

6.2.2.2 MANAGEMENT OF SERVICE PROVISION - PROCUREMENT MANAGEMENT

The emphasis was to identify and measure the processes that CAAB must excel into satisfy its customers and corporate business goals. In order to develop current and future solutions to the management of service provision, CAAB defined its value chain which comprised those processes that add value both to the business and to the products and services that customers receive. In particular, CAAB’s group property function concentrated on developing, implementing, reviewing and managing all contracts together with co-ordinating other minor contracts ensuring delivery of agreed service levels to support business continuity.

In terms of procurement, emphasis was placed on a “value for money” approach rather than “lowest cost”. Services were outsourced on the basis of addressing added value issues for the business and its stakeholders. Supply contracts were normally for 2-3 years and renewal of these contracts was seen as an incentive for suppliers to meet performance targets.

An extensive and detailed service level agreements were in use for all services offered to the business units. A variety of performance standards were written into FM contracts with minimum performance level thresholds being common, allowing sanctions to be adopted against persistent non-achievers. The most significant performance indicators were the timely delivery of a quality service that was cost effective and met the needs of the customer.

There was also an understanding that effective FM outsourcing management required long-term relationships with service providers and CAAB group property was actively working on establishing such relationships. There was a desire at the time to place all service provision in the hands of one of the “FM Consultancy” companies and CAAB preferred to build up long-term relationships with such a provider.

This process had allowed CAAB group property and facilities to address FM issues of quality, performance and delivery standards and internal culture and the effects of such issues on management efficiency, cost control, working practices and working environment, all of which had impact on business efficiency and effectiveness.

6.2.2.2.3 EFFECTIVE INTERNAL AND EXTERNAL RELATIONSHIPS

A major issue relating to management of CAAB’s facilities and property function was to develop and maintain effective internal and external relationships in order to understand business requirements, supplier constraints and opportunities enabling development of appropriate service solutions (CAAB Internal Document, 1999). In order to achieve this, CAAB’s facilities and property division ensured that appropriate network and effective lines of communication were established and maintained, regular liaison, reporting and feedback were achieved and responses to feedback were timely and appropriate.

6.2.2.2.4 FACILITIES RISK MANAGEMENT

CAAB FM developed, implemented and maintained systems and procedures to minimise the risk of business/service interruption and to enable statutory compliance. Accordingly, risk areas were identified, assessments and continuous reviews

undertaken, and control procedures and policies to minimise and manage risk were implemented and maintained.

6.2.2.2.5 FACILITIES MANAGEMENT INNOVATION

CAAB's property and facilities function analysed and assessed risks and opportunities, continued the development of business plans/strategies and/or developed and established appropriate plans/strategies for own area to maximise gain and achieve most effective and efficient use of resources.

As a consequence of the changes both in the needs of the customers and in the technological innovations supporting the banking process, the CAAB FM was reviewing the use and future value of existing facilities. The change process had been a long one and the continued monitoring, review and development of the process was ensuring that "best practice" was being encouraged and achieved across the CAAB FM's activities, to the benefit of the business and its stakeholders.

6.2.2.2.5.1 PROMOTING PARTNERSHIPS WITH EMPLOYEES

CAAB FM was committed to treating all employees as partners in the business and encouraged shared ownership. Employees shared in the success of the CAAB FM in numerous ways – through staff rewards, profit share, share participation, sharesave and share option schemes (CAAB Internal Document, 1999).

CAAB as an organisation had a positive reputation for staff training and development. This was carried forward into the field of FM in that the CAAB sponsored employees in various professional and academic courses and engaged in "in house" training of employees and FM service providers.

FM strategy claimed to value communication and an atmosphere of openness and approachability. There was a framework for dealing with staff concerns at work and employees were urged to follow these procedures if they had evidence of any issues.

6.2.3 CAAB DISCUSSION

This is a good example of an organisation which operated in a sector that had seen considerable changes in the last five years. Two external forces considerably influenced the nature of CAAB business:

- Deregulation of financial and banking services which led to increased competition and new entries to the traditional market; and
- The impact of information technology which led to the development of new ways of delivery and interaction to customers

The combined effort of the above factors had the impact of causing a major review of the facilities resource base in terms of how they will needed to be reconfigured to supporting the changing demands placed on the business in the near future and beyond. The management of facilities was seen as a critical component in this re-alignment of the business.

The CAAB FM case provided further evidence that performance measurement needed to be formally managed in an FM organisational setting. CAAB had moved its FM strategy forward to a point where the organisation was able to recognise and evaluate FM developments that may offer benefits in terms of added business value and business efficiency.

The corporate culture had a vital role to play in the continued success as a business within CAAB FM. Four pillars upheld the most important aspects of the culture and embodied the company values and sense of people: focus, communication, synergy and partnership. In a competitive market, its aim was to be the best at whatever it did, and to be the best it needed a clear vision on its business priorities at all times. CAAB FM fostered an atmosphere of openness and approachability and needed good ideas to outperform the competition. Wherever possible, employees were expected to share the skills and expertise – both within and across the individual business areas. Employees were expected to have greater trust and be sufficient in the use of resources – rather than creating territorial boundaries and duplicating effort. CAAB believed that teamwork was the way forward and encouraged relationships with

customers, shareholders and communities as partnerships and promoted sharing the responsibility for making these partnerships successful.

By believing in and applying these guiding principles to everything CAAB FM did, it was planning to have a well-run business. FM growth, within CAAB, had been neither explosive nor spectacular, but the “organic” nature of growth had probably engendered a feeling of confidence in the process and an acceptance of the organisational cultural changes that effective implementation of the process would require.

6.3 CAMA

CAMA was a Community Trust situated within the North West of England and was regarded as a primary health care type of organisation because it developed, administered and delivered health services for the local population, which included the provision and monitoring of patient access to other health agencies. The CAMA NHS Community Health Trust sought to provide health care services within the actual setting of the local community. This differed from the traditional perception of most of the hospitals in the acute health care sector, which tended to concentrate on the treatment and curing of illness rather than their prevention.

6.3.1 ORGANISATIONAL AND CORPORATE STRATEGY

The CAMA strategy claimed to pro-actively address the core philosophies and characteristics that made the Community Health Trust what it was. Core objectives of CAMA were being (CAMA Business Plan, 1999):

- The need to provide a flexible and accessible service to meet local needs and to take account of environmental and social factors;
- To work as closely as possible with services provided elsewhere in the health care spectrum;
- To optimise inter-agency co-ordination and co-operation between health and other statutory and voluntary organisations;
- To recognise that community health services should make it easy for patients and clients to be provided with appropriate care in their local environment; and

- To provide services which could enhance primary health care team working and avoid duplication and confusion.

6.3.1.1 POSSESSION OF MISSION STATEMENT

The mission statement helped determine the overall strategic direction of CAMA. It was therefore extremely important that the mission statement accurately reflected the core business of the organisation. CAMA's mission statement was: "CAMA seeks to provide excellence of service in all of its activities. It believes in local services for local people. Its services are at the heart of its local community. Its skills, its attitudes and its behaviour make a difference to people around. It will apply its strength, compassion and energy for the good of those it serves, at all times. It is there to care, and this is the foundation for all its actions" (CAMA Internal Document, 1999).

CAMA periodically reviewed the mission statement to ensure that it still conveyed the Trust's philosophy. For example, the main mission of the Trust was radically altered by a variation in purchaser requirements, demographic changes or a change in government. The Chief Executive Officer of the CAMA Trust has commented that: *"It is my belief that because of the ever changing environment in which modern community Trusts find themselves, the mission statement review period of greater than eighteen months is undesirable"*.

6.3.2 COMMUNITY HEALTHCARE FACILITIES MANAGEMENT

Within the NHS, it was only over the last decade that the art of FM, per se, had emerged as an all-embracing philosophy by which the factors that govern facilities effectiveness were co-ordinated to improve health care and organisational viability (Featherstone, 1999). Prior to the determination of a CAMA community health care FM, it was necessary to understand and appreciate the delineation of facilities operation within community health Trusts. Featherstone and Baldry (1998) outlined this as: "The typical core community health Trust property portfolio would consist of a number of health centres and clinics of varying types, conditions and floor areas. Modern facilities could include primary health care resource centres where, in addition to traditional community health care services such as district nursing, minor

operations are also performed. The community health Trust property portfolio may also consist of other types of property including some residential, commercial, and even hospital based property to facilitate the delivery of specialist community-based services. Community health care services were also delivered from many non-Trust properties such as schools and social service establishments and at the home of the patients themselves”.

Furthermore, the application of FM techniques within the community healthcare sector was even more embryonic as most of the emergent NHS FM guidelines had been established through applications within the secondary health care, or acute, sector. However, modern expectations of most community health care Trusts meant that the facilities function had to support the delivery of community health care on many different fronts through the co-ordination and integration of many different property related initiatives and drivers (Featherstone, 1999).

For the CAMA to develop the opportunities offered by the shift to community-based services it was important that all parts of the Trust were in harmony with the overall strategic direction, or organisational strategy of the trust. This philosophy was as applicable to support services, such as facilities, as it was to front-line services, such as district nursing.

The prime criterion in terms of CAMA community health care FM was to sustain a satisfactory health care environment through the empowerment of key socio-technological factors. Moreover, the subsistence of this satisfactory health care environment represented value for money so that organisational viability can be maintained.

6.3.2.1 FACILITIES MANAGEMENT MISSION STATEMENTS

The following statement represented the mission statement of CAMA FM: “The process by which the Trust creates and nurtures a caring environment and delivers effective support services to meet community health care objectives at best cost” (CAMA Business Plan, 1999). It was important to note that the CAMA Trust as a whole, and not just the individual provider unit, was part of the facilities process; a

caring environment was nurtured rather than merely sustained; supported services were effective; and specific community health care objectives were met.

6.3.2.2 FACILITIES MANAGEMENT STRUCTURE

Becker (1990) identified three categories of FM organisations (as detailed in section 2.3.5.1 of chapter two) Featherstone (1993) commended that all NHS FM organisations tried to move towards adopting elastic strategies as the characteristics which define elasticity help empower the facilities function so that it was better able to cope with the changing health care environment through a more aware and professional FM workforce that was ready and able to embrace new methods of working and emergent technologies. With reference to this, the following strategic characteristics, and therefore “fit” characteristics (section 2.3.5.1 of chapter two), emerged for the CAMA FM function (Table 38):

FM characteristics	Implication of characteristics	Dominant fit type
Operational environment is the greatest influence upon formation of trust FM strategy	Reactive tendencies	Loose fit Tight fit
FM department has a mission statement	Tactical disposition	Loose fit Tight fit
FM is represented at the board level	Maximum control over facilities decisions. Shared facilities decisions	Tight fit Loose fit

Table 38: CAMA FM characteristics [Source: CAMA FM Internal Document (2000)]

With reference to the above manifestation of CAMA facilities function, in order to move towards elasticity it was essential to examine the structuring of the facilities function within the Trust and, as the Facilities Director said, move towards a more horizontal and flatter structure that increased the consensus decision-making process. Section 2.3.4.2.2 of chapter two refers to this as the “process focus”.

6.3.2.3 FACILITIES MANAGEMENT MOTIVATORS

The key principles contained within the government white paper “The New NHS Modern and Dependable” (Department of Health, 1999a) presupposed their

application towards the entire health care process. Millman (1998) stated: “ the white paper ‘The New NHS’ set challenges and performance requirements that extend throughout the NHS, including its estate. In responding to these challenges, the estate possesses huge potential for contributing to and influencing the future delivery of healthcare and the future of the NHS itself”.

With reference to the Table 39 below, CAMA FM had derived an inventory of modern community health FM motivators which reference the NHS White Paper (Department of Health, 1999b) key principles:

White paper key principles	FM motivators at CAMA FM
Make the delivery of health care against these new standards a matter of local responsibility	Facilities managers to be accountable for meeting FM standards and be responsible for local FM delivery
Get the NHS to work in partnership	Get the FM to work in partnership with all health care processes
Improve efficiency so that every pound in the NHS is spent to maximise the care for patients	Improve facilities efficiency so that every pound saved means that more money is available for the maximisation of care for patients
Shift the focus on to quality of care so that excellence is guaranteed to all patients	Shift the focus on to quality of facilities so that excellence is guaranteed to all facilities users
Rebuild public confidence in the NHS	Increase the confidence of all facilities users in the FM process by demonstrating the positive impact that good FM can have upon the health care process

Table 39: FM motivators [Source: CAMA FM Internal Document (2000)]

CAMA FM had further identified a number of specific pressures, which helped motivate pro-active FM within CAMA. These were:

- Achieving cash releasing efficiency schemes;
- Downsizing facilities;
- Implementing new policy initiatives;
- Re-designing facilities and re-engineering care processes;
- Securing contracts and agreement for FM services;
- Preparing for competition; and
- Documenting and publishing user standards;

6.3.2.4 OVERVIEW OF SUPPORT SERVICES

What was apparent from the interviews conducted with the Facilities Director of CAMA FM, was that a good standard of facilities quality can contribute significantly towards the overall standard of care received by the patient. He further reinforced this point when he defined those organisational traits which underpinned the delivery of quality health care within CAMA. These traits, detailed below, clearly had great implications for the facilities function:

- Physical facilities;
- Waiting times;
- Opening/closing time;
- Privacy;
- Indications of performance and quality adopted;
- ‘Routines’ – in whose interest?;
- Procedures adopted to handle deviation from the normal;
- Presence of checklists, protocols; and
- Availability of information on the service and its providers.

The facilities function therefore had a great role to play in the delivery of quality health care. There were two perspectives from which this contribution can be judged. These perspectives were in terms of the contribution made towards the Trust’s strategic realisation/Trust core aims, and towards quality of care received by patients.

Accordingly, facilities services facilitated the day-to-day operations of CAMA. A mix of economy of in-house and outsourced service contracts were provided to the Trust and over this development period, considerable experience had been gained in the successful implementation of these contracts. An established policy to test support services continued to be central to the Trust’s activities.

6.3.3 EMERGENT FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT TECHNIQUES

The performance assessment, or measurement, of the FM process represented an important strategic development of the facilities function within CAMA. Assessment data was fed directly into, and therefore greatly assisted, the strategic FM decision-making process within CAMA. This in turn helped add value to the corporate strategic management process within the Trust.

It was likely that whatever that stage of facilities development within the CAMA, elements of facilities sub-optimisation were present either across the whole spectrum of facilities provision or existing in specialism enclaves. It was also important to recognise that existing cultures and FM methodologies may not represent best practice. It was important, therefore, to dig beneath the most visible and tangible aspects of the “FM crust” and explore and challenge the values, beliefs and assumptions that determined how facilities services were delivered. This helped to establish a baseline from which the future profile of the facilities function can be planned whilst also providing revealing information for a position statement detailing the facilities environment and situation within CAMA (CAMA Internal Document, 1999).

6.3.3.1 EMPHASISING FACILITIES MANAGEMENT QUALITY

The CAMA FM mission identified in section 6.3.1.1 partially related to the approach to facilities total quality management. This was through the reference to meeting health care objectives at best cost and the inference to the satisfaction of the Trust customer requirements through the delivery of effective support services. CAMA FM adopted Deming’s (1988) chain reaction for total quality management, as illustrated in Figure 47 and it was possible to visualise the enhancements that could be made to the Trust FM process through the application of these appropriate quality management techniques:

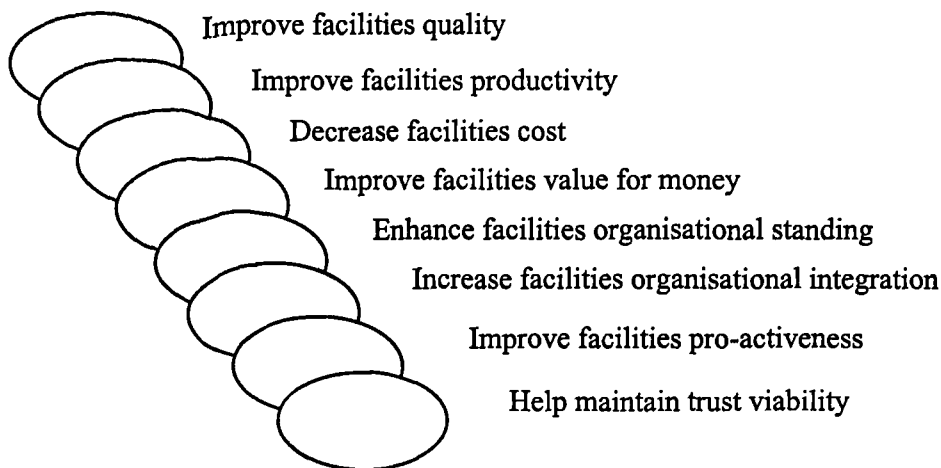


Figure 47: Facilities management quality chain [Source: CAMA FM Internal Document (2000)]

6.3.3.1.1 USER REQUIREMENTS SATISFACTION

User satisfaction had become central to the operation of the CAMA health Trust facilities function. Adversarial relationships between facility users and the Trust facilities was discouraged and the effect of all FM processes upon the delivery of community health care was optimised.

Attainment of FM quality, through the satisfaction of user groups, was derived primarily from six key rules (CAMA Internal Document, 1999):

- The philosophy – prevention and not detection;
- The approach – management supported;
- The scale – everyone possible;
- The measure – cost of quality;
- The standards – right first time; and
- The theme – continuous improvement

There were number of ways within CAMA FM, to analyse its FM practices and processes.

6.3.3.1.2 POST-OCCUPANCY EVALUATIONS

Post-occupancy evaluation is a rapidly emerging primary mechanism across all market sectors where the performance of a building was evaluated in terms of how it met the needs of the activities undertaken within that facility. Section 2.10.3.2.4 of chapter two has already described this concept in some detail. This potential feedback from the performance of post-occupancy evaluation surveys on CAMA properties was therefore extremely useful in helping to facilitate positive alignment of the CAMA stock with the community health care delivery process.

6.3.3.1.3 FACILITIES BENCHMARKING

CAMA FM referred to the practice of FM benchmarking to ensure the compatibility of facilities with the host organisation, and the requirement for compatibility with organisational goals and objectives. Therefore, the measure of compatibility, or facilities quality, required having some tools by which performance of the key FM measurables was judged in the wider sense. These comparators were largely defined from within the application environment and included both internal and external organisational and/or specific FM tools. It was seen that CAMA FM benchmarking practices related to a number of facilities objectives, which was relevant to both higher macro-organisational levels and micro-departmental levels within the Trust. These facilities objectives for CAMA FM were (CAMA Internal Document, 1999):

- Increasing FM efficiency;
- Choosing best FM practices;
- Defining Trust user facilities requirements;
- Establishment and furtherance of Trust facilities goals and objectives; and
- Development of tangible Trust facilities goals and objectives.

The process of benchmarking the CAMA FM function resulted in a more elastic type of facilities function within the Trust, thereby adding value to the entire Trust. This

added value was derived from the increase in effectiveness of the use of Trust buildings through the application of sound estate management techniques.

6.3.3.1.4 COST EFFECTIVENESS

At CAMA FM, services were delivered with cost efficiencies in mind. Although cost control was obviously a very important aspect of the Trust's balance sheet, it appreciated the benefits that were realised through adding non-fiscal value to the Trust. Added value in the management of Trust facilities and user environments helped the Trust, it was believed, to retain the best clinicians and deliver excellent community health care services.

6.3.3.2 OPERATIONAL FACILITIES TARGETS

It was important for CAMA FM to accurately align facilities standards with user expectations, to ensure that the operation and use of facilities was cost effective and productive, to be pragmatic and realistic about what could be delivered, and not to espouse clearly undeliverable facilities-related goals. However, prior to attainment of the core operational parameters, the facilities managers at CAMA FM needed a greater understanding of what contributed towards good FM quality and related quality measures within the Trust.

CAMA FM had established facility improvement targets within the Trust. The understanding thus far gained with regard to community Trust strategic direction, goals, and aims, converted directly into CAMA community Trust FM objectives. Some of the dynamic operational FM targets within CAMA were (CAMA Internal Document, 1999):

- Economy;
- Efficiency;
- Effectiveness; and
- Efficacy.

It was easy to see that a full range of appropriate FM targets, as those detailed above, indeed had become marginalised in favour of more qualitative targets. This in part, helped the CAMA Trust facilities department in its transition towards elasticity.

6.3.3.3 FACILITIES MANAGEMENT SERVICE DEVELOPMENTS

CAMA FM had its existing service portfolios defined within the remit and parameters of the Trust operation. These service portfolios had been obviously defined somewhere in between the absolute minimum of facilities service provision required to support the Trust as a whole and the maximum possible service attainable. The service development of the FM function within CAMA, where delivered successfully, significantly improved the facilities service provision within the Trust. Therefore, an essential part of improving FM services within the CAMA Trust involved identifying FM service developments within the Trust.

6.3.4 CAMA DISCUSSION

The omnipotence of the purchaser resulted from both the implicit and explicit restrictions placed upon providers of health care both in terms of health care intractability in terms of expanding markets, and fiscal compliance. It was hardly surprising; therefore, that the purchaser had the largest influence upon strategic development within community health Trusts. The second largest influence upon the development of CAMA FM strategy was exerted by the clinician group. This level of influence was for slightly different reasons from those for the purchaser. Historically within the NHS, the clinician group had always been one of the most influential and this influence had been maintained through an elevated professional standing at CAMA FM.

It can be seen, as described in section 6.3.3.1 above, that the basic improvement of Trust FM quality would ultimately lead to greater acceptance of the facilities function by the Trust. This resulted in a greater integration of the facilities function within CAMA, hopefully at the higher strategic levels, thus leading, ultimately, to a more pro-active facilities function with the Trust thereby helping maintain Trust viability. CAMA FM further argued that FM performance was the application of

total quality techniques to improve facilities quality, add value and reduce risks involved in occupying buildings and delivering reliable support services.

It was certain that quality of services within the NHS, not just FM services, was being taken more and more seriously. Whitefield (1998) states: “meeting quality targets should be just as important as balancing the books...Trusts should see quality as the second bottom line”. It can be seen, therefore, that if the CAMA Trust facilities did not meet user expectations, or they were perceived as being costly to run and contribute towards un-productiveness, or they did not help facilitate the Trust aim or “promise” of effective community health care provision, then quality of the facilities, and by inference quality of the facilities function, would have been regarded by the users as being poor. It was therefore extremely important to at least accurately align facilities standards with user expectations, ensure that the operation and the use of facilities was cost effective and productive, be pragmatic and realistic about what could be delivered, and espouse clearly undeliverable facilities-related goals. However, prior to the attainment of the core operational parameters, the CAMA FM must have a greater understanding of what contributes towards good FM quality within the CAMA Trust.

6.4 CASU

Initial contact was made with the Director of Estates and Facilities at CASU, a University, and after the initial meeting, it was agreed that the study would focus on performance measurement in FM. Members of Estates and Facilities Division were interviewed (a total of 15 interviews were conducted). Secondary data collected at CASU included documents outlining their FM process, annual reports and business plans and documentation of mechanisms used to support the FM process. For reasons of confidentiality, these have not been included in the list of references.

6.4.1 CASU IN GENERAL

CASU was a University, based within the heart of the modern centre of a major city in North East of England. CASU was awarded full University status in 1992. CASU had more than 15,000 full and part time students, 12,500 of whom were studying for

degrees and higher degrees, including almost 1,000 international students. At the time when the case study was carried out, CASU had more than 2,000 staff and an annual turnover of £ 63 million. It was the third biggest employment provider in the North East of England.

CASU claimed to be a University with a wealth of creative ideas and initiatives for further business development and diversification particularly around the concepts of the “global university” and “ the virtual university” (CASU Internal Document, 1999). The virtual University concept was embodied in a variety of developments, most notably in the “University for Industry”, which had secured substantial European Union funding. Various development schemes were placing the University at the centre of the virtual University movement and investment will continue to be made to consolidate and extend its position in these crucial fields: so becoming a University which facilitated life long learning in the information age.

The CASU comprised different school areas: Arts Design and Media, Computing Engineering and Technology, Education, Sciences and Social Sciences. The CASU had been rated excellent in every single subject assessed by the Quality Assurance Agency in the past. Its strengths in research were developing rapidly, shown by a four-fold increase in research income over the last two years. The CASU was recognised as the most successful UK institution for widening the participation in higher education and has received substantial government funding to enhance this work (CASU Internal Document, 1999).

6.4.1.1 REGIONAL ROLE

The CASU had always seen its local and regional role as central to its mission and objectives and the strategic plan was to seek to ensure that its regional role was even more firmly entrenched. The role of the regions had received a major impetus through the policies of present government leading to the imminent establishment of the Regional Development Agency which had a profound influence on all aspects of the regions economic and community development. It was increasingly recognised that as the UK moves to a knowledge-based economy, universities have a pivotal role in local and regional development. The CASU had been, and continued to be, a

leader in this (CASU Internal Document, 1999). The University continued to develop its links with regional organisations as a partner in strategic initiatives for the arts, employment and economic growth.

The CASU played a significant role in local and regional partnerships with business in the community including the City partnership. Its contribution to the regional economy and to its human resources was increasingly being recognised as a critical element in the region's economic recovery. The University's emphasis on widening the participation, equality of opportunity, vocational programmes, graduate placement and graduate skills was important in this context. The plan envisaged closer integration of the academic programmes, research and industrial and business support activities with an increased emphasis on learning within the work environment.

6.4.2 CASU'S FACILITIES MANAGEMENT BACKGROUND

CASU FM was both manager of a substantial resource, the estate and facilities, the CASU's second most valuable asset, and was responsible for management and provision of a wide range of services essential to the development, operation, maintenance and care of premises. It was also a service which by nature cares for students, staff and visitors of the University through a variety of personal contacts with CASU FM staff.

There was a large estate, its efficient operation and maintenance was very challenging due to the scattered nature and varied age and suitability of premises. The service was responsible for a significant proportion of the CASU's annual budget, (approximately 10%), and for the management of substantial capital funding in relation to estate development and maintenance. CASU's FM was concerned with (CASU FM Internal Document, 1999):

- Taking care of students, staff and visitors of CASU;
- Creating a safe, secure and pleasant environment in which to work and live;
- Ongoing review updating and implementation of the CASU's accommodation strategy;

- General management of the estate;
- Operation and maintenance of the estate; and
- Provision of estate services

During 1997/98 CASU FM services had been responsible for premises related revenue expenditure of £ 5.92 million (CASU FM Internal Document, 1999). The physical area of the estate had increased by 45% over the 1994 to 1998 period. This had not resulted in corresponding increases in revenue expenditure, which actually decreased over the period. This had been mitigated by the continued efficient and effective management of the estate, which together with other statistical analysis indicated that CASU FM continued to achieve a high level of performance with what was well below sector average resource provision.

The staffing establishment at the time of the study comprised of 39 management/office-based staff together with an operational workforce of 322 staff. In addition, a large number of staff was managed in the outsourced provision of services through various contracting arrangements.

6.4.2.1 CURRENT STRUCTURE

CASU FM structure was reviewed and updated in 1996 in line with the CASU preference for flatter structures and encouragement of devolved authority, responsibility, quality at point of delivery and greater customer focus. CASU FM was structured into five service divisions. The service functions were separately identifiable for responsibility and accountability purposes, however the extent to which the department was mutually dependent on individual and team contributions across these divisions cannot be over emphasised. CASU FM's divisions were as follows:

- Projects division;
- Operations and maintenance;
- Technical services;
- House services; and
- Administration office

Whilst concentrating on their own areas these divisions worked in very close co-operation and liaison with each other, particularly in respect to the commissioning of new buildings and other changes to the estate portfolio which had service-wide implications. The divisions were very much interdependent in many respects and could only function efficiently with good inter-team working. The divisions were supported by an administration office which provided general administrative and clerical services support and undertook cross service personnel and financial administration. External consultants were engaged to provide advice and services in specific subjects, in particular with regard to estate development planning, design of new buildings, major premises alterations and other specialist areas.

6.4.2.2 FACILITIES MANAGEMENT MISSION AND AIMS

CASU FM's mission was: "to contribute to the aims and objectives of CASU by providing and caring for a quality environment in which to live, learn and work". The service aimed to do this by (CASU FM Internal Document, 1999):

- Achieving customer satisfaction in all facilities and services provided;
- Providing best value through applying innovation in the design, procurement and delivery of estate services;
- Providing best professional advice in relation to the management and operation of the University estate;
- Assisting, advising and providing data in relation to reviews of the accommodation strategy, space allocations and facilities provided in meeting the CASU's strategic priorities;
- Being responsive to the operational needs of the university and the changing requirements of the university community;
- Having regard at all times to the possible impact on the local community and on the environment, of estate developments and the provision of facilities;
- Complying with statutory requirements and relevant codes of good practice;
- Promotion of a comprehensive quality management approach for the service and pursuit of a staff training and development programme to improve the capability and *working performance standards of the service*;
- Ensuring alignment between institutional strategic priorities and the planning, design and delivery of estate services; and

- Promoting a working culture, which encouraged and developed individual and team contributions.

The CASU FM plan sought to facilitate and support the strategic directions of the CASU through an estate management strategy and a quality strategy.

6.4.2.3 MANAGEMENT OF FACILITIES

Contracted maintenance continued to be tendered on an annual basis to ensure that best value for money and appropriate standards of service were maintained. CASU FM analysed all current maintenance contracts and re-wrote specification documentation for re-tendering whenever required and developed formal contract performance monitoring schemes to ensure that contracts let by the CASU FM met the levels of service set out in the specifications and tender documentation and hence provided value for money.

6.4.3 FACILITIES MANAGEMENT QUALITY IMPROVEMENTS

CASU FM was promoting a comprehensive quality management approach for service and pursuit of a staff training and development programme underpinned by the “Investors in People” initiative to improve individual and team working performance standards. In particular, the service had, and was, taking various actions to deliver appropriate staff training and development, refined policies, practices and procedures, improved client liaison and feedback, and pursued competitive pricing in the interests of efficiency, cost effectiveness and achievement of client satisfaction.

“Charter mark” was achieved, this involved significant change in the service practice and culture. Service standards had been published for all services. The monitoring and measuring of performance of service had required considerable changes in working practices, procedures, and management support information.

CASU FM’s quality strategy Framework is illustrated below (Figure 48):

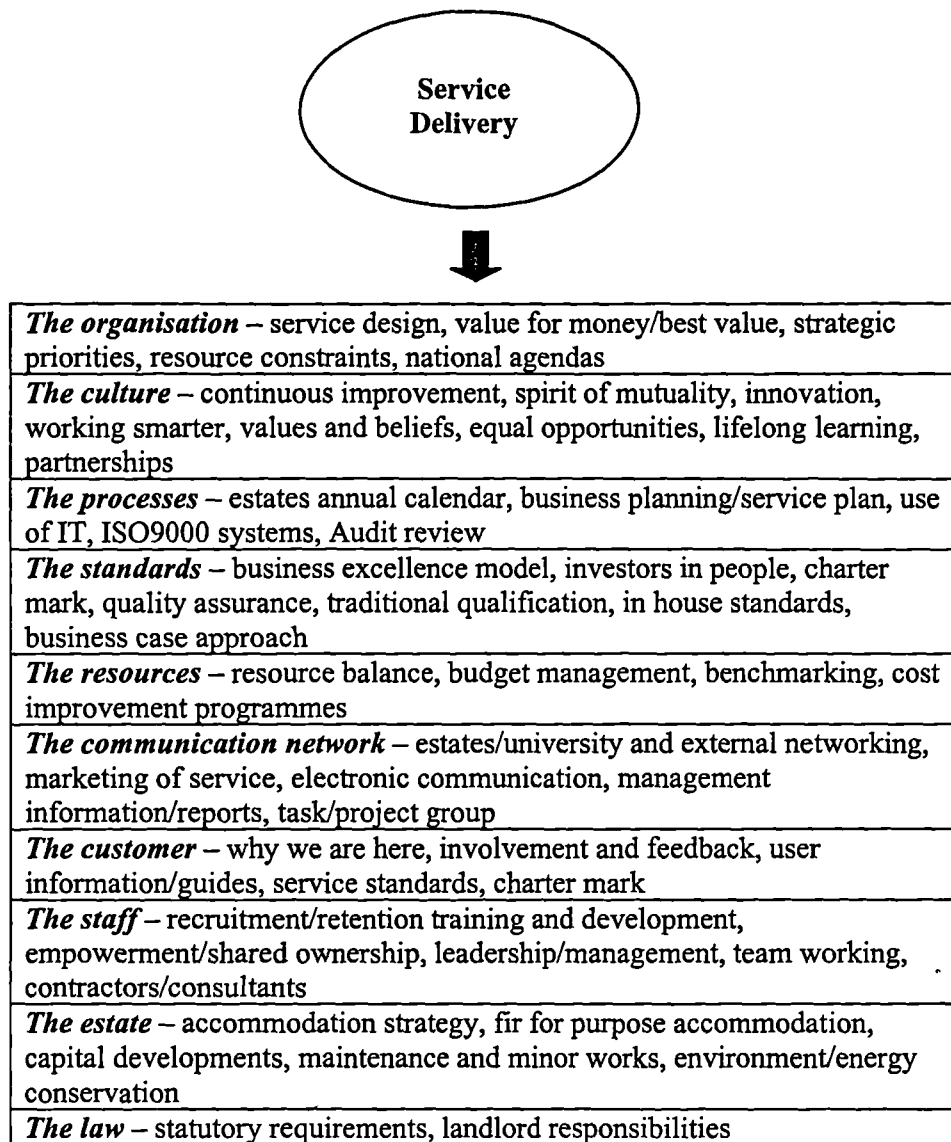


Figure 48: CASU FM's quality strategy framework [Source: CASU Internal Document (1999)]

6.4.3.1 CUSTOMER FEEDBACK

Customer/client feedback on services provided was achieved through the following:

- Campus bus user group;
- Security campus watch group;
- University wide security working party;
- Energy management group;

- Projects questionnaire;
- Technical services – user studies;
- Cleaning quality checklists;
- 3 “C”s system – comments, compliments and complaints;
- Staff participation within school and health and safety groups;
- Staff attitude surveys; and
- New buildings post review studies

Service-wide developments had resulted in the department being acknowledged as delivering efficient services, providing value for money and being able to demonstrate this through a number of qualitative and quantitative evaluations. This included detailed examination of a number of sector-wide and external cost comparative benchmarks and performance indicators. Results of this exercise confirmed the CASU FM to be performing well above average in all areas of service delivery.

6.4.3.2 EXTERNAL COMPARISON

The service delivery was increasingly looking outside the sector for the exchange of comparable best practice and this strategy was to be a continuing feature throughout the service-planning period. CASU FM continued to carry out annual benchmarking comparisons to inform the service on comparative service efficiency and value for money provided. This increasingly illustrated the high performance and low comparable cost of service provided.

A comparison of utilities and premises maintenance costs, prepared by Association of University Directors of Estates (UK) for Institutions, showed that the CASU FM has an expenditure of £18.28/m² gross floor area for academic and administrative buildings, against an average for 61 institutions of £27.85/m². The CASU's figure was £9.57/m² or 34% less than the average national institution. The CASU figure was also £3.25/m² (15% less than 1995/96 CASU levels indicating the continuing trend of downward costs of services (CASU FM Business Plan, 1999/00).

There was a continuous trend of premises related revenue and expenditure for the CASU year on year representing the continued increasing efficiency of the service in what was now clearly one of the most efficient in the sector. Recent capital under-funding of backlog major maintenance and redecoration programmes continued to be a matter of concern for the service, current levels of maintenance expenditure needed to be improved otherwise a serious maintenance backlog would continue to expand over time.

6.4.3.3 ENERGY MANAGEMENT

An energy manager had been appointed, responsible for the efficient and cost effective use of energy and utilities throughout the University. The University wide energy management review group continued to progress the University energy strategy through the production of an agreed policy and operating statement. Energy conservation schemes had been completed including the installation of energy saving controls and the zoning of the heating installations within the buildings.

6.4.3.4 FINANCIAL PLANNING

Total revenue expenditure for the service was very low at less than 10% of overall expenditure of the University. For the higher education institutions typically 12%-25% was expected as a consequence of owning and operating similarly diversified property portfolios (CASU FM Internal Document, 1999).

The recent funding shortfalls challenges facing CASU had already placed pressures on CASU FM to improve beyond what was already benchmarked and acknowledged as an efficient service. The challenge facing the service over the planning period was that of delivering further efficiency savings, further improving quality of service in core areas and doing so within a reducing resource provision. Clearly this continued to be a major challenge, particularly for a service such as estates and facilities that had already delivered large efficiency savings for each of the previous five years, together with delivery of a wider range and greater complexity of services. Through efficient and well-managed attention to the needs of the estate, operating costs had

been maintained well below sector average. In order to maintain this situation in the medium to longer-term under-funding in major maintenance required addressing.

In order to maximise the level of income generated by the service, increased attention was to be dedicated to the identification of all income streams involving the service. This continued to significantly contribute towards the funding of revenue expenditure budgets through a reduction in total net resource by the service.

6.4.3.5 TRAINING AND DEVELOPMENT

CASU FM sought to maintain a quality ethos, which provided an excellent experience for its customers and staff and promoted a comprehensive quality management approach for all its activities. Its commitment to staff development was the key objective in achieving CASU FM's success. CASU FM tried to understand and to provide for individual needs through the appraisal process, and to provide an appropriate allocation of resources to achieve staff personal development plans. The University's "Investors in People" programme and staff appraisal scheme continued to provide the infrastructure for the identification, planning, delivery and evaluation of CASU FM staff training and development needs over the planning cycle. Within this framework, use had been made and was planned for the use of standards based training and University derived development programmes. The emphasis was to be placed on lifelong learning, developing staff to fulfil their respective potential and achieve optimum working performance measured against appropriate recognised and relevant standards. Wherever practical, knowledge and skill was assessed and accredited to a nationally recognised level.

Outwith the University mainline training programmes, CASU FM services sought to update professional and technical skills and knowledge in order to keep up-to-date with rapidly changing legislation and technology relevant to the various professions active in the service. The recognition of continuing professional development as a right for each individual was one which was encouraged in order to sustain the medium to longer-term innovation of service.

6.4.4 CASU DISCUSSION

The management and leadership required at all levels to move the service from already being efficient and very good at what it did, to a position of providing excellence that meant: quality services in appropriate areas, at the right time, closely matched to client need at least possible cost. This was the continuing challenge facing everyone in CASU FM.

The delivery of facilities services to consistent standards was pursued, serving an increasingly demanding and diverse customer base. The scope to maintain previous years cost improvement savings had reached the stage where any new savings of a significant nature could only be delivered if matched against reduced service levels coinciding with reducing demands from service users or the cessation delivery of some selected services.

The development thrust of the CASU FM continued to be one built around the common University drive to deliver excellence throughout, by a clear quality strategy and encouragement of staff to fulfil their potential and maximise individual and team contributions. The need to maintain progress and deliver further efficiencies involved developing increasingly innovative and intellectual solutions. This was increasingly dependent on the recruitment, development and retention of quality staff within the service.

Barriers to achieving change were not restricted to the areas of skill mix, expertise, experience, or staff training and development. Although these areas were very important, crucial factors were the values, attitudes, personal maturity and intellect of individuals and their ability to function as part of an effective team. These were the main characteristics which determined the operating culture within the CASU FM and were also at the core of key quality issues as devolved management, individual responsibility and accountability and ultimately effective and efficient team performance.

There were a number of issues facing the CASU FM, which potentially inhibited its ability to achieve its goals. These issues or blockages to progress needed to be

considered more fully to achieve an appropriate outcome. These included the following broad areas:

- Closure and disposal of buildings;
- Research and storage space;
- Funding and training in Information Technology;
- Financial regulation controls;
- Security review recommendations; and
- Appropriate resource provision.

6.5 CALO

6.5.1 ABOUT CALO

Established in 1997, the CALO was a representative body for local authorities and built on the strengths of the three previous local authority associations. The CALO was formed from the belief that one strong voice could present the case for local government better than several separate organisations. As the national voice for local communities, the CALO spoke for nearly 500 local authorities representing over 50 million people and spending £65 billion a year on local services. The CALO vision of one national body was complete with 100% local government membership. Every local authority in England and Wales was in membership of the CALO. In addition, the CALO represented police authorities, fire authorities and passenger transport authorities thereby; CALO provided the national voice for local communities in England and Wales.

The CALO had established five key commitments for local government to demonstrate its commitments to new ways of working (CALO internal document, 2000):

- Maintaining the highest standards of probity in the conduct of public affairs;
- Providing civic leadership by speaking for the communities;
- Securing best value and the provision of services of the highest standard;

- Engaging with the residents and the partners in broadening and deepening local democracy; and
- Reviewing and experimenting with the way local government conducts its business.

6.5.2 CORPORATE AIMS AND OBJECTIVES

The CALO had been established to promote the case for democratic local communities which are prosperous, safe, healthy and environmentally sustainable, and which provided equality of opportunity for all citizens. The CALO aimed to deliver the following (CALO Business Plan, 2000):

- *Developing policy, research and strategy* – to engage in high level development work at the leading edge of policy, research and service delivery issues in order to promote local government in the service of local communities;
- *Lobbying and communications* – to be a first class lobbying organisation for local government and to communicate CALO’s priorities and objectives;
- *Supporting member authorities* – to provide an efficient and effective service to member authorities and individual councillors working in partnership with the central bodies in the local government family; and
- *Managing the resources* – to be an efficient and well-managed organisation.

These organisational aims encompassed the main functional areas of the CALO’s work and directly related to the mission statement: “to be an effective national, representative organisation that promotes democratic and effective local government in the service and support of communities which are safe, prosperous, healthy and pleasant to live in and which provides efficient support to member authorities and councillors” (CALO Business Plan, 2000).

The following figure illustrates the CALO’s management structure (Figure 49):

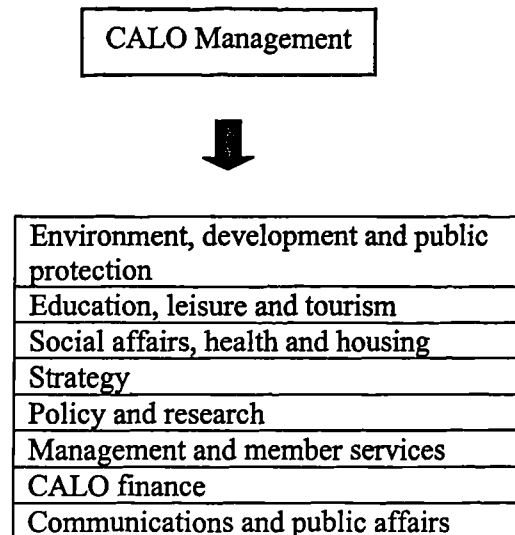


Figure 49: CALO management structure [Source: CALO Internal Document (2000)]

6.5.3 FACILITIES MANAGEMENT SETTING

The key issue relating to management of support services within CALO was about providing the support services necessary to deliver CALO's mission as an organisation. These mission objectives of CALO FM were (CALO FM Internal Document, 2000):

- To manage the facilities at CALO to provide high quality services for members and staff;
- To make best use of the CALO's capital assets;
- To provide high quality printing dispatch and office support services which meet the needs of members and staff; and
- To provide support and company services as required to the central bodies.

FM activities relating to CALO had formed around maintaining its high tech "house" situated in the heart of London. This was appropriate for a body, which wanted to be a world class lobbying force on behalf of local authorities. Moving to a single, modern site was symbolic of the way the CALO intended to operate in the future. The CALO was adopting new and innovative ways of working to match the style of its new office floors, which were in the main open plan and spacious. One of the key design concepts was to provide flexible office space that provided a mixture of open

plan, quiet rooms, meeting space and social areas, reflecting modern styles of working. This approach promoted group working with colleagues and external partners and with individuals working across traditional departmental boundaries.

The FM structure had been formed around the Head of Personnel and Support Services. He was supported by the Head of FM, a Facilities Manager, Office Services Manager, helpdesk operators, supervisors, portergae and site technicians. Main functions of the CALO FM included: technical helpdesk, meeting room organisation and management, catering, building maintenance, customer service, planned maintenance and term contractor management, security, cleaning, portering, budget management and reporting.

6.5.3.1 TOTAL FACILITIES MANAGEMENT SERVICES

A FM consultant provided a total FM service at CALO. CALO was provided with the management of on-site facilities service contractors, financial management of CALO running costs budget and environmental and energy management. FM within CALO covered a wide range of activities as identified above, however, CALO had chosen to contract-out majority of these functions and so CALO's FM consisted of an in-house management team of a few facilities managers who ensured that the various contractors completed their duties to the terms of the contracts..

CALO had faced difficulties in implementing FM from a position of no management structure to a fully operational FM team in only 6 months, putting workable procedures in place, staff training and learning a new building.

The services that external FM consultants provided to the CALO can be summarised under the following headings:

- General management, administration and financial management;
- Procurement and management of facilities services contractors;
- Environmental and energy management;
- Maintenance surveys; and
- Property management services.

The consultant had assembled an enthusiastic team, with fresh ideas who could work in partnership with the CALO to provide a quality and efficient service and value for money. A profile of the FM consultant's contract with CALO was to provide FM services for three years with an option to extend.

6.5.3.2 STRATEGIC OPERATIONS

At CALO, the keynote theme to the FM services was “control, quality service and communication”. Because external FM consultants were responsible for management of all non-core activities within CALO, customer information services and initiatives were a key part of the strategy. The contract management team representing the FM consultant was updated by the in-house FM management team prior to communication to customers.

FM in CALO was viewed as a purely operational function providing daily services that ensured the smooth running of the headquarters building. This represented the first generation FM as identified in section 2.3.4.2.1 of chapter two. As long as the CALO's FM maintained its support services to a high standard and problems were dealt with as they arose, the CALO could concentrate on its core business and consequently saw no real need for a facilities strategy. However, due to number of external forces identified (section 6.5.3), CALO had been forced to rethink the importance of its facilities. Therefore, even though the FM department was not likely to become involved with strategic planning there were plans to extend its services. Over the past year or two, they had gained a lot of experience in managing daily support services.

6.5.4 FACILITIES PERFORMANCE

In creating the culture of “an efficient organisation”, CALO tried to provide the fullest support services necessary to deliver the organisation's prescribed objectives. Simply liaising with the contract management team was not sufficient in CALO, because of the size and nature of the building, its multi-occupier nature, and the number of issues the FM team managed. Members of the contract management team

and the facilities service contractors needed regular information on service level agreements and measures being taken to improve the service provided.

Even with a partnership approach to FM services, there had to be a formal system for performance monitoring and benchmarking to ensure standards, and that quality and response times were met. The performance indicators used to measure CALO's success in this area included: a satisfaction survey, the financial outturn in relation to 5 year financial plan, a staff survey on development and the CALO as an employer, employee monitoring and monitoring of improved skills mix in relation to the CALO secondment programme. Accordingly, CALO measured success in achieving the facilities objectives by conducting a customer satisfaction survey, and regularly monitoring the volume of business undertaken using electronic communication.

Measures of client satisfaction were carried out by the FM team by means of weekly inspections of the building, monthly formal audits, general notification by clients on a day to day basis and follow up of complaints and queries. Further, facilities were being checked by the supervisors on a day-to-day basis and regular meetings were conducted between FM personnel to review the feedback received from the users. Even though the meetings were a useful way of gauging satisfaction with facilities services, there was generally no time to discuss things in great detail and only certain people's views were represented. Even though outcomes were being assessed constantly but no actual data was systematically available.

The 1999 Local Government Act which introduced the best value legislation, was the corner stone of the CALO's modernisation agenda. It required CALO to assess all its services over a five-year period by using the principles of 4 "C"s – challenge, compare, consult and compete (adapted from Clark and Rees, 2000). However, this had little relevance to FM and Audit Commission (1988) and Department of Transport, Environment & Regions (2000) reports that were specifically relevant to asset management and FM would be expected to be driving the strategic direction and requirements of officers and members involved. It must be noted that the requirements laid out in these reports complement rather than contradict the principles of best value.

6.5.4.1 CONTRACT MANAGEMENT

A FM consultant was responsible for facilities contractors' administration, monitoring and management. The contractor management responsibilities were discharged through the combined efforts of the team formed between CALO FM and the FM consultant. The facilities team ensured that the contractors were adhering to the health and safety procedures that were in force throughout the building. The compliance team focused on performance monitoring, and the general management of the contract and the business support team processed invoices from contractors after they had been authorised by the compliance team. Effective communication was encouraged between teams in an effort to prevent them working in isolation in their specialist areas.

All contractors were working under an annual budgetary restriction based on a “cost plus” contract setting which set out key performance indicators and service level agreement standards in the tender documentation and this was measured on monthly basis by the in-house FM team. In developing a successful FM strategy for the FM commission, four main ingredients influenced (CALO FM Internal Document, 2000):

- Effective communications;
- Value for money;
- Quality customer focused service; and
- Helpful and caring attitude

Communication between the management team and the service contractors was a two way process, and feedback to the FM team was an essential ingredient in successful service delivery. This was achieved through customer feedback, informal presentations, in addition to spontaneous comments. The suggested improvements were incorporated into the services by the FM team after appropriate discussions, and consequently reviewed for effectiveness.

6.5.4.2 COST CONTROL

Site technicians carried out daily service meter readings which were collated and submitted to the FM team on a monthly basis in graph format for reference. Costs relating to utilities were also monitored monthly and spend checks against the previous bills received. An environmental policy was in place and all items relating to the building and ways to save spiralling costs were constantly upgraded. Measured term contract rates for the building maintenance were worked on the previously agreed rates and submitted by means of monthly valuation by the term contractor.

Costs were being monitored via the FM consultant organisation. This exercise was underway to streamline the contracts in place in its cleaning, security, building maintenance and FM helpdesk roles. It was believed that it would be more effective when systems were developed in relation to cost benchmarking as, at the time, there was no comparative benchmarking in place.

Difficulties had been encountered when the building was still in its infant stages and comparative costing from previous years had not been available. Once the buildings had completed a year of operation, it was anticipated that it would be possible to provide one complete years costing, which will enable the benchmarking process for future analysis.

6.5.5 CALO DISCUSSION

The CALO organisation was unusual in that it contracted out the majority of its FM services, however, that arrangement appeared to work extremely well in this case. Perhaps the most noticeable effect of this approach was that the facilities systems tended to be much more formal and structured as because the contracted staff were not necessarily always on site and so workloads had to be planned carefully to make the best use of people's time.

The nature of CALO business meant that the various elements of FM services never received the same prominence as they did in other sectors. In 1988 the Audit

Commission (1988) focused on the need for greater attention to be paid to the strategic and policy implications of property ownership and use. Department of Transport, Environment & Regions (2000) more recently concluded that this remained the case and government initiatives required CALO to place greater strategic importance on managing property assets. This emphasis on efficiency, effectiveness and economy, whilst not referring specifically to facilities/asset management, was creating new demands upon this function.

CALO's FM had not been involved in strategic decision-making in the past and the researcher was aware that CALO had little understanding of FM, and of how well they would integrate, with strategic influence, to enable CALO to deliver best value and best practice. Research into the origins of support services in these public sectors showed that the contribution made in the NHS, for example had been recognised in government since 1954 and was seen as key to meeting the needs of users of the service (Clark and Rees, 2000). However, in CALO FM was viewed as an internal function with little impact on meeting the needs of those who consume CALO services.

6.6 CALA

The CALA University was a modern University with a well-deserved reputation for excellence, situated in the North West of England. This excellence was demonstrated in its academic programmes, the research on which its programmes were based, the support it gave to its students, the employability and employment record of its students and the physical environment of the University of CALA.

The purpose of this University was to encourage and enable individuals to develop their full potential by providing a high quality and stimulating learning environment encompassing a wide range of relevant educational activities. To encourage and enable individuals to participate in the learning environment the CALA University aimed (CALA Internal Document, 2000):

- To provide the widest possible access to those individuals who seek to benefit from its educational activities and to remove barriers to those with special needs;

- To encourage and enable those in the region of the University to participate in and benefit from higher education in general and the University's provisions in particular, thereby taking part in the enrichment and development of the region's social, economic, cultural and recreational activities; and
- To develop relationships with other educational institutions, particularly within the region of the University and to facilitate progression through the educational system.

To promote the development of the full potential of the individuals participating in its educational activities, the University aimed (CALA Internal Document, 2000):

- To ensure equality of opportunity by combating all forms of prejudice and by eliminating all forms of unfair discrimination; and
- To ensure adequate levels of literacy and numeracy, to foster the development of a spirit of enquiry leading to open and critical minds and to provide an environment in which individuals could develop their ability to act with confidence and competence.

To provide a high quality and stimulating learning environment, the University aimed (CALA Internal Document, 2000):

- To provide opportunities for all for involvement in the provision and development of the learning environment;
- To foster contact and understanding between the University and members of other educational institutions regionally, nationally and in other countries; and
- To engage in scholarly, research and income generation activities supportive of a stimulating learning environment.

In interpreting and implementing its purpose and aims, the University claimed to adopt, as appropriate, an innovative, reflective and dynamic approach.

6.6.1 FACILITIES MANAGEMENT APPLICATIONS

CALA FM's mission statement was to ensure the corporate aims and objectives of the CALA University were met by providing the highest quality of services in terms of estate management, maintenance and development and to deliver this service efficiently and effectively, within available resources, and through liaison and co-operation with other managers.

CALA FM had worked as a team developing the University for the past 6-7 years. In that time, it had been responsible for developing the available space for teaching and administering the business of the University.

Accordingly, CALA's FM arrangement looked as follows (Figure 50):

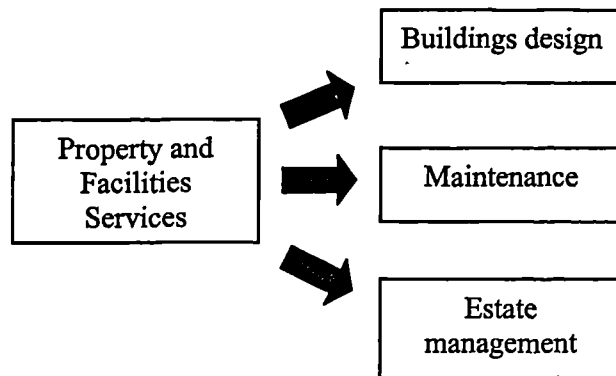


Figure 50:CALA's FM structure [Source: CALA FM Internal Document (2000)]

6.6.1.1 BUILDING DESIGN

The building design office was responsible for the erection of all the new buildings on the campus and for the continued refurbishment and remodelling of existing premises and bringing facilities up to date. The office continued to follow a contemporary design brief, where appropriate, reflecting the realistic aspirations of a new University with an understanding of its students' and other stakeholders' needs. It hoped to continue its drive and determination to deliver a vibrant and exciting environment within which the students and staff at the CALA University could fulfil their dreams.

6.6.1.2 ESTATE MANAGEMENT OFFICE

The estate management office was primarily concerned with three interactive functions (CALA FM Internal Document, 2000):

- Strategic planning of the whole estate to interact with the academic planning of the institution;
- The effective management of the estates and its assets; and

- The planning, design and provision of new or upgraded buildings, plant, services and equipment.

All the functions listed above were provided by a multi-disciplinary team of professionals who recognised the value of providing a quality environment for all clients. The following core activities were provided by the estate management office:

- Property portfolio;
- Measurement and drawings;
- Energy management;
- Maintenance management; and
- Building fabric and engineering surveys;

CALA FM needed information in order to perform its vital estate management functions. The property portfolio was an important reference document providing the essential information required for complimenting the smooth running of the estate.

From an environmental position and economic use of resources every organisation was under an obligation to manage energy efficiently. Energy management services included: surveys and audits to discover patterns of energy consumption and to identify cost savings; advice on monitoring and target setting to check energy leading to lower consumption; advice on a multi-year programme of energy efficiency measures, and the provision of training to encourage energy efficiency awareness.

6.6.1.3 MAINTENANCE MANAGEMENT

A programme of planned preventive maintenance was required to ensure the building components realised their life expectancy. *“Unfortunately in most large and diverse property portfolios planned maintenance was left until it is too late”*, commended Faiclitied Director. Maintenance management needed to be addressed to ensure that the building’s purpose and the capital value were retained. CALA FM’s maintenance management service included: stock condition surveys of building fabric, services and infrastructure to identify corrective preventive and planned maintenance, and a

programme of maintenance investment for yearly, five yearly, and twenty yearly periods to allow a phased and effective provision of resources.

6.6.1.4 OVERVIEW OF SUPPORT SERVICES

Facilities services facilitated the day-to-day service related operations of CALA. A mixed economy of in-house and outsourced service contracts were provided to the CALA and over this development period considerable experience had been gained in the successful implementation of these contracts. An established policy relating to support services continued to be central to the CALA FM's activities.

6.6.1.5 SUPPORTING EXCELLENCE

CALA FM believed that its services should be: healthy and safe, fit for the purpose, maintained in a good condition, used effectively, run efficiently, hold the right tenure, be supportive of corporate goals, be in the right location and be of the right size. Property services were committed to providing and maintaining an environment which was fit for purpose and conformed to requirements, and facilitated the successful delivery of the core business. Accordingly, members of CALA FM were required to providing a quality and professional approach to user needs and provide a speedy effective service in line with the customer care philosophy.

6.6.2 FACILITIES MANAGEMENT SERVICE EVALUATION

A support service audit department had been established was fully functional, and continued to develop its expertise in both the qualitative and financial aspects of FM service contracts.

The CALA was committed to provide high quality services for stakeholders, and through investment in training initiatives; the staff had become more focused on developing organisational standards. User satisfaction with service delivery was monitored through a number of feedback mechanisms such as user questionnaires. The responses were evaluated and action taken where necessary.

The staff and management also had an opportunity to voice their opinion on the quality of services through the customer feedback form introduced to service users. This allowed the CALA FM to monitor quality across all aspects of FM service provided. Other initiatives included the introduction of a call logger system to monitor the performance of the switchboard service and a telephone helpdesk system for FM services.

The attitude of staff and their total support in providing a quality service was fundamental to the organisation's overall effectiveness. In this particular case, although the staff were fully aware of the above initiatives many still did not appear to make full use of them.

6.6.2.1 VALUE MANAGEMENT

The practice of value management was incorporated into the CALA FM through the adoption of standardised performance indicators. All budgets had to be carefully scrutinised with more emphasis put on achieving "value for money". Regular reviews of FM service requirements and the costs of achieving them were carried out using the agreed performance indicators plus other tools including market testing, customer satisfaction surveys as identified already, and past experience of the higher education estate and facilities industry.

6.6.2.2 RISK MANAGEMENT

Risk management strategy of CALA FM was under developed but had called for the formation of a risk management committee chaired by the head of facilities. Its purpose was to establish a practical and systematic framework for focusing the CALA FM's approach to risk management. Their main aims being to (CALA Internal Document, 2000):

- Improve the safety of all stakeholders of CALA;
- Enhance the quality of service provided; and
- Minimise its financial liability due to unsafe conditions.

The objective of the risk management strategy was to systematically identify, analyse and control risks. Risk identification was implemented through further development of the “Incident Reporting System”, and the health and safety control book for managers. Risk analysis and control was carried out by utilising “Safe-code” notes and other relevant memoranda.

6.6.2.3 EFFECTIVE COMMUNICATION

Effective communication was the key to improving service quality and property services have developed a number of initiatives in order to achieve it. Improved oral and written communication, communication channelled down to staff, property services bulletin, database and programmes, property services brochure and action groups were some of the initiatives that CALA FM had taken to improve communication.

6.6.3 CALA DISCUSSION

The University’s physical environment had been rated as an excellent resource for the students. In this context, CALA FM aimed to provide advice and information on all land and property matters related to the University estate, ensuring quality of the built environment, establishing standards and maximising the use of the estate and facilities on sound value-for-money criteria and to provide an effective reactive maintenance service that ensured the estate operated efficiently and to agreed service standards.

CALA FM was working on a “Property and facilities service development plan” and it was linked to the University’s four main objectives. In achieving these, CALA FM continued to develop the work of property services quality groups and implemented their recommendations, continued to initiate, develop and implement quality systems and management to meet the demands of thriving estate and to achieve, where possible, ISO9000 registration, and continued its commitment to staff development and training, and embraced the “Investors in People” philosophy (see section 8.4.2.3.1.1 of chapter eight).

CALA FM, through its development plan, aimed to operate at a level that not only gave value for money but also strengthened customer confidence within the core business of the University by delivering an improved quality of service.

6.7 CABO

6.7.1 ORGANISATION IN GENERAL

The CABO NHS Trust was formed in 1994 being previously part of a Health Authority situated within North West of England. Achieving Trust status brought about managerial independence from the local health authority and allowed the Trust to greater flexibility in managing its own affairs, raising finance, responding to change and developing its workforce (Annual Report, 1996/97). The purpose of the Trust was to provide high quality clinical services through the effective and efficient use of resources, according to the needs of the patients.

6.7.2 ORGANISATIONAL PHILOSOPHY, VISION, MISSION AND VALUES

Mission, vision and strategy were the statements of the organisation's highest-level purpose, desired end-state, and methodology for achieving that end-state for its business systems. All objectives and measures sought to support these statements. The Trust's vision for the future was, "to be the local provider of hospital and community based health services, continuously pursuing excellence in services to patients and carers". The Trust's aim was to improve the quality of services to patients and achieve value for money, whilst satisfying the needs of purchasers of health care. It was, "to provide high quality clinical services through effective and efficient use of resources, according to the needs of the patients". The organisation had published a commitment that (CABO Internal Document, 1999):

- Its services will be patient-centred and responsive to purchaser needs;
- Its staff will be valued and their skills, talents and commitment developed;
- Effective relations with purchasers, other providers and local agencies will be fostered in the best interests of high quality patient care;

- Services for local people should be effective and broadly based;
- Effective internal and external communications will be central to the Trusts' business; and
- There will be a strong commitment to quality, in all areas of service.

6.7.2.1 TRUST'S STRATEGY

It was almost four years when this study started since the Trust took time to examine its objectives as an organisation. Since that time, the context in which it operated had considerably varied. During 1999, the CABO Trust began to discuss and consult on its plans for the next five years and some of the major issues laid down were listed below (CABO Internal Document, 1999):

- To increase awareness of the potential within the estate resource to improve healthcare;
- To secure value for money in the development, management and use of the estate; and
- To secure, a work-place environment to deliver high-quality patient care.

The strategies were further elaborated as the following objectives (CABO Internal Document, 1999):

- Provision of a safe environment for patients, staff and visitors which met agreed quality standards and legal requirements;
- Risk assessment – protection against hot surfaces, fire-code compliance, environmental health, highway maintenance, protection against legionellae and rewiring and associated repairs to Trust head quarters;
- Energy, utilities and environmental management;
- Other developments involving estates – capital asset management, major capital developments, estates management;
- Income generation - contract for provision of wheel chair maintenance, ground maintenance advice contract with other hospitals, contract for inspection of registered nursing homes and maintenance of premises of healthcare centre;
- Reduction backlog maintenance;
- Financial management;
- Human resource management;
- Contract/activity management;

- Arts project/fundraising; and
- Avoidance of disability discrimination including the appointment of disability advisor

6.7.2.2 KEY ISSUES AFFECTING PLANS

The business plan for the CABO Trust had been developed within the framework of the White Paper “The New NHS – Modern and Dependable” (Department of Health, 1999a). The quality agenda continued to develop through the Trust’s strategy for the implementation of clinical governance. A guidance note, “Modernising Health and Social Services: National Priorities Guidance” was issued subsequently and this explained the national context in which local plans should be developed to achieve the government’s aim of modernising health and social services.

In order to achieve the vision of the Trust identified above, progress was needed in a number of key areas which underpinned all service development, such as properly resourcing services, developing and involving staff, introducing modern information systems, and developing a modern infrastructure of buildings and equipment. A number of strategies had been made available and local implementation was underway, the most notable of these were the information technology strategy and human resources strategy.

6.7.3 FACILITIES MANAGEMENT PROFILE

The CABO’s estate and facilities comprised a variety of buildings of varying ages and condition and associated services. The oldest buildings dated from mid-1860’s, the most modern being built during 1998. A development control plan had been drawn up in 1999 which identified an investment of approximately £ 2.2.million over the next 3 years.

CABO FM, within the Trust was arranged as follows (Figure 51) (CABO Internal Document, 1999):

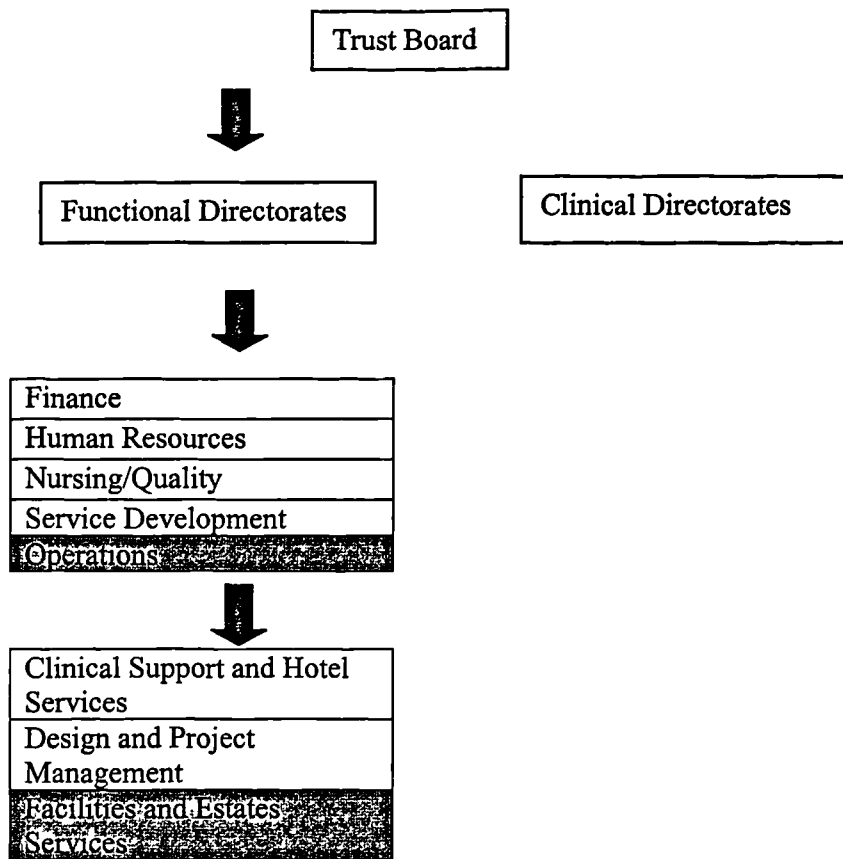


Figure 51: Organisational structure at CABO [Source: CABO Internal Document (1999)]

The Estates and Facilities Division of the Operations Directorate of the CABO Trust aimed to provide a high quality, cost-effective service for the maintenance of buildings, engineering and related services, medical and surgical equipment, and for design, project management and property services. More specifically the functions of estates and facilities included:

- Building and engineering service maintenance;
- Electronics and biomedical engineering;
- Asset register management;
- Energy management;
- Design services;
- Project management;
- Property appraisal;
- Property management;

- Capital and asset management; and
- Arts project/fundraising

Routine liaison took place between CABO functions and finance function of the Trust to monitor payments made against capital allocations.

In terms of positioning within the organisation structure, the range of facilities and estate was the direct responsibility of the head of operational services represented at the second tier of the corporate structure.

Whilst the representation of property matters was at the heart of the corporate structure, it was the level of influence its role was able to contribute to the business processes that mattered. The following comments of the Facilities Director reflected the senior management consensus: *“Property and facilities are generally misunderstood by the senior management – seen as simplistic. No appreciation of the FM aspects - that they cost money to maintain them and should be properly managed just like any other business resource. Issues generally considered as an afterthought after key business decisions are made..... There is a need to promote facilities life cycle management”*.

6.7.3.1 MANAGEMENT OF FACILITIES

FM within CABO covered a wide range of activities as identified above, and the organisation had chosen both in-house and contracting out options to carry out day-to-day FM operations. Each in-house functional unit was responsible for carrying out work in their own area of expertise. With contracted services that needed to be carried out on a regular basis, the contractor worked to a detailed specification compiled by CABO FM. Even though the various outsourced personnel come from different companies they were encouraged to see themselves as part of the facilities team.

Management of facilities and estate was supported by detailed information collection and analysis. This comprised the following elements (Table 40):

Estate terrier	Updated continually
Building condition appraisal with interim	Update annually
Engineering conditional appraisal	Updated annually
Functional suitability and space utilisation	5 yearly
Energy	Annual audit
Safety	Annual audit
Fire safety and statutory requirements	Continuing update based on service reports and fire code reporting

Table 40: Management of facilities [Source: CABO Internal Document (1999)]

The asset register of the CABO Trust was held by its Estate and Facilities Directorate using WIMS software. Mechanisms were in place for the regular validation and updating of the asset register and for tracking the movement of assets in order to ensure an accurate reflection in capital charges. The register was used as a vehicle to record the status of equipment regarding its compliance with Y2K issues.

6.7.4 PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

6.7.4.1 CUSTOMER SATISFACTION MEASUREMENT

CABO facilities and estates aimed to meet customers' wants and needs, and to build long-term relationships and to provide effective services to, and establish effective partnerships with, internal and external customers. Effective service partnerships were key ingredients in assessing the health of facilities in the CABO Trust.

To understand the extent to which internal and external customers were satisfied with specific personal property products and services, questionnaire surveys had been devised to ascertain "customers" views of support services. The areas addressed included transport, car parking, signage, waiting areas, treatment areas, access, food and other facilities. Core elements under consideration within this scheme were: timeliness of services and products received, quality of services provided and the degree of partnership that existed between personal property functions and external customers in terms of responsiveness, co-operation, and level of communication.

These surveys were utilised to obtain customer perceptions regarding the estates services and recommendations resulting from these surveys were developed. Results were also communicated to customers.

6.7.4.2 FACILITIES MANAGEMENT INTERNAL PROCESSES

CABO FM operated several monitoring mechanisms to make sure that FM functions were properly managed.

The concept of operational effectiveness ensured that appropriate processes were established and maintained to support customer needs and to achieve the primary objective of providing effective life cycle management of estates services. It further dealt with establishment and maintenance of effective life cycle management of assets to meet the estates services mission – which included: accountability of estates' assets, effective utilisation of equipment and timely disposition of excess and surplus property.

Efficient communication provided clearly, in plain language, using methods and timing which met the needs of the recipient, and communicated the plans and vision to the staff that were fully involved in discussions to achieve the aims.

A major internal FM issue was to secure a workplace environment to deliver high-quality patient care. This helped to ensure that clinical standards were met as CABO FM was accountable for continuously improving the quality of services and the standards of care by creating an environment in which excellence and clinical care would flourish. Regular internal audits were taking place in buildings and engineering services contracts including: ground and gardens maintenance contracts, prevention of legionellae, safety, highways, gritting and snow clearing, compliance with the construction and design and management regulations. Also, procedures were taking place within CABO FM relating to continued registration to ISO9002 for quality assurance.

All work carried out or procured by CABO FM took into account statutory and mandatory requirements relating to health and safety. A library of risk assessments

had been developed for both location and job. The former had been published through CABO FM and a set of information was available for contractors. The measured term contracts had been redesigned to incorporate risk assessment requirements.

Membership continued with the North West environmental networking group. This information was being used in-house and was provided for external contractors. A high priority was given to safety training and statutory issues when formulating the training and development plan.

6.7.4.3 INNOVATIVE FACILITIES MANAGEMENT

CABO FM focused on the objectives of ensuring employees had access to dynamic and strategic information systems and ensured that they were aligned to CABO's business strategies. This promoted organisational and individual growth providing long-term benefits to the estates function.

CABO FM encouraged innovation in pursuit of improvement and to increase awareness of the potential within the estate resource to improve healthcare. Further, CABO FM sought to take necessary steps to sustain its reputation as experts in estate management to be recognised as a centre of excellence and to and pursue research-based policy determination and advice.

6.7.4.4 FINANCIAL ISSUES

Some of the financial issues relating to CABO's FM activities were as follows (CABO Internal Document, 1999):

- Strive for optimum cost efficiency of facilities and estates operations;
- Secure value for money in the development, management and use of the estate in the Trust;
- Establish a cost and performance baseline for each targeted process and trend cost annually; and
- Demonstrate an improving trend in efficiency in the aggregate for targeted processes

Based on the above broad objectives the following were identified as important in terms of achieving value for money: achieving cash releasing efficiency savings and identifying cash releasing efficiency targets, and continuing to implement strategic financial solutions. In addition to delivering value for money, CABO FM was required to concentrate on three basic financial targets: balanced income and expenditure, return of assets, and a balanced external finance limit.

Efficiency and savings represented many considerable financial pressures within CABO FM which would significantly reduce the real growth available for initiatives and improve performance. CABO FM was needed to be contributed towards improved efficiency and minimum cash releasing efficiency savings that were required.

CABO FM continued to generate income from external customers to improve the level of service able to be provided to the Trust as a whole. Contracts with external customers helped to bring in additional income and the income generated directly enabled CABO FM to achieve a balanced budget.

6.7.5 CABO DISCUSSION

The measurement process described in previous sections was an example of one way in which CABO organisation learnt about its FM activities.

Maintenance needs were assessed based on the information collected from a variety of sources (described in section 6.7.3.1) and were then included in a priority index system which ranked needs on the basis of agreed criteria. There were targets to key areas which were identified in condition surveys. The CABO Trust's policy was to respond to the recommendations of its estates and facilities which were based on the above performance measurement techniques. A regular commitment was made and, in the event of a special need arising, a business case was submitted.

Performance assessment data at CABO FM provided information which was combined with the capital asset management initiative in order to respond more specifically to demand for resources and the identification of surplus assets.

Although within CABO, tools to measure facilities performance were in existence these processes did not address all the areas which needed to be considered. Chapter eight considers up these issues under different headings of facilities performance.

The CABO FM findings also contributed to the thesis by supporting the basis of the theory developed from the CACE FM case. This case also supported some of the findings in the trends outlined in the four generations of FM outlined in section 2.3.4 in chapter two.

6.8 CASA

6.8.1 GENERAL ORGANISATION

Whilst the University of CASA already attracted students from a wide range of socio-economic and ethnic groups, there were significant opportunities open to it. The city in the North West of England, and the number of neighbouring metropolitan areas, had low higher education participation rates and the CASA University was well placed to work with these local communities in addressing this problem.

As an institution in receipt of considerable sums of public money the University was subjected to the continuing emphasis on openness and accountability in the public sphere. Having understood the context within which the CASA University had to operate it was important to assess dispassionately its strengths and to identify those activities or attitudes that made it distinctive.

Taking due account of the institution's strengths (and weaknesses) it was then possible to move forward to identify broad aims for the future which encompassed the core areas of activity: teaching and learning, research, and commercial/entrepreneurial activity (CASA Annual Report, 1998/1999):

- To strive for high standards and quality in all areas of activity;
- To recognise the interdependence and equal value of the three core activities (teaching, research, commercial/entrepreneurial activities);
- To have a pro-active attitude towards the changing requirements of society, funders and students; ensuring academic provision is

responsive to demand and that students are treated as valued customers;

- To sustain a national and international identity and reputation;
- To identify with the local and regional community; working with others to widen educational opportunities, to secure economic regeneration and to enhance the city's pride in itself; and
- To maintain a commitment to external engagement and partnership with all sectors of society.

6.8.2 FACILITIES MANAGEMENT STATE

While the core activity of CASA had a mission and objectives, it was also correct to say that the CASA FM had a mission and objectives within the overall organisational scheme. CASA FM's aim was to provide a professional and cost effective estate management service to enable the University's academic and support activities to proceed in a safe and efficient manner and to create an environment which facilitated the work and social conditions of staff, students and visitors.

CASA defined FM as the support services and physical resources of the institution that are key to its business success. This definition of FM recognised that FM arrangements may include a broad range of academic support, administrative, and technical services; and that these arrangements can differ widely for CASA. FM was not about "contracting out" key services to external service providers, within CASA, it was about establishing an integrated resources infrastructure and management approach that would enable CASA to support the delivery of core activities, and to meet the clearly identified and agreed needs of its customers.

6.8.2.1 FACILITIES MANAGEMENT'S MISSION

The main goals of CASA FM was to ensure the maximum opportunity afforded, both by the University's budget and by its environmental policy, for each legitimate user group to operate in a safe and fit-for-purpose environment, within spaces of size, quality, configuration and location appropriate to the group's number and activities.

Accordingly, some of the strategic objectives of CASA FM are summarised below (CASA Business Plan, 1999):

- To keep under review the University’s portfolio of owned, leased and rented property, to ensure fitness for purpose combined with affordability;
- To provide a physical environment conducive to successful study, work and enjoyment of life in an academic community;
- To ensure the long-term well-being of the University’s estate through an effective and efficient system of maintenance; and
- To keep under review the physical configuration of the University, in support of its academic activities and the needs of support sections consistent with the need to achieve efficient use of space.

Figure 52 reflects the organisation and FM mission/objectives as being central to the business and support activities within CASA setting.

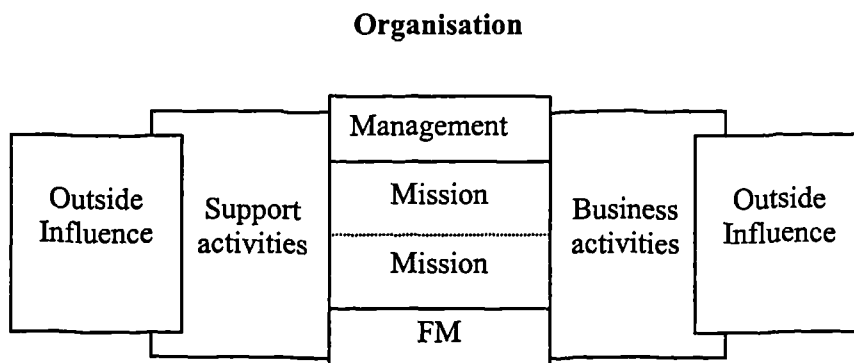


Figure 52: Interaction of FM within CASA [Source: CASA Internal Document (1999)]

CASA FM claimed to be a customer-focused organisation and customer satisfaction was paramount to the division. It had a responsibility to promote a caring and flexible approach to its customers and the co-ordination of its estates and facilities needs.

6.8.2.2 IDENTIFYING INITIAL OBJECTIVES

To obtain value for money, CASA needed a clear and agreed set of objectives and criteria for FM arrangements, based on the needs of its stakeholders. This was a strategic exercise and contributed to the CASA’s corporate plan. A better delivery of service outcomes through FM was achieved by linking more explicitly the CASA’s strategic, tactical and operational documents to the corporate strategic business plan and the evaluation of customers’ needs.

FM needed to operate in partnership with academic staff to enhance resource management skills and processes, such as planning, service definitions and so on. Service level agreements played a valuable part in developing this partnership. Appropriate resources were required to match stakeholders' needs, to underpin the whole process of service delivery of support services.

6.8.2.2.1 SERVICES PROVISION

CASA's FM sought to implement a rolling programme of planned maintenance, upgrading and remodelling of the estate and facilities within the University's estate and facilities strategy. Accordingly, it provided services which improved and enhanced the working environment of faculties and other units of the University:

- Ensures compliance with all matters relating to health and safety legislation;
- Repairs and maintains the University's estate, to the best possible standard within the constraints of the resources available;
- Provides project management;
- Provides effective energy management;
- Responds to guidance offered or constraints imposed by external agencies;
- Maintains effective management information databases; and
- Monitors performance on an annual basis

6.8.2.3 INFORMED CLIENT FUNCTION

Another important element for effective FM arrangements was the "informed client function". This role was undertaken by a member of the senior management team who was independent of the more detailed service delivery processes. He ensured that the CASA's requirements were reflected in any procurement process, be it in-house or contracted out, in terms of corporate standards and faculty, school or department standards.

The informed client function was a critical one, acting as the client representative for both internally and externally procured support services. It required a thorough knowledge of existing arrangements, and of the CASA's business, culture, values,

goals and objectives. The informed client function also involved co-ordinating views within the CASA in establishing service level agreements to define the service requirements from service providers and, in formulating the CASA's corporate strategic plan, to set the objectives.

6.8.2.4 FOCUSING ON SERVICE DELIVERY

At CASA FM all support services, whether internally or externally provided, were subject to review: there were procedures to test the market, benchmark services and to maximise the use of limited resources. Performance indicators were developed to monitor and to link the individual service contributions from co-ordinated services. Some performance indicators for FM services were developed as part of the funding council's estate management statistics study.

A procurement strategy as part of the CASA's FM arrangements was being prepared to ensure that appropriate service standards were operating across CASA and that existing support service benefits were maintained.

The application of market testing was in the context of an overall strategy for the development and delivery of the CASA's support services. This strategy was then applied to the management of in-house services. In-house services operated in a similar way to services contracted out, namely, there was a strategic informed client function as identified in section 6.8.2.3 above.

6.8.3 CASA DISCUSSION

The future presented ever-increasing challenges for CASA: one such challenge was to improve the management of its support services. These services were vital for the institution in providing better quality outputs to meet the needs of its students, academic staff, visitors and other stakeholders. Better co-ordination between core activities and support services would mean that CASA could respond faster and more effectively to those demands for services.

Whilst the higher education properties could contribute to high quality education, it was the interrelationship within the organisational context that provided the catalyst for improved performance. From a business point of view, and from one of public accountability, the effective and efficient management and use of the property resource was imperative for CASA. Proliferation and diversity of technology and adaptation of sharing facilities (use of common teaching spaces etc.), and greater emphasis on quality in the study place, were some of the potential implications of the changes for CASA. Externally, they may inevitably suppress the demand for space and this in turn will increase the need to adapt redundant spaces to new uses. On the other hand, the recent expansion in higher education participation has forced Universities, including CASA, to achieve more economic intensive use of their facilities.

Performance evaluation played an ever-increasing role in CASA FM planning processes as external and internal factors placed more demands upon the facility. Measuring performance explicitly focused attention on feedback loops and this influenced behaviour. This was especially true for CASA which was entrusted with the responsibility of utilising public funds judiciously. Performance measures provide a mechanism to both learn from the past and evaluate contemporary trends in the use of facilities. It was hoped that the collection, interpretation, and analysis of information about performance measures of facilities would provide the key to better planning and design for the future.

It was likely that CASA may take a more progressive commercial approach to resource allocation than has been the case in the past. As such it was suggested that University models of facilities performance evaluation such as in CASA FM, if developed sensitively, could be more useful to inform not only resource allocation in Universities but also to lead to development of new resource-based approaches for commercial competitive advantage.

6.9 SUMMARY OF THE CHAPTER

The findings from the case studies presented in this chapter are summarised in Table 41. It is worth noting that the case studies investigated confirmed some of the trends

of FM generations uncovered in part one of chapter two. Specifically, the trends towards strategic FM, that is integration of FM function with that of the core business was confirmed in most of the case studies.

The analysis of the case studies revealed that each organisation is confronted by a different set of core factors that are particular to its industry and suggested that while some are fundamentally reviewing their entire FM operational strategies in the light of the above-identified factors; others appear to maintain the current systems, content to adopt a reactive response to demand. The evidence from the case studies analyses and identifies a range of awareness levels from: “*we maintain cost benchmark levels of facilities operations*”, to a “*strategic review*” of the whole facilities portfolio with a view to incorporating major rationalisation and introduction of innovative performance management concepts.

The theory to be developed in chapter eight derives from the findings of the case studies presented in this chapter, chapter five and chapter seven, which discuss the quantitative analysis of the study. In particular, the CACE FM case contributes most to the performance measurement features of the theory development. Supporting case studies described in this chapter are founded in support of the CACE FM, which is the central case, and illustrates the importance of performance measurement for the management of facilities.

The importance of each FM function, and the understanding of its role in support to the core business process were revealed from all the case studies. Many of the problems encountered during the application of performance measurement in FM were the result of a lack of understanding as to the roles of each FM activity, particularly between FM and the rest of the organisation. The dominant position of being financially driven in the CAAB FM case creates an imbalance between FM activities on the one hand, and its role as a supporting function to the core business on the other.

Activity	Organisation						
	CAAB FM	CAMA FM	CASU FM	CALO FM	CALA FM	CABO FM	CASA FM
Organisational information	Financial sector	Public sector – Health	Public Sector – higher Education	Semi government sector	Public sector – higher education	Public sector – Health	Public sector – higher Education
Corporate objectives	Strengthen the market position Win the competitive advantage through superior customer service To remain a low cost operator	To provide a flexible and accessible service to meet the needs To optimise inter-organisational collaboration To provide service to enhance the primary healthcare service	To be the university for the industry Promote long-life learning in the information age Widening the participation in higher education	Maintaining the highest standards of probity in the conduct of public affairs Providing leadership by speaking for the communities Securing best value and the provision of service of the highest standard	To provide widest possible access to individuals who seek to benefit from its educational activities To develop relationships with other institutions	To be the local provider of hospital and community based health services, continuously pursuing excellence in services to patients and achieve value for money To increase awareness of the potential within the resource to improve healthcare	To strive for high standards and quality in all areas of its activities To have a pro-active attitude towards the changing requirements of the society To sustain national and international identity and reputation
FM mission	To promote and develop service partnerships to deliver facilities solutions to the CAAB group	To create and nurture a caring environment and to deliver effective support services	Create a pleasant, safe and secure environment in which to work and live Achieve customer satisfaction in all	To manage the facilities to provide high quality services for members and staff To make use of	To ensure the corporate aims and objectives of the university To provide highest quality of service	Increase awareness of the potential within the estates To secure value for money	To provide a professional and cost effective estate management service to enable the university's academic and

<p>FM structure</p>	<p>Total of three components: strategy (part of the management function), management (part outsourced) and delivery (totally outsourced)</p>	<p>Operational entrainment was the greatest influence upon formation of the FM strategy FM was represented at the board level Had FM “motivators” – managers to be accountable for meeting service standards, FM to have partnerships with other key processes within the organisation, improve facilities efficiency, shift the focus on the ‘quality facilities’</p>	<p>services provided</p>	<p>the organisation’s capital assets To provide support and services as required to the central bodies</p>	<p>Worked as a team developing the university Comprised of three departments: building design, maintenance and estate management</p>	<p>To secure a work-place environment to deliver high quality patient care Staff to be valued</p>	<p>other support activities to proceed in a safe and efficient manner</p>
<p>Single site structure</p>	<p>Single site structure</p>	<p>Single site structure</p>	<p>Management team to plan the service provision Operational level services are totally outsourced</p>	<p>Single site structure</p>	<p>Single site structure Mixer of both in-house and contracted-out services In-house team to carry out work o their won expertise Outsourced work to be determined by detailed specifications</p>	<p>Claimed to be a customer focused organisation</p>	

<p>FM activities and responsibilities</p>	<p>Customer focus Procurement management Facilities risk management</p>	<p>Achieving cost efficiency, downsizing facilities, implementing new policy initiatives, preparing for competition</p>	<p>Customer satisfaction Providing best value Complying with statutory requirements</p>	<p>To provide a flexible office space Technical help desk Meeting room organisation and management Customer service Planned maintenance and term contractor management Security Cleaning</p>	<p>Erection of all new buildings and refurbishment of existing ones Effective management of the estate Maintenance management</p>	<p>Building and engineering services maintenance Asset register management Energy management Design services Project management Property appraisal and management</p>	<p>Ensured compliance with health and safety regulations Repair and maintenance activities Project management Effective energy management Management of information Monitory performance on annual basis</p>
<p>FM: Business relationship</p>	<p>Promoting partnerships with employees Facilities performance were focused on the critical success factors of the business</p>	<p>Identification of organisational traits – which had great implications for the facilities function in terms of the contribution made towards the trust’s strategic realisation</p>	<p>Ensuring alignment between institutional strategic priorities and the planning, design and delivery of facilities services is a major priority</p>	<p>“Control, quality service and communication” providing the support to the core business</p>	<p>Strategic planning of the whole estate to interact with the academic planning of the institution</p>	<p>Had direct relationship to the trust board</p>	<p>Defined FM as the support services and physical resources of the institution that are key to its business success</p>

<p>Measuring FM performance</p>	<p>Service quality measurements Customer surveys Periodic audits</p>	<p>FM quality User requirements satisfaction Post-occupancy evaluation Facilities benchmarking Cost effectiveness Operational facilities targets</p>	<p>Customer feedback ISO9000 EFQM model Investors in People Charter mark Quality assurance Business case approach Energy management</p>	<p>Contract management Cost control</p>	<p>Value management Risk management Effective communication</p>	<p>Customer satisfaction measurements Efficient communication Operational effectiveness Workplace environment quality Risk assessment</p>	<p>User satisfaction surveys Achieving value for money</p>
<p>FM developments</p>	<p>Analysed and assessed risks and opportunities, continued the development of business plans, achieve more efficient and effective use of resources</p>	<p>Defined service portfolios within the parameters of the trust operations, identification of new service developments</p>	<p>Promoting of a working culture which encourages individual and team contributions Life-long learning</p>	<p>Keen to adopt new and innovative ways of working to match the style of its new premises</p>	<p>Working on a “property and facilities development plan” which was linked to the university’s key objectives</p>	<p>Employees had access to dynamic management and strategic information to promote organisational growth</p>	<p>Informed client function</p>

Table 41: Supporting cases summary

The balance between FM and its performance is re-visited in the CASU FM case study. The FM team structure provided a customer focus for the performance measurement and other quality related activities and improved relations between the FM and other commercial functions.

Assessment of the performance of institutions delivering educational services has become a matter of particular interest to the government seeking to increase the effectiveness of educational provision and to maximise value for money. CASU FM, CALA FM and CASA FM cases emphasise that for any organisation attempting to improve facility performance significantly is a major undertaking. This is particularly true with CASU FM. The problem is compounded by the fact that the task of developing meaningful performance measures in FM is far from complete, and also because service quality is a multifaceted construct – but as yet, there is no clear indication in the literature on the number of facets and their interrelationships.

The inputs and outputs of a FM organisation in a commercial business and a public service are substantially different. For a higher education FM organisation or FM organisation providing publicly funded healthcare with a social mission, the process of small incremental improvement has to be maintained across a complex range of performance indicators. In a business FM organisation, similar to CAAB FM, the key indicators can be more easily quantified and controlled because the organisation has a direct economic purpose.

One of the most important developments in FM over the last decade has been the growing recognition of the strategic importance of FM, as stressed by Then (1996). If facilities are perceived to be a poor performer then this is not likely to enhance its chances of contributing to the strategic direction of the primary business. Case studies reported in this chapter are increasingly indicating that management of FM is focussing attention on facilities improvement for a number of reasons, especially in a search for competitive advantage. Due to the nature of their activities, their background and their assignment, FM's performance measurement brings a different view to performance measurement activities including more of a sense of scientific enquiry.

Research in performance measurement of manufacturing and service industries has evolved in a scientific and rigorous fashion (Neely et al, 1995; Boice and Kleiner, 1997; Preiser, 1997; Clift, 1996), but the study of other areas, particularly in FM, has not evolved in a similar manner. Case studies presented in this chapter further confirm this and conclude that one of the problems faced by organisations seeking to improve facilities quality is that, as yet, a body of meaningful performance measures do not exist. It is on the basis of these findings that the theory of this thesis pertaining to performance measurement in FM organisations is developed in chapter eight, with findings supported by the quantitative analysis reported in the next chapter, seven.

Chapter 7

Survey Findings (Quantitative Analysis)

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

*“The differences between research approaches are by no means clearer and distinct when it comes to actual research”
- Easterby-Smith (1991)*

7.1 OVERVIEW

This chapter presents the analysis of the FM performance measurement questionnaire which forms the main quantitative contribution of the thesis, aimed primarily at supporting the qualitative findings outlined in preceding chapters. The use of quantitative methods to understand performance measurement applications within FM represents a new approach to data analysis within FM, as application of such techniques within the field has been relatively low. This could be due to the ambiguities and contradictions in the constructs of FM and its performance measurement as outlined in chapter two.

The survey used in this research was developed mainly from the constructs emerged from the case studies detailed in chapters five and six, supported by the literature survey detailed in chapter two. Constant contacts that the researcher had with the FM representatives from academia and industry also had an influence on the questionnaire development process. The statistical analysis was consequently conducted using the preliminary theoretical model identified in chapter three. The quantitative analysis should not be regarded as a separate study but rather as part of the triangulation method outlined in section 4.6 in chapter four, providing: further validity of the findings of the case studies, definition to the constructs of performance measurement in FM and the relationships between the constructs.

7.2 THE PURPOSE OF THE QUESTIONNAIRE SURVEY

As already emphasised in 4.19 of chapter four, a questionnaire survey was planned in this research to support the findings of the qualitative data analysis, thereby increasing the validity of the research, thus the researcher aims to achieve a situation where “qualitative data can support explicitly the meaning of quantitative research” (Jayaratne, 1993).

There is a strong suggestion within the research community that both quantitative and qualitative research are best thought of as complementary and should therefore be mixed in research of many kinds as already identified in section 4.4.3 of chapter four. Das (1983) states that, “qualitative and quantitative methodologies are not antithetic or divergent, rather, they focus on the different dimensions of the same phenomenon. Sometimes, these dimensions may appear to be confluent: but even in these instances where they apparently diverge, the underlying unity may become visible on deeper penetration... The situational contingencies and objectives of the researcher would seem to play a decisive role in the design and execution of the study”. This emphasis has developed with the growing attention focused upon “triangulation” in research (Yin, 1994), as already emphasised in section 4.6 of chapter four.

Rossmann & Wilson (1991) answer the question of why link qualitative and quantitative data and consider it to be:

- To enable confirmation or corroboration of each other via triangulation;
- To elaborate or develop analysis, providing richer details; and
- To initiate new lines of thinking through attention to surprises or paradoxes, "turning ideas around", providing fresh insights.

Quantitative data can help with the qualitative side of a study during its design phase by finding a representative sample and locating deviant samples while qualitative data can help the quantitative side of the study during research design by aiding with conceptual development and instrumentation.

This emphasis has developed with the growing attention focused upon “triangulation” in research (Yin, 1994). It generally denotes a reference to a combination of research methods, thus the use of qualitative and quantitative techniques together to study the topic – which is very powerful to gain insights and results, and to assist in making inferences and in drawing conclusions, as already identified in section 4.6 of chapter four.

Based on Jones (1997), by adopting the following assumptions, the researcher ensures that the final product maximises the strengths of mixed method approach as described in section 4.4.3 of chapter four:

- Quantitative analysis may compliment the findings of qualitative methods by indicating their extent within aspects of performance measurement in FM;
- Quantitative methods can be used to enable statistical testing of strengths of relationships that emerged from the qualitative study;
- If such relationships are determined, then quantitative methods are weaker in providing explanations. Qualitative methods may assist in understanding the underlying explanations of significance.

Further, it was assumed that quantitative analysis techniques such as correlation analysis (section 7.3.4) may confirm or reject any apparently significant data and their relationships that emerge from factor analysis described in section 7.3.3. For this research, the quantitative research supports the qualitative research, that is case study research, which is the more dominant method applied in this research. Further it helps to identify formal relationships between the FM constructs. The findings that emerge from the initial analysis form the basis for the questionnaire at latter stages. Where the objective of the qualitative research in this study is to build theory, the aim of quantitative research is to provide further evidence to support the emergent theory. Furthermore, the findings from the quantitative research indicate relationships in the qualitative data that would have otherwise have gone unnoticed. Again, it is important to note that the quantitative research is not aimed at finding causality, but rather associations amongst the variables which support the findings in the qualitative data.

7.2.1 QUESTIONNAIRE DESIGN

The questionnaire is made up of the four categories emerged from theoretical framework identified in chapter three and consisted of statements captured from the initial case study analysis:

- Customer related FM performance measurement;
- FM internal processes;
- FM learning and growth; and

- Financial FM performance measurement.

It is important to note that the questions in the survey were not randomised. Questions pertaining to specific subject areas outlined above were categorised into sections in the questionnaire. This has implications particularly for the factor analysis.

Five principle sources of information provided the basis for the development of questionnaire constructs in this thesis: the literature survey findings and the findings of the initial survey as detailed in chapter two one (section 2.10.3), case studies described in chapters five and six, other related interviews with facilities personnel and academics in the field, and the experience of the researcher in research and consultancies in the related subject areas encompassing the scope of performance measurement.

The questionnaire development was based on the outcome of the initial survey carried out to identify the research need in chapter two and was pilot tested with previously interviewed employees from the case study organisations and with the researcher's colleagues in the field. The respondents in the pilot survey were asked to comment on the questions, the use of the Likert scale, and the length and the layout of the questionnaire. Furthermore, a comparison of the questionnaire responses with the interview data for each respondent in the initial survey provided further information from which to edit the questionnaire. In fact, the findings from the questionnaire were highly correlated with the interview data, providing further construct validity for questions.

7.2.2 DISTRIBUTION OF THE QUESTIONNAIRE

The questionnaire was distributed among FM industry personnel and academics in the field. 85 questionnaires were distributed in total. 22 usable questionnaires were returned, giving a response rate of 28.2%. The distribution of questionnaires like the choice of case study organisations was not limited to any specific industry. In the final analysis of the quantitative data it was assumed that industry basis did not have any impact on the variables investigated. However, it was not tested whether the

spread of the industries in the sample versus the number of responses provided a valid basis upon which to base inter industrial comparisons on different categories of FM applications as it was outside the scope of this doctoral study.

A reminder notice was sent to all, two weeks after the original contact, so as to encourage participation. This action increased the response rate. (see section 0 of chapter seven for more details on questionnaire distribution).

7.2.3 DATA COLLECTION

The majority of the survey was conducted through questionnaires developed as described above, although a small number of carefully targeted interviews were also conducted to explore the issues in more depth and also to triangulate as indicated by Robinson (1993). As already mentioned above, questionnaires were distributed among the personnel responsible for FM function within companies. The questions were phrased in such a way that they could be easily understood, avoiding multiple meaning (Hawkins & Tull, 1994), thus reducing the need for personal contact with respondents. It was further considered that respondents might consider some of the questions to be of a confidential nature; therefore, it was decided to use a postal questionnaire to enable respondents to remain anonymous if they so wished.

The questionnaire intended to obtain views or attitudes of FM personnel upon the performance measurement issues related to FM, as identified by the case studies carried out (and described in chapters five and six), and whether they think such issues are appropriate in practice. Thus, the adoption of one of the forms of attitude scales seemed appropriate. It is difficult to judge which scale is the best and “each has important desired features, but each of them is also open to criticism” (Oppenheim, 1978). As the same author commented, if the desire is to study the “attitude patterning”, probably the Likert procedure will be the most relevant, thus Likert scales were used in the questionnaire to gather data.

The researcher intended to subject the data to factor analysis (described in section 7.3.3) using SPSS. Thus, data produced from Likert scales is considered to be ordinal if strict interpretation of measurement rules are applied (Tull and Hawkins, 1976).

But many researchers in management studies believe that data from Likert scales is close enough to interval data to justify the normal statistical procedures.

As stated in section 0 above, the researcher carried out number of interviews in parallel to the postal questionnaires in areas of emerging importance. Although individual in depth interviews do not follow a set of pre-specified questions that must be asked according to the order imposed by a questionnaire (Hawkins & Tull, 1994), the researcher still bore in mind that the questions asked must be relevant to the questions responded to the questionnaire, such as FM performance measurement issues related to customers.

7.2.4 SAMPLING

If the population of interest is so small, interviews could then be carried out for the entire population (Weisberg & Bowen, 1977). Thus, the selection of the sampling procedure was a compromise between accuracy and economy. According to Tull & Hawkins (1976), the sampling process consists of seven sequential steps, and this frame was used as the basis for selecting samples:

- Step one – define the population;
- Step two – specify the sample frame;
- Step three – specify the sampling unit;
- Step four – selection of the sampling method;
- Step five – determination of sample size;
- Step six – specify the sample plan; and
- Step seven – select the sample

85 questionnaires were sent out with covering letters (see Appendix two – Part two) accompanied by a stamped addressed envelope for the return of the questionnaire. 7 were returned as being “unclearly addressed” or “no such person” etc. The response was encouraging with 22 valid questionnaires completed and returned. The response rate was therefore 28.2%. Follow ups were sent out subsequently with further 25 questionnaires in which 15 went to the recipients who did not respond and to 10 new contacts. Another 7 responses were returned. Finally, a total of 29 responses were received and the overall average response rate was 32.95%.

15 interviews were subsequently conducted face to face and via the telephone. The interviewees were chosen by the researcher recommended by the researcher's supervisor and other fellow academics based on their expertise in the FM field. The information collected was subsequently transformed into a similar proforma developed for the questionnaires so that information would be directly fed into SPSS for the purpose of factor analysis. This procedure helped to increase the number of responses and further helped to increase the reliability of the data set, for the purposes of statistical generalisation. Therefore, altogether, there were 44 data sets for the statistical analysis.

7.3 DATA ANALYSIS

Data analysis involved converting a series of observations into descriptive statements about variables and/or inferences about relationships among variables. But before analysing the data, it needed to be reduced – data reduction, the process of getting the data ready for analysis and the calculation of summarising statistics (Hawkins & Tull, 1994).

The questionnaires received and interview scripts gathered data in excess of 1500 items. As previously mentioned, SPSS (release 8.0) was used to analyse data. Norusis (1990), Pedhazur & Schmelkin (1991), Tabachnick & Fidell (1996) and Field (2000) were all invaluable guides in applying this package.

7.3.1 DATA EDITING AND CODING

The raw data from the respondents needed to be edited before coding to make sure that the data was present, readable and accurate. Variables were all coded as nominal numbers, which were merely labels to represent categories with no intrinsic order. For most of the categories variables or answers were ordinal ranking scaled and therefore coding simply involved scoring from 1 to 5, that is, from 1 = “strongly disagree” to 5 = “strongly agree”.

7.3.2 MISSING DATA

It is very common for a questionnaire to be returned with one or more specific questions unanswered. “The most acceptable solution to the problem of missing information is not to have any”, according to Youngman (1979). While this is obviously a counsel of perfection, it highlights the problem that there is no really satisfactory way of dealing with missing data. An unanswered question was treated as missing data and was assumed to be because the respondent did not want to answer, the respondent did not understand the questions, or missed that question or tried to avoid answering it. These sorts of data were dealt with by allocating a special coding number (that is, -9) when entering the data into SPSS.

Data collected were subjected to factor analysis and correlation analysis (using SPSS statistical package). Sections 7.3.3 & 7.3.4 below summarises the procedure involved in factor analysis and correlation analysis.

It is important to note the validity criteria for the statistical results. The use of quantitative methods in the FM field, performance measurement in particular is non-existent. Therefore, the criteria for accepting as opposed to rejecting statistical results is less strict than for other academic areas where quantitative methods are more prolific than qualitative methods, such as in the financial disciplines.

The quantitative analytical methods used in this thesis are fairly standard at this level of investigation and are recommended by many authors (Kinner and Gray, 1996; Pacitti, 1998). It is possible, however, that the data collected from the questionnaire could be analysed using other techniques.

7.3.3 FACTOR ANALYSIS

Factor analysis is a technique that is useful in identifying which attributes are most important. Factor analysis is so named because the individual attributes are grouped into a number of categories or factors (Naumann and Giel, 1995). Factor analysis refers to a variety of statistical techniques particularly suited to analyse complex, multi-dimensional problems, whose common objective is to represent set of many

interrelated variables in terms of a smaller number of hypothetical variables (Overall & Klett, 1972). The attributes that share common patterns of relationship with one another are loaded into a “factor”. The relative strength of the relationship between the individual attributed and the dependent variable can then be identified. Attributes displaying a weaker relationship with the overall issues can then be trimmed from the attribute list. Majority of researchers use factor analysis as an expedient way of ascertaining the minimum number of hypothetical factors that can account for the observed co-variation, and as a means of exploring the underlying dimension of the data.

The primary problem with factor analysis is that the factor loadings or underlying themes may not necessarily correspond very well with the organisation’s value added processes. Therefore, the outcome of the factor analysis, a reduced attribute list, is usually adjusted until it fits more closely with specific value added processes.

During the factor analysis process, the following three steps were followed. Each step used different tests to past the stage:

- **Stage one** – The appropriateness of the factor model is evaluated. As one of the goals of factor analysis is to obtain factors that help explain correlation, the variables must be related to each other for the factor model to be appropriate;
- **Stage two** - To determine the number of factors necessary to represent the data given in the items and to ascertain how well the chosen factor model fits the data, the factor extraction techniques were applied. “Principal component analysis” and “scree plots” are used to identify the number of factors; and
- **Stage three** – The statistics table of the principal component analysis is then used to judge how well the selected factor model describes the original variables. “Rotation matrices” (Varimax rotation) were used to transform the initial matrix into one, which is simpler and more theoretically meaningful in order to make factors more interpretive.

The factor analysis of FM performance measurement questionnaire resulted in an emergence of number of factors, which were subsequently named according to the nature of loading items. Only those factors with an “Eigenvalue” greater than 1 were considered. This is one of the many criterion available in factor analysis according to Field (2000). Kaiser (1960) (cited in Field, 2000) also recommended retaining all

factors with eigenvalues greater than 1. This criterion is based on the idea that the eigenvalues represent the amount of variation explained by a factor and that an eigenvalue of 1 represents a substantial amount of variation. Further, some factors which came out of the analysis were disregarded as they had too few loading items as discussed in section 7.3.3.1.

Factor analysis is not a single technique; instead there are several types of factor analysis (Naumann and Giel, 1995). But principle component factor analysis is most commonly used for reducing an attribute list and determining the underlying constructs and relationships in the factors, and in this analysis, as identified in Stage two above. With the principle component factor analysis, factors are extracted from the data until successive factors add little in the way of explanatory power. The most important factor is extracted first, so for each iteration the marginal contribution of each factor can be evaluated.

Thus, the factors presented here are categorised into the concepts previously identified in chapter three: customer, internal FM processes, learning and growth and finances. Factors were identified under these four broader themes. The important issue here is that the emergence of these factors provided some further explanation and understanding of the concepts and constructs of FM performance measurement. To reiterate, the items (questions), which loaded onto the factors, were derived mainly from case studies presented in chapters five and six. The factor analysis results for each theme are shown in Tables with the “Eigenvalues”, “percentage explained by variance” (V explained) and “cumulative percentage of variance explained” (V explained cm). Only those variables with factor loading above 0.5 are shown. Dunteman (1989), Guadagnoli & Velicer (1988), Stevens (1992), Cliff (1987), Pedhazur & Schmelkin (1991) and Tabachnick & Fidell (1996) were all valuable sources in dealing with factor analysis.

7.3.3.1 SAMPLE SIZE – INITIAL CONSIDERATIONS

The reliability of factor analysis is dependent on sample size (Field, 2000). Much has been written about the necessary sample size for factor analysis resulting in many “rules-of-thumb”. The common rule is to suggest that a researcher has at least 10-15

subjects per variable (Field, 2000). Kass & Tinsley (1979) recommends having between 5 and 10 subjects per variable up to a total of 300. Guadagnoli & Velicer (1988) found that most important factors in determining reliable factor solutions were the absolute sample size and the absolute magnitude for factor loadings. They argued that if factor has four or more loadings greater than 0.6, then it is reliable regardless of the sample size. In this context, factor analysis carried out in this research could be claimed as reliable.

7.3.3.2 PERFORMANCE MEASUREMENT PROCESSES

The items in the questionnaire were aggregated according to the results of the factor analysis. Since the questions in the questionnaire were not randomised, the factor analysis resulted in factors, which were, for the most part, more or less located within (rather than across) sections of the questionnaire.

The broad concept of performance measurement in FM was divided into four main areas of information, as already mentioned above, in the performance measurement questionnaire. The factors which resulted from the analysis in this section pertained to each of their respective factors, as is shown in sections below:

7.3.3.2.1 CUSTOMER RELATED PERFORMANCE MEASUREMENT

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Eigenv.	3.108	2.533	2.332	1.487	1.150
V.Explained	20.719%	16.885%	15.544%	9.911%	7.667%
V.Explained cm.	20.719%	37.605%	53.149%	63.060%	70.726%
CP1				.619	
CP2			.965		
CP3				.817	
CP4					.703
CP5			.965		
CP6		.949			
CP7					.716
CP8					
CP9		.949			
CP10	.941				
CP11	.565				

CP12					
CP13	.941				
CP14	.587				
CP15		.637			
Interpretation of factors	Partnerships and responsiveness	Quality of service	Timeliness of service provision		
Abbreviation	CF1	CF2	CF3		

Table 42: Factor Analysis: Customer related FM issues

Table 42 above contains the initial statistics on FM performance measurement issues relating to customers. Abbreviations are used to represent the items which were subjected to factor analysis, for example, CP1 represents “FM services are available when customers need them” (see the questionnaire in Appendix Two – Part two for other interpretations). Variance explained by each factor is listed in the top section of the table, row labelled “Eigenvalue”. The next row contains the percentage of the total variance attributable to each factor. For example, the linear combination formed by 1 has a variance of 3.108, which is 20.719% of the total variance of 15. The last row of the top section of the table, the cumulative percentage, indicates the percentage of variance attributable to that factor and those that precede it in the table. Appendix three lists out the detailed SPSS output relating to the factor analysis.

To help to decide how many factors need to represent data, examination of the percentage of total variance explained by each factor is used. Abbreviations are used to represent the factors. Factors which resulted from this analysis are:

- Factor 1 (CF1) - Service partnership;
- Factor 2 (CF2) – Quality; and
- Factor 3 (CF3) - Timeliness

It was identified that Factors, 3,4, and 5 are related to each other and therefore has grouped together and is labelled as “Factor 3 (CF3 – Timeliness of Service Provision) ”.

Figure 53 is a plot of the total variance associated with each factor. The plot shows a distinct break between the steep slope of the large factors and the gradual trailing off

of the rest of the factors. This gradual trailing off is interpreted as “scree” (Field, 2000) because it resembles the rubble that forms at the foot of a mountain. Experimental evidence indicates that the scree begins at the k th factor, where k is the true number of factors. From the scree plot, it appears that a three-factor model would be sufficient for the data representation.

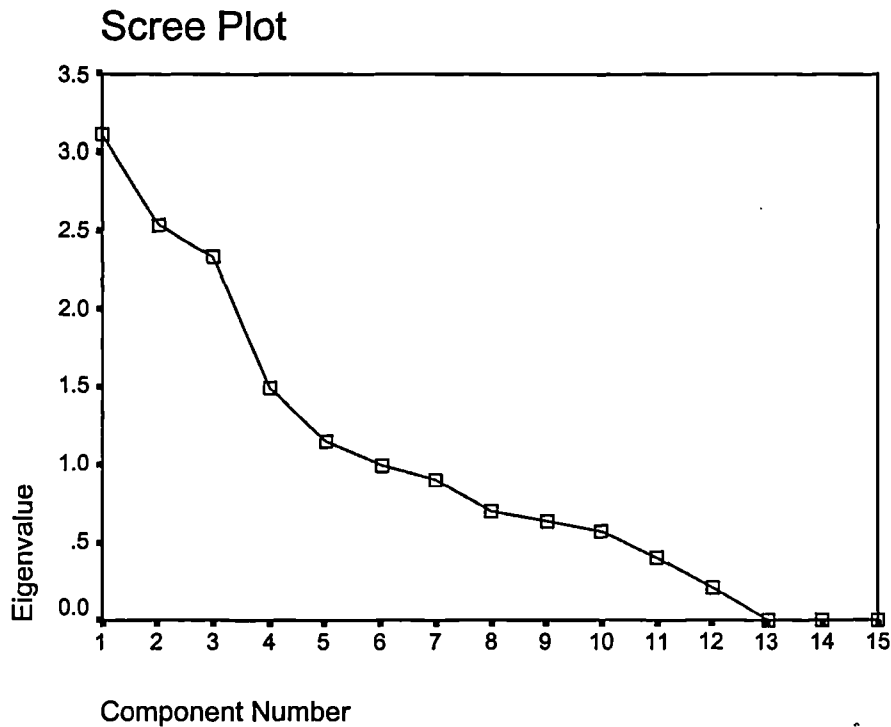


Figure 53: Scree plot: Factor analysis representation on customer related FM critical success factors

The scree plot further helped to decide at which point the “scree” begins. Some interpretation that is important in this instance, can be found in Overall & Klett’s (1972) book: “Statistical data reduction is usually considered to be adequate and effective when the number of factors is approximately one fourth the number of original variables and the variance accounted for is 50-75 percent of the total variance”. Although scree plots are very useful, factor selection should not be based on this criteria alone, according to Field (2000), hence “eigenvalues greater than 1” rule was also used with scree plots to decide on the number of factors.

7.3.3.2 FACILITIES MANAGEMENT INTERNAL PROCESSES

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Eigenv.	3.329	2.470	2.032	1.685	1.505	1.309	1.220	1.143
V.Explained (%)	17.519	13.000	10.694	8.867	7.919	6.886	6.422	6.015
V.explained cm.(%)	17.519	30.519	41.213	50.080	58.000	64.887	64.887	77.323
IP1		.951						
IP2								.754
IP3					.817			
IP4			.769					
IP5				.785				
IP6								
IP7							-.777	
IP8							.629	
IP9						.845		
IP10		.951						
IP11						.640		
IP12	.953							
IP13	.642							
IP14			.739					
IP15				.678				
IP16	.953							
IP17								-.664
IP18			.814					
IP19					.698			
Interpretation of factors	Contract management	Operational efficiency	Supply chain management	Work environment		Risk management	(Disregarded)	(Disregarded)
Abbreviation	IPF1	IPF2	IPF3	IPF4		IPF5		

Table 43: Factor Analysis: FM internal processes

To help to decide how many factors need to represent data, examination of the percentage of total variance explained by each factor is used. The total variance is the sum of the variance of each variable. As described in the above section, top section of Table 43 contains the initial statistics for each factor. Table 43 further shows that almost 64.887% of the total variance is attributable to the first 6 factors. The remaining 2 factors together account only for 12.437% of the variance. Thus, it was decided that a model with 6 factors may be adequate to represent the data, and factors 7 & 8 were disregarded in the identification of factors.

Items IP5, IP15 and items IP3, IP19 has been formed into two different factors according to the analysis. Statements interpretation clearly indicates that both factors could be categorised as “work environment,” related issues.

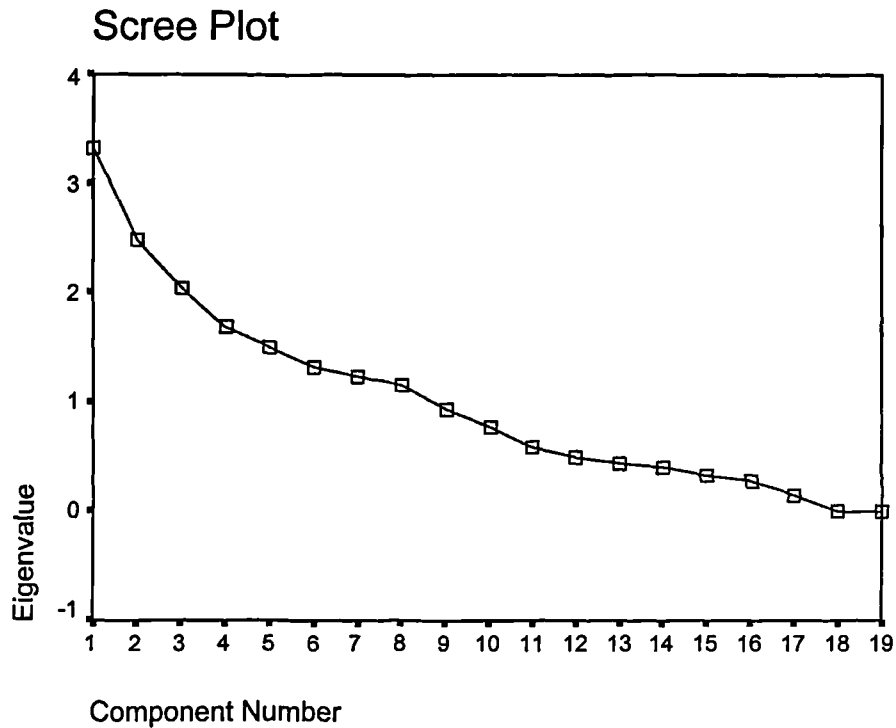


Figure 54: Scree plot: Factor analysis representation on financial related FM critical success factors

As per the description given in the above section on factor identification, identified factors were labelled as follows:

- Factor 1 (IPF1) - Contract management;
- Factor 2 (IPF2) - Operational service efficiency;
- Factor 3 – (IPF3) - Supply chain management;
- Factors 4 & 5 (IPF4) - Work environment; and
- Factor 6 (IPF5) - Risk management

7.3.3.2.3 LEARNING AND GROWTH FACILITIES MANAGEMENT ISSUES

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Eigenv.	3.256	2.187	1.729	1.514	1.100	1.362	1.003
V.Explained (%)	20.352	13.667	10.803	9.461	6.875	8.511	6.272
V.explained cm.(%)	20.352	43.019	44.822	54.283	69.669	72.794	75.941
LG1		.955					
LG2				.766			
LG3	.963						
LG4						.536	
LG5					.679		
LG6							
LG7						.791	
LG8							.941
LG9						-.594	
LG10					.626		
LG11				.628			
LG12	.893						
LG13			.795				
LG14			-.749				
LG15	.963						
LG16		.955					
Interpretation of factors	Innovation	Strategic FM information and management	(Disregarded)	Staff training and development		(Disregarded)	(Disregarded)
Abbreviation	LGF1	LGF2		LGF3			

Table 44: Factor Analysis: FM learning and growth

Table 44 above indicates that almost 72.794% of the total variance is attributable to the first 6 factors and the remaining 14.783% of the variance. Therefore, the last factor was eliminated from the findings. Further, item LG14 has resulted a negative value in forming the factor 3, and item LG9 in factor 6 and these two factors too were eliminated from the analysis. Items LG2 and LG11 which represent factor training issues and items LG5 & LG10 representing staff development were combined and were labelled as “Staff Training and Development” based on the factor analysis.

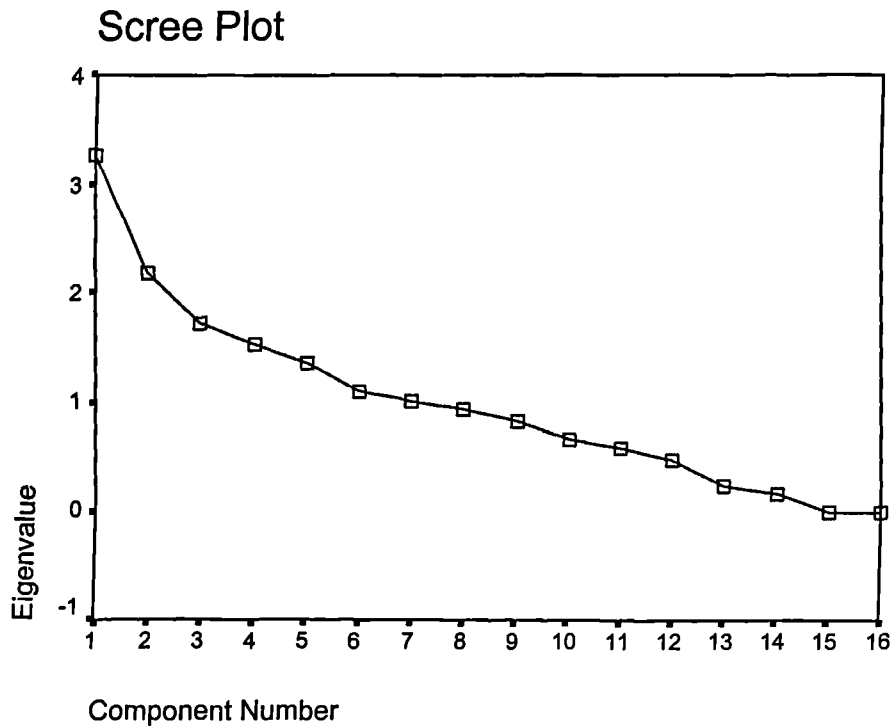


Figure 55: Scree plot: Factor analysis representation on learning and growth FM success factors

Figure 55 above illustrates the plot of each variance associated with each factor. Below is the summary of factors identified under FM learning and growth related critical success factors:

- Factor 1 (LGF1) – Innovation;
- Factor 2 (LGF2) - Strategic FM information and management; and
- Factor 3 (LGF3) – Staff training and development

7.3.3.2.4 FINANCIAL FACILITIES MANAGEMENT PERFORMANCE

The factors which resulted from the analysis which are related to the theoretical theme of “FM financial related measurements” are: “value for money”, “asset utilisation”, “financial resource management” and “profitability”. This section provides a description of these factors and the results of the factor analysis as shown in Table 45:

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Eigenv.	2.626	2.192	1.598	1.390	1.138
V.Explained	20.202%	16.859%	12.296%	10.694	8.754%
V.explained cm.	20.202%	37.061%	49.356%	60.050%	68.804%
FP1				.816	
FP2	.979				
FP3					.812
FP4		.956			
FP5					
FP6			.648		
FP7	.979				
FP8			.529		
FP9		.956			
FP10			.730		
FP11					.670
FP12				.727	
FP13					
Interpretation of factors	Financial resource management	Value for money/cost efficiency	Profitability	Asset utilisation	
Abbreviation	FF1	FF2	FF3	FF4	

Table 45: Factor Analysis: Financial FM issues

68.804% of the total variance is attributable to the factors identified by the factor analysis, as Table 45 above indicates. Factors 4 & 5 have combined together and labelled as “Asset Utilisation Strategies”.

As indicated in the above Table 45, factor analysis on financial related performance measurement information in FM resulted the identification of following themes:

- Factor 1 (FF1) - Financial resource management;
- Factor 2 (FF2) - Value for money;
- Factor 3 (FF3) - Profitability; and
- Factor 4 (FF4) - Asset utilisation

The interpretation that Ovearall & Klett (1972) put forward in calling a “good factor solution” has been satisfied in this particular factor solution, as it is parsimonious, orthogonal and conceptually meaningful.

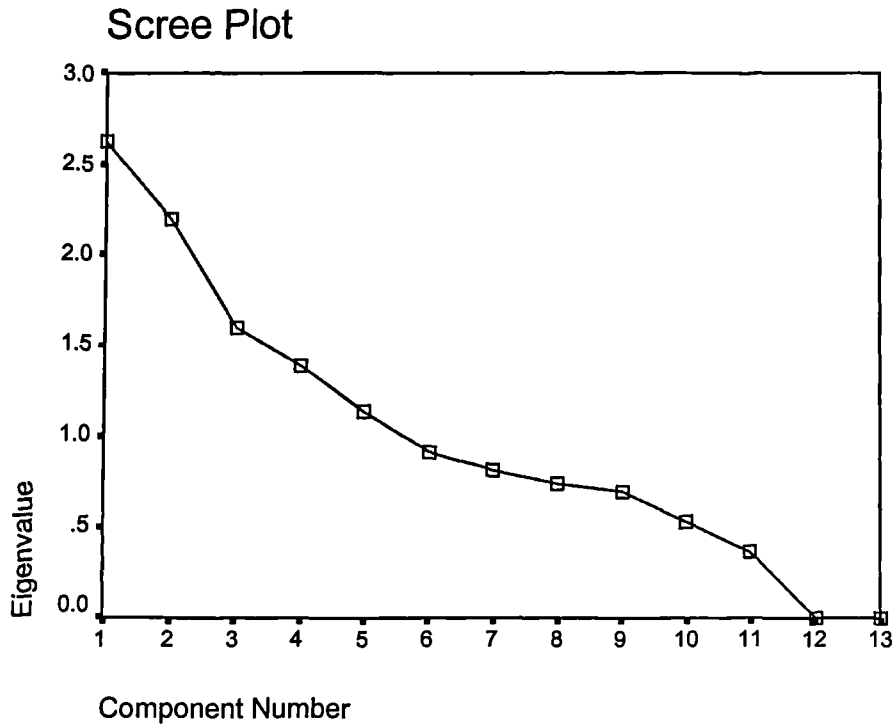


Figure 56: Scree plot: Factor analysis representation on financial related FM critical success factors

Although there were disagreements (in some items sets analysed) over the number of factors to be included into models from the initial statistics and from scree plot, the interpretation of factors by considering both alternatively, indicates a some how clearer picture and in the researcher’s opinion, considering the factor numbers in factor models (Table 42, Table 43, Table 44 and Table 45) is quite reasonable.

The next step in the quantitative analysis is the correlation of aggregated variables, as described below:

7.3.4 CORRELATION ANALYSIS

The items in the questionnaire were aggregated to form the factors (variables), which resulted from the factor analysis. These aggregated items are referred as variables in order to avoid confusion with the factor analysis results. For example, the aggregation of items CP10, CP11, CP13 and CP14 makes up the variable “ service partnerships” and labelled as “Factor CF1”, a variable resulting from previous factor

analysis. Each of the new variables is linear association of the items in the questionnaire which made up of each factor in the previous section.

In finding some relationships/associations among variables, this study uses correlation coefficients. Correlation is a technique for dealing with data associated with two or more variables. Here the variables are studied simultaneously to see how they are interrelated. The correlation coefficient is most useful from the quantitative point of view for discovering whether a pair of variables is possibly linearly related (Pacitti, 1998).

Due to the sample size involved in the correlation analysis, the “Pearson Coefficient of Correlation” was chosen as it measures the strength of the linear relationship between the variables. Pearson correlation is further used to analyse the relationships among the different factors identified through the factor analysis as it is found to be normal approximately. Accordingly, it is assumed that both groups are sufficient enough to make “r” (Correlation Coefficient) reliable, a value of “r” closer to zero will lead to a conclusion that the variables are not linearly related, whereas a value closer to one in magnitude shows that they are strongly linearly related. An intermediate value in the neighbourhood 0.5 would represent a fairly weak, but possibly useful, linear relationship among the variables. This section presents some of the more interesting correlation analysis results and are presented in table form, indicating the correlation coefficients which are significant at $p < 0.05$, providing a 95% confidence interval.

Following Tables summarises some issues found out through the correlation analysis:

	Service partnerships	Quality	Timeliness
Service partnerships	1.000	0.296	0.128
Quality	0.196	1.000	0.086
Timeliness	0.128	0.086	1.000

Table 46: Correlation analysis: Customer related FM performance issues

Table 46 represents the findings of the correlation analysis of the variables pertaining to the theoretical theme “customer relations” and includes service partnerships, quality and timeliness of the service received by the customer. The table further indicates that all the components of the customer related FM performance measurement variables are correlated, even though in some instances, by a marginal value. The reasons for this might have been the relative small size of the sample used.

	Contract management	Service quality	Supply chain management	Work environment	Risk management
Contract management	1.000	0.263	0.018	0.255	0.160
Service quality	0.263	1.000	0.182	0.052	0.084
Supply chain management	0.018	0.182	1.000	0.024	0.083
Work environment	0.255	0.052	0.024	1.000	0.016
Risk management	0.160	0.084	0.083	0.016	1.000

Table 47: Correlation analysis: FM internal process performance

Table 47 represents the results of the correlations between contract management, service quality, supply chain management, work environment and risk management, all of which are the factors exposed during the factor analysis phase, for FM internal process perspective. The results here indicate that whereas service quality and contract management are highly correlated, supply chain management and work environment are only slightly correlated.

	Innovation	Strategic FM information	Staff training and development
Innovation	1.000	0.170	0.019
Strategic FM information	0.170	1.000	0.012
Staff training and development	0.019	0.012	1.000

Table 48: Correlation analysis: FM learning and growth performance

Table 48 represents correlations between variables of FM learning and growth issues relating to its performance measurement: innovation, strategic facilities information

and staff training and development, where as Table 49 represents correlations between financial related FM critical success factors.

	Financial resource management	Value for money	Profitability	Asset utilisation
Financial resource management	1.000	0.088	0.115	0.135
Value for money	0.088	1.000	0.292	0.118
Profitability	0.115	0.292	1.000	0.018
Asset utilisation	0.135	0.118	0.018	1.000

Table 49: Correlation analysis: FM financial related issues

The comparison brings out similarities and differences among the different “factors” exposed during the factor analysis in the previous section 7.3.3. In doing so, the study expected to explore critical dimensions of the FM process in the performance measurement perspective and has acted as means of increasing the reliability and validity of factors exposed through the factor analysis.

7.3.5 SOME PRELIMINARY EXPLANATIONS AND INTERPRETATIONS

Factor analysis is a statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables (Field, 2000), thus is used in this quantitative analysis as a preliminary screen to reduce an attribute list and form groupings. Lists of variables (items) were used to collect information on different aspects relating to FM performance assessment and the related questionnaire is enclosed in Appendix two. However, descriptions of what is meant by the term “performance measurement” in FM is simplified by identifying underlying dimensions, or factors, and is used in the theory development chapter as the basis for discussions.

To avoid duplication of information, detailed descriptions of uncovered factors are not included in this section. The issues are discussed in detail in chapter eight, while exposing performance measurement theory in FM. For example, section 8.5.2.4 of

chapter eight deals with “Financial resource management”, section 8.5.2.1 on “value for money” etc.

7.4 CONTRIBUTION TO THE THEORY DEVELOPMENT

Factor analysis, described in section 7.3.3 above, helped to uncover the following themes relating to performance measurement theory development in FM which would have gone un-noticed otherwise if factor analysis was not performed. Table 50 summarises such findings:

Customer related issues	Facilities management internal processes
Timeliness Quality Service partnerships	Service efficiency Contract management Risk management Supply chain management Work environment
Learning and growth issues	Financial information
Strategic facilities information Innovation Staff development and training	Value for money/cost efficiency Asset utilisation Financial resource management Profitability

Table 50: Summary of factor analysis findings

During the correlation analysis phase, it was discovered that relationships exist among the above variables exposed during the factor analysis thus increasing the validity and reliability of the factors exposed. These factors were incorporated in the theory development in subsequent chapter (chapter eight) together with detailed information on the factors. Definitions of factors, its associated measures and how these factors are further supported (together with other variables exposed through the qualitative analysis) from different cases are also described in chapter eight, in the following sections (Table 51):

Factor exposed	Related section in chapter eight
Timeliness	Section 8.2.2.2
Quality	Section 8.2.2.1
Service partnerships	Section 8.2.2.3
Service efficiency	Section 8.3.2.1
Contract management	Section 8.3.2.2

Risk management	Section 8.3.2.3
Supply chain management	Section 8.3.2.4
Work environment	Section 8.3.2.6
Strategic facilities information	Section 8.4.2.1
Innovation	Section 8.4.2.2
Staff development and training	Section 8.4.2.3
Value for money/cost efficiency	Section 8.5.2.1
Asset utilisation	Section 8.5.2.2
Financial resource management	Section 8.5.2.4
Profitability	Section 8.5.2.5

Table 51: Factors exposed – Related sections

7.5 SUMMARY OF THE CHAPTER

In summarising the findings from this chapter, it is important to keep in mind that the quantitative analysis in this thesis is used to support the qualitative data and to help contribute to the interpretation of the qualitative findings. Quantitative study gave opportunities to strengthen the issues identified through the qualitative analysis fully. Further, as emphasised before, quantitative study detailed in this thesis provided further evidence to support the emergent theory described in chapter eight and has helped to determine reliability and validity more objectively, thereby as supported one of the assumptions of the thesis that performance measurement in FM will form from the existing knowledge base within FM organisations.

The factor analysis uncovered performance measurement constructs in FM hence providing some examples of what these constructs entail. The correlation analysis alerted the researcher to some interesting relationships although it does seem that most of the constructs are related.

The quantitative data arrived through correlation analysis indicates associations and relationships between the constructs identified in the factor analysis, thereby providing some guidance to the analysis of the qualitative data. In this regard, the analysis and interpretation of the quantitative and qualitative data is an iterative one; the preliminary case study findings provided the basis for the items in the questionnaire, and the findings of the questionnaire provided some tentative guidance for the more in-depth analysis of the case studies.

By comparing a reduced attribute list generated through questionnaires, and statistical analysis, common themes have emerged and this is illustrated in detail in the next chapter eight, together with other performance measurement constructs identified through the qualitative analysis which are not specifically exposed through the statistical analysis.

Some aspects of quantitative analysis are therefore re-visited in chapter eight, which provides an analysis of the qualitative data set out in chapters five to six and a combined interpretation of the qualitative and quantitative results.

Chapter 8

Interpretation and Theory Development: Performance Measurement in Facilities Management

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

“The accurate measurement is worth more than a thousand expert opinions...”
Admiral Grace Hopper (1999)

8.1 OVERVIEW

This chapter presents the theory development of the thesis which derives from the qualitative and quantitative findings outlined in chapters five to seven. Part one of the chapter discusses the performance measurement features of the theoretical model where as the prospects of developed theory is the subject of Part two. Sections described at the beginning of Part one of this chapter is dedicated to describing descriptive findings of the research, referred to as performance measurement theory in FM. The move from descriptive to prescriptive findings follows the methodology recommended by Pacitti (1998), as discussed in section 4.19 in chapter four. Part three of the chapter deals with the verification of the theory development by comparing developed theory with the existing performance measurement literature. The development of descriptive findings provides the basis for the identification of practical tools for improving performance measurement in the FM function, bridging the gap between theory on one hand and practical performance measurement tools on the other. These prescriptive findings are described in detail in chapter nine.

Theory development process uses the pattern matching approach described in chapter four and is further illuminated using indicators and key illustrative examples from any of the case studies.

It is worth emphasising that the observations of practice also showed several theoretical replications, that is, where the failure in adopting the theory resulted in predicted problems. This thesis presents only a few of these in order to make a point since they were too numerous to report in full.

PART ONE – FACILITIES MANAGEMENT

PERFORMANCE MEASUREMENT AND MANAGEMENT

In Chapter two (section 2.6), the topic of performance measurement was outlined. This included the issue of different types of performance measurement techniques and it was suggested that the diversity in performance measurement could be explained through the existence of these different modes of performance measurement.

The concept of performance measurement in FM is extended in this thesis. The findings from the quantitative data presented in the previous chapter suggests that there are different categories of performance measurement techniques in the FM organisation and that the characteristics of these categories of performance measurement techniques were dependent on level of FM strategic involvement within the core business. These different levels also emerged from the qualitative data.

This section set out the different critical success factors and measurement tools relating to performance measurement, which exist in the FM organisation (that is not to say that there are not other types which have not been uncovered here). The subsequent discussion describes these different types of performance measurement categories and the importance of making them visible.

The identification of different critical success factors according to the core concepts identified in section 3.8 of chapter three, and related performance measurement tools which exist within FM organisations present a new perspective through which to measure FM performance aimed at increasing the effectiveness of the FM process thereby to increase the overall organisational efficiency. Further, this process provides a basis for the discussion around usefulness and applicability of performance measurement through the exposure of each type of FM critical success factor and related measurement tools. “Expose” and “Explore” are used to convey

that it is a general process of making performance measurement visible within FM organisations. These are each discussed in turn with evidence from the case studies. Finally, the case studies are mapped on to a matrix to evaluate the difference between the management of these different critical success factors and performance measurement tools, thus providing the basis for a discussion of the differences in FM performance against the case studies.

Detailed definitions are also provided for the different types of critical success factors followed by descriptions of related performance measurement tools. The use of the symbols ▶ ◀ mark the beginning and end of insights from the case studies and survey results which present evidence for the theoretical point being made.

8.2 MEASUREMENT OF CUSTOMER RELATIONS

8.2.1 WORKING DEFINITION/DESCRIPTION

Customers are the most wanted people of today. Without them, there will be no market for services, no reason for enterprise, no income, no profit and no survival. Successful businesses today ask their customers what they really want and listen to the answers.

In the past, organisations could concentrate on their internal capabilities, emphasising product performance and technology innovation. But organisations that did not understand their customers' needs eventually found that competitors could make inroads by offering services and products better aligned to their customers' preferences (Kaplan and Norton, 1996). Thus, organisations are shifting their focus, externally, to customers.

Within the FM setting, customer requirements assessment capture the ability of the FM organisation to provide quality services, the effectiveness of its delivery, and overall customer service and satisfaction. Many FM organisations, as identified in chapters five and six, today have a mission focused on the customer and how the organisation is performing from its customers' perspective has become a priority for facilities managers. Mission and vision statements routinely declare their goal: "*Our*

customers are the focus of all we do and our customers' success is our success", *"We understand our customers anticipating and exceeding their needs"*, *"Seek close and durable relationships, partnering for the long-term"* and to provide *"Effective services to an establish effective partnership with external customers"*. The current business trends demand that facilities managers translate their general mission statement on customer service into specific organisational processes that reflect the factors that really matter to customers. In a public organisation model the principal driver of performance is different than in the strictly commercial environment: for example customer and stakeholder interests take prominence over financial results. In general, public organisations have a different, perhaps greater, stewardship/fiduciary responsibility and focus than do private sector FM entities.

The re-focus of strategies onto customers instead of products has been undertaken in many of the case study organisations. At the same time, there has been increasing recognition that the value created by an organisation is dependent on the satisfaction of employees as well as satisfaction of customers.

The virtues of getting closer to the customer have been touted in the business literature for some time (Naumann and Giel, 1995). It seems ironic then that many organisations didn't really understand what attributes is most important to customers. In fact, the process of initially identifying attributes is typically referred to as "discovery".

8.2.2 EXPLORING CRITICAL SUCCESS FACTORS AND MEASUREMENT TOOLS FOR MEASURING CUSTOMER RELATED PERFORMANCE IN FACILITIES MANAGEMENT

8.2.2.1 QUALITY

This is the customer's satisfaction with the quality of services delivered.

Users of facilities services within organisations may view FM as a monopolistic supply, with quality and value being dictated by managers who are out of touch with the needs of the occupiers and the external customers who are unable to claim

compensation for poor service. Schonberger (1990) proposes, “each function in a business should be a customer of the next in chain”, and advocated the use of the internal customer culture in order to improve service relationships between functions, eliminating internal conflict, enabling organisations to turn their competitive energy outwards – “we should be fighting the enemy not ourselves”. Front line employees who deal with external customers need support from service suppliers within their own organisation, and the total quality of the delivery chain is only good as the individual links within it. Quality is an intrinsic part of customer service and yet quality evaluations are “not made solely on the outcome of the service, they also involve evaluations of the process of the services (Parasuraman et al, 1985).

The primary focus of facilities customer service is to ensure that the customer derives maximum value from the service provision (Madeley, 1996). Albrecht and Zemke (1985) develop the customer service triangle as shown in Figure 57:

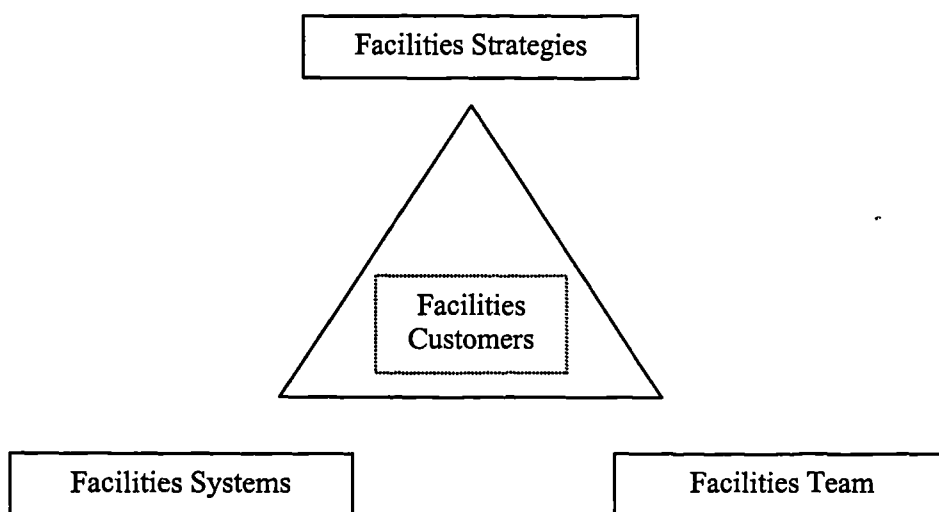


Figure 57: Customer service triangle [Source: Adapted from Albrecht and Zemke (1985)]

In the above diagram, facilities strategy represents a statement of competitive advantage and value to customers, facilities systems represents processes, quality control, information and productivity and facilities team represents facilities service provider teams.

▸ CACE's FM assessment programme was consistent with and supported CACE's core values and critical success factor strategies as listed in the CACE's business plan, in customer orientation, which measures how business decisions and actions are responsive to the customer's needs. In this sense, CACE FM captured information from its customers relating to quality of products and services delivered by its Facilities Directorate, degree of shared commitment among participants, implementation of best practice initiatives and information on work environment quality. ◀

▸ Superior image of the services provided was a major theme within CALO FM. CALO FM communicated and demonstrated reputation for quality of the service provided and innovation in order to maximise the perceived value to the customer: "*We need a brand image that positions us as an innovator*". ◀

8.2.2.1.1 MEASURES

The objective of this measure is to measure the service provided and it assesses how well the FM organisation manages its relationships with its customers and is a key measure of the amount of emphasis and effort the FM organisation places on the satisfaction of its customers.

Customer satisfaction measures provide feedback on how well the organisation is doing and identifies the extent of internal and external customer satisfaction with the quality of the information and services provided. The importance of customer satisfaction probably cannot be overemphasised. Customer satisfaction is a psychological concept that involves the feeling of well-being and pleasure that results from obtaining what one hopes for and expects from an appealing product and/or service (Butz and Goostein, 1996). Customer satisfaction can also be defined as satisfaction based on an outcome or a process (Pizam and Ellis, 1999). Vavra's (1997) outcome definition of customer satisfaction characterises satisfaction as the end-state resulting from the experience of consumption.

▸ The NHS plan (Department of Health, 2000a) has set out a range of initiatives and requirements, which renew the emphasis on clean and tidy hospitals. The patient

environment programme has set up accordingly and it is a national initiative, which provides hospitals with support and framework within which to immediately improve standards of cleanliness and tidiness. Patient Environment Action Teams (PEAT) have been identified to undertake inspections of hospitals. PEAT members have been drawn from NHS professionals – including infection control nurses, domestic/hotel services managers and estates and facilities managers. Teams will also include patient's representatives and people from commercial organisations providing cleanliness services within the NHS. CACE FM, CABO FM and CAMA FM all were actively engaged in carrying out PEAT assessments and had undertaken a full assessment of current conditions and has developed an action plan to bring standards up to excellent conditions. The elements which had been assessed were: entrances and main reception areas, internal decoration and signage, visitors toilets, smells, internal cleanliness and tidiness, furniture, linen, support service staff, grounds and gardens, external cleanliness and tidiness and external decoration. ◀

▶ Further, to track the specific goals of providing a continuous stream of attractive solutions, CACE FM measured its *customer satisfaction* (internal and external customers both) and information on quality of products and services delivered, range of service offered, whether services are received in accordance with customer service requirements. Information on personalised quality services, shared commitment among service providers to improve quality and number of new services introduced were also collected through customer satisfaction surveys. ◀

▶ CALO had an innovative approach to *customer satisfaction* in its facilities division and has identified five objectives for its customer satisfaction survey process:

- Determined the degree of customer satisfaction;
- Measured factors associated with the quality of their services;
- Identified the opportunities for process improvements;
- Established a baseline to measure improvements over time; and
- Benchmarked customer satisfaction relative to similar organisations of best of class.

In order to meet these objectives CALO FM used surveys with different timing. The customer satisfaction capturing process at CALO FM had helped not only to satisfy customers but also to achieve the excellence in providing facilities services. ◀

▶ *Help desks* supported the procedures for handling service and job requests, incident handling and procedure management information to support the improvement of service quality at CASA FM, but there was a need for investment in better-trained, more expert staff and good knowledge support systems. Periodic review of the day-to-day operational quality performance was key to continual improvement of the facilities services and a knowledgeable and responsive operator was a great asset to customers. ◀

▶ At CABO FM, *help desk* cultivated a strong customer service orientation and a human face and demonstrated factual improvements in service. Help desk evolved to be the primary day-to-day service interface to the customer and the main monitor of service performance and incident handling. ◀

8.2.2.2 TIMELINESS

This is the customers' degree of satisfaction with the timeliness of the delivery of facilities services. The attributes significant to the customer are linked directly to value added processes of whether the services are delivered on time within the organisation and are put into a form consistent with the quality and service partnerships measurements discussed elsewhere within section 8.2.2.3.

▶ CAAB FM commented: *“We have identified that customer satisfaction measurement has an advantage and it provides a customer view of our performance, which can then be compared to our internal perception. We now have a balanced view of our performance, together with some ideas of our strengths and weaknesses. Assuming that we are in a competitive marketplace, we still have information on how our customers view our performance. Our only comparative viewpoint of reference is ourselves. In any competitive environment, it is important to add the dimension of competitive comparison to our customer satisfaction information ”*. Accordingly, *service delivery response time, timeliness of communication with customers and*

timeliness of contract completion were some of the issues that CAAB considered as important in capturing information from its customers. ◀

▶ CABO believed on “deliver on our premises” strategy and wanted to strengthen their reputation for value by focusing on delivering on specification and on-time to their customers. CABO believed that: “*Unless service delivery is handled better, with more accuracy and punctuality they will have trouble convincing customers on services that they provide*”. ◀

8.2.2.2.1 MEASURES

Satisfied customers are the mainstay of any business. Knowing what customers like and dislike can mean the difference between success and failure. Accordingly, *customer satisfaction surveys* are the most commonly used method for acquiring responses on timeliness. Almost all the case study organisations have some form of user feedback. Extent of internal and external customer satisfaction with the timeliness of different services and facilities provided is monitored through this mechanism.

▶ One of CALO facilities managers commented: “*We need customer satisfaction measurement because we need to satisfy our customers. Therefore, we need to fully understand what the customer wants from service before we can deliver to that expectation, and before we can ever hope to measure customer satisfaction accurately*”. Accordingly, CALO analysed response times and help desk calls and records absenteeism. Call handling desks and service support help desks had progressively become centres of excellence in service delivery, promoting creative environments and becoming proactive as well as reacting quickly to unforeseen events. ◀

▶ CALA kept records on whether services were delivered when needed, milestones were consistently met, service were received on schedule, whether CALA FM did a good job to prevent problems that may lead to delays in providing FM services and whether FM services provided timely information regarding changes affecting other divisions’ actions. ◀

▶ CALO had an organisational wide objective of 98% satisfied customers. Since the same approach was used throughout CALO, it was possible to benchmark the various parts of the organisation by comparing them with each other. In this way, CALO FM collected information from its customers on whether customer requirements were researched in a timely and accurate manner, planning was effective in obtaining timely services, and whether CALO FM developed FM strategies early in the planning process and collaborated with other divisions of CALO. ◀

8.2.2.3 DEGREE OF SERVICE PARTNERSHIPS AND COMMUNICATION

The perceptions, choices, and behaviour of all participants in the FM process affect the outcome of the service delivery. This element is based upon the degree of responsiveness of the FM team, the success of mechanisms which support teambuilding, and the degree of satisfaction with communications and problem solving.

For this critical success factor, the primary objectives are to provide effective service to and establish effective partnerships with, external and internal customers. Effective service and partnerships are key ingredients in assessing the health of any FM organisation in terms of satisfying customers' needs.

▶ CACE FM identified collaboration, effectiveness of communication of FM objectives, flexibility of service delivery and degree of promotion of teamwork between FM and its customers as important issues to be captured from customers under this critical success factor. ◀

▶ The products that CAAB markets were all based on providing a high focus for customer service. Therefore, the customer relationships, and measuring it, had become even more important. At CAAB FM, various methods were used to monitor customer perception of facilities service and associated relationships. Examples are satisfaction surveys, transaction based feedback cards and customer focus groups. CAAB had done some experiments with transaction-based feedback cards, which provide a continuous flow of information between regular surveys.

The results from all sources were analysed, and improvement tables were compiled; every trend and comment logged, numbered, and allocated to an individual who was to take appropriate further action. The philosophy at CAAB FM was that every item of feedback represents an improvement opportunity. ◀

▶ At CAAB FM, a “distributor partnership” was considered as important as they work closely with their service suppliers to ensure a superior experience for users by “*Positioning themselves as a strong business partner to attract the best service providers*”. ◀

8.2.2.3.1 MEASURES

The extent to which customers are satisfied with effective partnerships was measured and the data for this measure comes from *customer satisfaction surveys*, like the previous instances identified above. The measure provided feedback from customers regarding their satisfaction with the degree of partnerships that existed between FM functions and customers in terms of responsiveness, cooperation and level of communication.

▶ Service partnerships were considered important in delivering an effective FM service within CACE FM. CACE FM worked closely with their service suppliers to ensure a superior experience for users of facilities within CACE FM. CACE FM believed in positioning themselves as a strong business partner to attract the best service suppliers. Regular *customer surveys* carried out provides information about the effectiveness and efficiency of such collaborations. ◀

▶ Customer perceptions on issues relating to: flexibility in trying to meet the customer requirements, communication between the customer and the CAMA FM, provision of adequate information to process actions, responsiveness to end users suggestions and recommendations and the standards of the manuals produced, were assessed at CAMA FM. ◀

8.2.3 DISCUSSION

In the rapidly changing business environment of the 1990s, becoming truly customer focused is essential for the survival and success of virtually any business. Meeting and exceeding customer expectations is no longer the domain of only innovative, world-class competitors (Naumann & Giel, 1995). Customer satisfaction is the leading criterion for determining the quality that is actually delivered to customers through the service and by the accompanying servicing (Vavra, 1997). Therefore, the measurement and achievement of a high level of customer satisfaction demonstrates the FM's attention to stakeholders' goals. As a performance measure, this method has the following merits:

- Easy to administer;
- Allows targets to be set against which actual performance could be measured;
- Allows transparency of FM operations; and
- It does not appear to have any dysfunctional consequences if pursued by the organisation.

Measurement of customer satisfaction has received considerable interest in recent years. Customer satisfaction surveys are extensively used to determine the effectiveness of the FM system in providing quality services in a timely and accurate manner in meeting customer expectations. Customer satisfaction surveys also often provide a numerical value for the level of customer satisfaction, a percentage for example. Such index numbers indicate trends in satisfaction and allow correlations to be identified in order to assess the drivers and consequence of customer satisfaction. These surveys are utilised to obtain customer perceptions regarding the FM system and recommendations resulting from these surveys are promptly evaluated and results are communicated to customers in a timely manner.

This section has outlined three types of customer related critical success factors, uncovered primarily from the case study findings presented in chapters five to six and from factor analysis detailed in chapter seven. These critical success factors are quality, timeliness and degree of partnership and corporation. It is not the existence of these types of success factors which is important issue for facilities managers but

the way in which they are being measured, that is the exposure and the development of a shared understanding of each type of critical success factors and related measurement tools. The case study data provides evidence that it is always desirable to expose these performance measurement bases, as it is the first step in achieving a shared understanding or consensus within FM organisations.

8.2.3.1 TYPES OF CUSTOMER RELATED FACILITIES MANAGEMENT CRITICAL SUCCESS FACTORS AND ASSOCIATED MEASURES

Critical success factor	Associated measurement tools
Quality	Customer satisfaction surveys
Timeliness	Customer satisfaction surveys
Degree of partnership and corporation	Customer satisfaction surveys

Table 52: Types of customer related measurements – Definitions

Table 52 sets out three types of critical success factors relating to customer related performance initiatives that exist within FM organisations. These three types of issues provide a new perspective on the management of facilities which are aimed at increasing the effectiveness of the core organisation through increasing facilities performance. They are also a basis for the discussion around performance measurement in FM through the exposure of each type of critical success factor. Ultimately FM organisations shall use the measurement of customer satisfaction in dimensions identified above to identify the drivers of customer satisfaction so that they can develop long-term managed relationships with their customers.

8.2.3.2 EXPOSING FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT RELATING TO CUSTOMERS

To summarise, some of the case studies presented various ways in which the different types of customer related performance measures are made visible. The types of critical success factors and related measurement tools that were exposed in each of the cases are illustrated in Table 53:

Critical success factors and related performance measures	Case study							
	CACE	CAAB	CAMA	CASU	CALO	CALA	CABO	CASA
Quality	✓	✓	✓	✓	✓	✓	✓	✓
Timeliness	?	✓	?	?	✓	✓	✓	?
Partnerships and communication	✓	?	?	?	×	✓	✓	×

✓ = Performance issues exposed

× = Not exposed

? = Don't know

Table 53: Types of critical success factors (and associated performance measures) exposed relating to customer base in case studies

An important point to note is that perceptions of performance are often more important than the FM organisation's actual performance in determining customer satisfaction. Even though the organisation's performance is outstanding, if customers perceives it to be poor or no better than the competition their satisfaction may well be low. If there is a shortfall between perceived performance and actual performance, the virtues of performance must be emphasised. It is also important to consider the importance that customers place on the different dimensions of performance, as identified in Table 52 above. The organisation has to excel in aspects which the customers care about most.

8.3 MEASUREMENT OF FACILITIES MANAGEMENT INTERNAL PROCESSES

8.3.1 WORKING DEFINITION/PROCESS

8.3.1.1 PROCESS THINKING IN ORGANISATIONS

There is a great deal of variety concerning the definitions of processes. In the management literature the term "process" is frequently defined as a set of related activities. This basic definition often carries with it elaborating text referring to outputs, value and customers. Paul (1987) describes a process as the logical organisation of people, materials, energy, equipment, and procedures into work activities designed to produce specified results. A process is a set of linked activities

that takes an input and transforms it to create an output, and it should add value to the input and create an output that is more useful and effective to the recipient (Johansson et al, 1993). Davenport (1993) describes a process as a specific ordering of work activities across time and place, has a beginning and end, and clearly identified inputs and outputs. The concept of process is familiar to many as the central element in the input-process-output paradigm. In this context, process refers to the patterned, purposeful interactions between a system's inputs and its processes. In spite of many definitions, they follow similar directions to emphasise the nature of a structured set of activities designed to produce a specified output (Tinnila, 1995).

8.3.1.2 PROCESS THINKING IN FACILITIES MANAGEMENT

FM processes are those extending over different functions and having customers as well as suppliers, therefore the FM organisational perspective should focus on the core and critical FM processes. In contrast to functional definitions, process perspective in FM is clearly focusing on the tasks and activities that are taking place in the FM organisation. The emphasis should be on how the work is done, rather than the functional emphasis on what is done within the organisation.

An FM organisation's transformational processes and its transactional processes define the organisation from the process perspective. These basic processes are themselves parts of a larger loop of activity, some of which are transformational and some of which are transactional in nature. FM organisations' business processes, are typically divided up into some commonly accepted business functions:

- Managing service quality;
- Managing service planning;
- Managing property services;
- Managing information;
- Managing contract management;
- Managing FM finances; and
- Managing administration

Most FM organisations have a culture that is focused on the service they provide. In such a culture people are naturally inclined to emphasise issues that are tangible,

visible or measurable. In such organisations people are likely to resist activities that do not contribute to short-term tangible results. Due to fast changes in the market place, and customers' increasing expectations, task oriented or functional thinking has therefore become outdated. Many facility managers now believe in process thinking. Belief in itself is not sufficient, and the problem has been how they should implement this thinking in their FM organisations (Hinks, 1999).

8.3.1.3 INTERNAL PROCESSES WITHIN FACILITIES MANAGEMENT ORGANISATIONS

FM processes are primarily an analysis of the FM organisation's internal processes, which focuses on the internal business results that lead to financial success and satisfied customers' expectations. Internal FM processes are the mechanisms through which performance expectations are achieved. Customer-based measures are important but they must be translated into measures of what the FM organisation must do internally to meet its customers' expectations. Therefore, managers need to focus on those critical internal operations that enable them to satisfy customer needs (Kaplan and Norton, 1992). Key processes are monitored to ensure that outcomes will be satisfactory. FM organisations should decide what processes and competencies they must excel at and specify measures for each. The measures should also link to top management's judgement about key internal processes and competencies to the action taken by individuals that affect overall corporate objectives (Kaplan & Norton, 1996). This linkage ensures that employees at lower levels in the organisation have clear targets for actions, decisions, and improvement activities that will contribute to the organisation's overall mission (Olve, et al, 1999).

Some of the most important FM processes to describe and analyse are those which tend to enlarge the customer satisfaction and the following section identifies some of the important FM processes identified through case studies.

▶ To achieve extraordinary growth in FM processes, CACE worked together across titles, job responsibilities and organisational structure. CACE FM leveraged its resources by sharing information and expertise and encourages openness and

initiative and expected participation in decision-making and problem solving across all functional areas and organisational levels. ◀

Internal FM processes are important because it not only addresses the internal processes that must be developed and maintained to meet customer and stakeholder requirements and expectations, but also the process results that lead to financial success and satisfied customers. Within any FM organisation, there are a number of internal FM processes that require focused management attention to ensure requirements and expectations are met as effectively as possible while accommodating cost efficiency issues. Preceding sections identify different FM internal processes followed by corresponding performance measures.

8.3.2 EXPLORING CRITICAL SUCCESS FACTORS AND MEASUREMENT TOOLS FOR MEASURING INTERNAL FACILITIES MANAGEMENT PROCESSES

Quality is an intrinsic part of customer service yet quality evaluations are “not made solely on the outcome of the service, they also involve evaluations of the process of the service” (Parasuraman et al, 1985). Facilities service processes are not only less tangible than hard products they are mainly delivered in a manner which is at the discretion of the provider.

As already discussed in section 8.2.3.1, each critical success factor relating to FM internal processes should too supported by at least one measure that will indicate the organisation’s performance against that objective and measures are precisely defined including the population to be measured, the method of measurement and the data source. Measures are described as detailed as possible and these cover: the characteristics of measures, frequently available indicators of recent or current performance, reliable, precise and sensitive indicators of results, cost effectiveness, usefulness and achieving the targets aiming good business decisions and over compliance or other sub-optimisation.

8.3.2.1 OPERATIONAL SERVICE EFFICIENCY

The FM *operational processes* represent the short wave of value creation in FM organisations, deal with the delivery of the service to the customer and stress efficient, consistent, and timely delivery of existing services to the customer. The operational process remains important and FM organisations should identify cost, quality, time and performance characteristics that will enable it to deliver a superior service to its customers. Gronroos (1990) defines service efficiency as understanding the capacity of the organisation to deliver the actual service to the required quality together with new service offerings.

▶ CACE's FM had undergone maturity in terms of its FM service provision since its formation. CACE FM had undergone a steep learning curve through the need to procure FM services for several new buildings and to re-define the level of quality. The redefinition of its activities had led to a review of what facilities were required and their quality based on what would be needed to attract staff, improve productivity and portray a more professional image. Although it had been established that FM contributed to the objectives of the core organisation, the benefits of employing particular FM strategies as discussed in section 5.3 of chapter five, were less clear at an operational level and were very difficult to quantify. ◀

▶ CAMA believed that FM *operational efficiency* should become central to the operation of the CAMA's FM function and emphasised that the effect of all FM processes upon delivery of the core business should be optimised. Some of the FM motivators within the CAMA FM were: to improve facilities efficiency so that every pound saved means that more money is available for the maximisation of care for patients, to shift the focus on to quality of facilities so that excellence is guaranteed to all facilities users, and to increase the confidence in the FM process by demonstrating the positive impact that good FM can have upon the health care process (CAMA Internal Document, 1999).

CAMA FM was under pressure to reduce "FM related costs" and improve quality. The scope for large monetary savings from, on the face of it, the application of small

percentage facilities related services to cash releasing efficiency savings, was immense. One inevitable downsizing of the facilities related cash releasing efficiency savings can be seen in the rationalisation and downsizing of the Trust facilities estate so as to reduce the running costs of the estate. This situation was equally applicable to CACE FM and CABO FM. ◀

8.3.2.1.1 MEASURES

It is important to establish considerable FM operational efficiency targets within the FM organisation. The understanding thus far gained with regard to FM organisation's strategic direction, goals and aims be converted into directly related FM organisational objectives. As identified in section 2.3.5.1 in chapter two, tight fit philosophies inevitably lead to the setting of operational measures with an emphasis on cost containment and other financial bias. These types of operational FM measures, it can be argued, do nothing to encourage the addition of value to the FM processes and the organisation as a whole (Featherstone, 1999). Varcoe (1998) states; "cost is an outcome of doing something, not the reason for doing it. It is important...to identify...the beneficial outcomes of actions, as well as the completion of the action and the resource inputs it requires". Varcoe (1998) further defines the setting of dynamic operational measures of FM processes at the strategic level of FM organisation and some of the measures identified from the case studies are illustrated in the sections below:

8.3.2.1.1.1 POST-OCCUPANCY EVALUATION

Post-occupancy evaluation is a rapidly emerging primary mechanism, across all market sectors, where the performance of a building is evaluated in terms of how it meets the needs of the activities undertaken within that facility. Preiser (1988) refers to the process of post-occupancy evaluation (as visited in section 2.10.3.2.4 of chapter two) as being; "the process of obtaining feedback on the performance of a facility in order to improve the design of similar facilities in the future and to assist in solving problems in existing facilities".

This potential feedback from the post-occupancy surveys on organisations can therefore be extremely useful in helping facilitate positive alignment of the FM operational efficiency with the core organisation.

▸ CAMA FM assessed productivity improvement of facilities services, quality of the facilities service provided, the effective utilisation of facilities, achievement of time scales and performance of service excellence through *post occupancy surveys*. This process had helped CAMA FM to identify problems in community health care facilities along with possible solutions in the immediate time scale and in internal time scale, it had helped the Trust to identify the possible ways to adapt community health care facilities to best meet the evolving needs of the health care Trust as a whole. ◀

▸ In addition, CACE FM referred to the very necessity of post-occupancy evaluation mechanism as a key tool to assist in the overall organisational FM process, and the benefits that can be accrued through the correct application of this tool: *“Facilities are usually seen by management to be a cost centre; hence ‘good’ management is measured by a reduced operating cost. In such a climate, facilities managers are hard pressed to make a case for operational optimisation of facilities processes, so the use of a tool like post occupancy evaluation at CACE FM shows a connection between facility quality, cost and productivity and offers a useful leader in advancing the FM discipline”*. ◀

8.3.2.1.1.2 SERVICE STANDARDS

The quality delivery of the FM processes within organisations must be continually developed. Grigg (1996) (cited in Madeley, 1996) refers to this continuous development as a “campaign”. It is important therefore to develop a cycle through which FM quality can be monitored, enhanced and developed within organisations. The commencement of the development of dynamic FM quality standards is established through initially specifying clear FM quality standards. Only then can the facilities service be delivered in a quality manner and monitored to minimise exceptions from the previously specified quality standards. Therefore, the establishment of FM *quality standards* within the FM organisation is an essential

pre-requisite to the delivery of any FM service. According to Property Help Line (1994), this establishment of clear FM service standards is a direct product of the conglomeration of the quality aims of the FM function.

The measures of service standardisation provide an indication of the variety of service variants that are offered by the FM organisation. It assesses the amount of the service that is standard, as opposed to the number of product variants or services that are customer specific. This is an important measure of the attractiveness of the products offered to the market and also has a significant impact on the operations of the organisation.

▶ AT CALO FM, this measure was used where there are variations in the requirements of specific services and wherever customisation of services is necessary. When standardising services, there was a need to ensure that the customer is still getting the service that is required and that their choice is not reduced. In order to increase responsiveness to customer requirements the amount of service standardisation at CALO FM was as great as possible and where possible customisation of standard services was undertaken as late as possible. This enabled inventory of standard services that was required and to make sure that the choice is not reduced. ◀

▶ CACE FM used “*Controls Assurance Standards*” as a quality audit mechanism to monitor its FM operational efficiencies.

Controls assurance (see section 5.4.2 of chapter five) is a holistic concept based on best governance practice and is a process designed to provide evidence that NHS organisations are doing their “reasonable best” to manage themselves so as to meet their objectives and to protect patients, staff, the public and other stakeholders against risks of all kinds (Department of Health, 2000c). Fundamental to the process is the effective involvement of people and functions within the organisation through the application of self-assessment techniques to ensure objectives are met and risks are properly controlled. The purpose of the self-assessment is to identify weaknesses in relation to compliance with relevant service standards, and to generate an action

plan for improvement. The standards are not all-inclusive and the assessment need not be constrained to only considering the requirements contained within the standards themselves.

Tabulated scores were used to generate a graphical profile for CACE FM and the service standards that are dealt with are: buildings, land, plant and equipment, catering and food hygiene, emergency preparedness, *environmental management*, fire safety, health and safety management, information management and technology, security, transport and waste management. ◀

▶ CASU FM complied with *charter mark* criteria for FM services..... Charter mark is the government's word for organisations which provide an excellent service to the public and therefore it is a sign of excellence. CASU FM's activities were assessed against the 10-charter mark criteria against which organisational performance is assessed. They are designed to help organisations measure and improve service delivery (CASU FM Internal Document, 1999):

- *Set standards* – set clear standards of service that users can expect, and monitor and review performance and publish the results, following independent validation;
- *Be open and provide full information* – be open, and communicate clearly and effectively in plain language to help people using public services, and provide full information about services, their cost and how well they perform;
- *Consult and involve* – consult and involve present and potential users of public services as well as those who work in them, and use their views to improve the service provided;
- *Encourage access and the promotion of choice* – make services easily available to everyone who needs them including using new technology to the full, offering choice wherever possible;
- *Treat all fairly* – treat all people fairly, respect their privacy and dignity, be helpful and courteous and pay particular attention to those special needs;
- *Put things right when they go wrong* – put things right quickly and effectively; learn from complaints; and have a clear, well publicised and easy to use complaints procedure, with independent review wherever possible; and
- *Use resources effectively* – use resources effectively to provide best value for taxpayers and users. ◀

▶ FM organisations that have addressed the issue of quality are predominately quality assurance-oriented, under client pressure, with few having embraced total quality management. CABO FM had in-depth knowledge of the requirements of *ISO 9000 family*, and had attained appropriate accreditation “even though this standard has its origins in manufacturing industry”. At CABO FM, ISO accreditation advocated design work, work on site, commissioning, repair and maintenance, products and their manufacture. ◀

▶ Progression of operating systems and procedures were in alignment with *ISO 9000 quality assurance* at CASU FM. It is generally accepted that FM activities continued a “process” and as such process driven quality systems such as ISO 9000 were potentially of great value to control the quality of the FM process. Moreover, the rationale behind ISO 9000 standards (and proposed revisions) provided an ideal opportunity for the facilities managers to achieve the benefits of total quality management and thus improvement in various key performance dimensions. Its focus on continually increasing the effectiveness and efficiency of the FM organisational process, listening and responding to the growing needs and expectations of its customers, increased attention to communication and work environments, greater orientation towards measured success of systems, processes and products, for example, makes the ISO standard a valuable addition to the management of FM performance. ◀

8.3.2.1.1.3 BENCHMARKING

“*Benchmarking*” has gained in popularity since the publication on the subject by Camp (1989). By definition, the emphasis of benchmarking is on processes as well as results. This differentiates it from traditional comparisons of performance of organisations. It also provides the steps for organisations to use information to identify an action plan to emulate the best practice performance in others such as identification of comparators, analysis of gaps in performance and goal setting (McFadzean, 1995). Kearns (1993) (cited in Featherstone, 1999) gives a generic definition of benchmarking as: “...the continuous process of measuring products,

services and practices against the toughest competitors or those recognised as industry leaders”.

The types of benchmarking adopted depend on the organisation, the willingness of organisations to participate and the availability of information on which to initiate a search for best practice performers.

▶ CAMA FM related *benchmarking practices* to a number of facilities objectives, which could be relevant to both higher macro-organisational levels and micro-departmental levels within the Trust. These facilities objectives for the CAMA FM were: increasing FM efficiency, choosing best FM practices, defining Trust user facilities requirements, establishment and furtherance of Trust facilities goals and objectives and development of tangible Trust FM quality measures. ◀

▶ Types of measures available at CAAB FM included: core measures (measures that expect all elements to employ where applicable), optional measures (measures that are suggested, but not required), local measures (which have site or contractor specificity), and outcome and in-process measures (indicators of performance).

Each site established short-term local targets for core, optional and local measures. While these should provide aggressive “stretch” *performance targets*, they should be realistic. There was little benefit in creating unrealistic or unattainable targets. It was expected that when targets were set below CAAB FM’s expectations, they will be set to stimulate substantial progress toward those expectations and will rise over time. Similarly, where sites had already exceeded CAAB’s expectations, targets in excess of national averages may be maintained as part of continuous improvement. ◀

▶ At CASU, service-wide developments had resulted in the facilities department being acknowledged as delivering efficient services, providing value for money and being able to demonstrate this through a number of performance evaluations including detailed examination of a number of sector-wide and external cost comparative benchmarks and performance indicators. The service was increasingly looking outside the sector for the exchange of comparable best practice and this

strategy was being a continuing process throughout the service-planning period. *Benchmarking and performance indicator reports* were produced on an annual basis in order to assess the continuing efficiency of the service. ◀

The process of *benchmarking* the FM function can result in more realistic types of FM processes within organisations, thereby adding value to the entire organisation. This added value is basically derived from the increase in effectiveness of the use of organisations' facilities through the application of sound FM techniques. *Benchmarking* of the FM process efficiencies can help therefore negate the ineffective use of the organisation's facilities through the effective application of, and establishment of, key performance indicators that provide a valid and objective view of the facilities processes within organisations.

8.3.2.1.1.4 MAINTENANCE MANAGEMENT

Maintenance is a supporting function in any organisation, and is part of production processes that transform inputs to outputs. Facilities managers require performance information to be able to control the facilities related maintenance processes. Traditionally, FM maintenance is an action-oriented function, the fire fighters that solve problems associated with FM maintenance.

Clearly, *FM maintenance management* needs to analyse what maintenance operations need to be performed on each item of facilities function, thus maintenance needs to be initialised and the performance levels of such activities. The changes in the organisational environment cause a need for facilities managers to concentrate on efficiency, safety and environmental concerns. Performance indicators are needed to give FM quantitative information on the extent to which these goals are reached and what actions to take to improve its operations.

▶ Upgrade and utilise equipment and increase *maintenance effectiveness* was considered as important at CABO FM. Upgrade the plants to the best equipment available and focus the attention on optimisation in order to reduce operating costs and increase the maintenance programme in order to minimise downtime were two main areas that CABO FM considered as important. The Director of Facilities at

CABO FM described this as: “*necessity for equipment upgrades*” and “*sub optimally utilised equipment*”. ◀

▶ At CABO FM, *equipment utilisation standards* were measured by the percentage meeting utilisation standards and/or objectives. Upgraded and utilised equipment was measured based on percentage of equipment upgraded, and increase maintenance effectiveness was measured on percentage of maintenance time spent on prevention, for example. ◀

▶ Further at CACE FM, the number of unscheduled work orders gave additional information on the need for extra labour. It was needed as not all maintenance activities can be planned, owing to labour restrictions. Other indices were also popular within CACE FM including; *maintenance cost as a percentage of plant replacement cost, and maintenance cost per labourer*. ◀

8.3.2.2 CONTRACT MANAGEMENT

It is important to understand the many ways in which a FM organisation deals with their outsourcing FM contracts. A growth trend in outsourcing thus: “More and more people working in and for organisations will actually be on the payroll of an independent outside contractor” (Featherstone, 1999). Ownership and the use of facilities are diverging and the organisations therefore are outsourcing their activities and are concentrating on their core business. The specialist contractors performing such outsourcing tasks, perhaps naturally, support the view that outsourcing is both beneficial and a growing trend. There are a number of contracting options, which range from encompassing all services from one contractor or single services spread amongst many suppliers.

The contracting out strategy varies from organisation to organisation. Although there are advantages and disadvantages to contracting out in general, and in specific types of contracting, it is unknown which, if any, contracting strategy contributes to better performance. The reason as to why it is likely that the periphery activities are outsourced first is summed up by the Property Help Line (1994): “*Currently many companies are arguing that maximum effort must be directed to core business.*”

Concentrate on these elements of the business that you are most skilled at doing, and from which you derive profit and contract out any peripheral activities as long as doing so will not threaten business integrity”.

However, not all organisations share the above view of “collapsing in-house service to a minimum”, particularly those which place great value on retaining as many in-house FM services as possible. Bell (1998) refers to the need to strike a balance between in-house and outsourced FM services: “a number of recent market surveys indicate that clients continue to combine in-house, external or both approaches to suit their needs. In general terms, “non-core” services are more likely to be provided by contractors than directly employed staff, while functions perceived to be more strategic, still tend to be kept in-house”.

By adapting criteria laid down by Lee (1992), the main considerations to be taken into account when determining the advantages and scope of in-house and outsourced FM services primarily revolve around cost, quality and convenience. However, the traditional boundaries of FM services which either lend themselves to in-house delivery or outsourcing are constantly being re-defined. Many external contractors are becoming as convenient as in-house contractors and many in-house service providers are now as cost effective as external contractors.

Given this changing business climate there are several reasons for the adoption of a contract management approach in FM:

- *Reduced costs* - through the consolidation of the contractor base, as fewer contract relations will mean lower costs;
- *Increased value* - to increase the value received by the end customer, example, through the bundling of products and services into single packages with many FM providers delivering FM services to meet client’s specifications; and
- *Integration* - to integrate all organisations and business units involved in the FM chain into focusing their efforts on the ultimate customer.

▶ At CASU FM, each contractor was responsible for establishing and maintaining business systems and processes, which meet its requirements. Contractors were also responsible for conducting credible, documented assessments of their business

processes, to include problem analyses and improvement planning to ensure compliance with applicable laws, regulations, and terms and conditions of the contract. Compliance was focused on objectively measurable criteria and allowed for meaningful trend and rate of change analyses. ◀

▶ CAAB FM had a programme titled: “business management oversight process review” for its contractors and the frequency depended on the organisation’s past performance, evaluation of the organisation’s self-assessment level. This assessment frequency was supported by the contract management memorandum issued as part of this system, field personnel serve on a general team of contract management professionals to verify the results of the self-assessment. In the case of CAAB FM contractors, these results contributed to the annual determination of the contractor’s compliance with laws and regulations and the terms and conditions of the contract, and the efficiency and the effectiveness of the contractor’s management systems.

Over a yearly period, the cumulative results of the contractor’s self-assessment of the business systems, together with day-to-day operational awareness activities, and annual on-site reviews, if required, formed the basis for determining the contractor’s business systems status. However, evaluation of performance was an ongoing process, not an “event” within CAAB FM. ◀

The importance of contract management in the FM setting has been further emphasised by the introduction of PFI (Private Finance Initiative) types of contracts within NHS. PFI is the model of Public Private Partnerships in the NHS (NHS Executive, 2000b). Comparing the capacity of NHS as the major client for FM services within UK, PFI initiatives now play a major role within FM procurement trends. PFI is a key policy for improving the quality and cost effectiveness of public services. It enlists the skills and expertise of the private sector in providing public services and facilities (NHS Executive, 2000b). It is not simply about the financing of capital investments but also exploiting the full range of private sector management, commercial and creative links. PFI schemes involve creating partnerships between public and private sectors and is about building long-term and mutually beneficial partnerships between public and private sector partners. Where

capital investment is required, there is increasingly being a role for a private sector partner in the provision of facilities.

Typically for a large scheme, the private sector partner will be a consortium whose members may include a construction organisation and a FM provider, amongst others (NHS Executive, 2000b). The private sector partner obtains finance for the project, constructs the project, and provides services to the hospital as specified in the contract agreed between the Trust and the private partner. The terms of the contract set out the range of service to be provided and the performance standards required of the consortium.

▶ *“Under PFI, separate payments for rent, rates, property management and support service packages, based around primary leasehold or freehold property interests, are exchanged for a single unitary charge for a service environment, the unitary charge being variable according to availability and quality of the service received”* commented CACE FM. As such, the public sector organisations move away from buying assets and looking after them at risk, and paying only for the service that is delivered in accordance with its defined requirements. The consequence of the scale of the PFI opportunity is a very simple one as far as outsourcing in new developments are concerned. It has placed the activity at the core of major funding deals. Most importantly, all the leading financial institutions that have looked at PFI now recognise the vital role of the service provider. It is this that is creating the prospects for change in the private markets.

FM within CACE was well positioned to support the integration of all its contractor base within the entire supply chain, reinforcing the performance links between facilities operations and those of the core business in order to improve the overall performance of the business. There were also opportunities to create value through innovative facilities design and process management and this area is dealt with under facilities supply chain management in section 8.3.2.4. ◀

8.3.2.2.1 MEASURES

Given that some (or all) facilities services are provided by external contractors, what are the key performance issues arising and how may they be addressed?

Traditional approach to contracting out facilities services are often piecemeal, involving a large number of contractors/suppliers, may be adversarial in nature and often lead to a number of post contract problems (Featherstone, 1999). Many contracts are awarded on the basis of the lowest bid rather than a considered approach with regard to value, quality and risk.

There are however signs of change as contractors and clients seek to develop a new basis for doing business, one where trust and openness prevail and both parties have the opportunity to win.

8.3.2.2.1.1 SERVICE LEVEL AGREEMENTS

Service level agreements have been claimed to be an excellent vehicle for organisational improvement where there is a substantial degree of departmental autonomy (Dib et al, 1998). It is proposed that service level agreements can be used to promote improved integration between different services, quality assurance and provide a framework for cost transfer charging. In the new procurement world, facilities managers are facing the emergence of the “intelligent client” and the development of purchaser power. Consequently, customer satisfaction demands are placing increasing pressures on the FM to raise the standards on the “bought-in” services, particularly those most visible to the end user. This demand for quality means greater emphasis is being placed on the achievement of predetermined, measurable, standards defined in *service level agreements*.

Adherence to the *service level agreement* is a key measure of a contractor’s ability to deliver the minimum required service to the customer. The service level agreement is usually between the client and the FM contractor and represents a regular acting in

the interest of clients who do not have collective influence over the service contractor. The control paradigm of *service level agreements* is lengthy and detailed with an emphasis on costs with a focus on outputs. It operates in practice as “*the best you will get without paying more*” and “*the minimum you can expect from a given resource level*”.

▶ At CAAB FM, the *service level agreements* established the minimum service requirements. As a result client satisfaction was conditional on adherence. Superior performance was required if satisfaction to be increased. CAAB FM usually defined the penalties that were incurred by the contractor for failure to achieve the desired service level. Therefore this measure was linked to the measure of penalties for non-conformance to regulatory requirements. Penalties reflected the impact that non-compliance with the agreement had on the operation of CAAB FM and on the satisfaction of the regulator. ◀

▶ The use of performance standards in contracts was monitored at CAAB FM to denote the level of maturity in relationships and in performance measurement. The use of *partnering* was also a measure of the maturity of FM practices at CAAB. ◀

▶ At CASU FM, *service level agreements* defined the minimum level of service that a contractor was contractually obliged to provide. The “service” in the service level agreement refers to the dimensions of performance that were most important to CASU FM. These were based on delivery reliability or levels of support services. Data from this measure was used when negotiating new service level agreements to ensure that realistic conditions were included. CASU FM had identified that unnecessary services level descriptions eroded user friendliness and understanding. ◀

Overzealous pursuit of product variety with the aim of meeting the heterogeneous needs of the organisation can be inefficient and over stretch the facilities team beyond their capacity to deliver sustainable and reliable quality. Opinion and satisfaction surveys are one way of reducing complexity by obtaining feedback and suggestions on a regular basis enabling more effective planning, delivery and

optimisation of variety of services provided. Service level agreements form a useful internal tool for communication, and simplicity enables effective communication and realistic information, from which to measure performance.

8.3.2.2.1.2 PROCUREMENT PARTNERSHIPS

The suitability of contract partnership for FM depends on: *“The type of product or service and the readiness of the FM contractor to enter into the relationship”*, commented CASA Director of Estates and Facilities.

▶ At CASA FM, *contracts partnerships* were seen as a gateway to cost savings. New revenue and cost saving opportunities identified. Improved relationships, loyalty created, clarified accountability and shortened problem resolution process were some of the advantages that CASA FM has achieved through partnerships. ◀

A formal contract partnership is essentially a management process. As such, the elements distinguishing the process will tend to fall in line with the overriding culture of the FM business as a whole. The contract partnership process can be treated as a bolt-on activity, and the FM contractor must have an appropriate culture for the partnership to work, as must the client.

8.3.2.2.1.3 PERFORMANCE BASED OUTSOURCING

The popularity of performance-based outsourcing, once a popular measurement of energy serving organisation, is spreading into other outsourced processes, particularly among FM.

▶ *“Performance based contracting gives the Trust the ability to create systems that are more outcome based, holding great promise to reduce contracting costs while increasing service quality”*, according to Facilities Service Development Manager at CACE FM. Particularly with the introduction of the new PFI type of contracts, before finalising the long-term service provider facilities executives needed to define what performance was expected. *“That begins with initial planning”*, said Facilities Service Development Manager at CACE FM. *“You begin with a detailed audit of*

what happens, what is needed and then you must make sure you have a good transition plan in place”, he said. *“To measure performance you need to have developed a detailed task plan. Establish what is to be done, how often, who does what and what skills are required to do those tasks”*. *“Goals and objectives for the contract services provider must be clearly spelled out”*, he further said. *“Evaluation of performance and strategic feedback to the service provider must be given on a regular basis to guide and optimise the service provider’s efforts”*.

“We use performance standards. How those standards will be measured weekly, monthly and quarterly are set up in the beginning”, said Director of Facilities and Estate Directorate at CACE. *“That way, we know what we are looking for and our contract service providers understand what we are looking for”*. ◀

The attainment of value for money in the procurement and provision of FM services is now a global, corporate pursuit with increasing complexity and sophistication (Akhlaghi, 1996). In order to ensure and monitor the achievement of value for money, the essence of endeavour in FM contracts is the need to be effective in today’s highly competitive commercial environments.

▶ *“Value for money in FM contracts is about making sure that: we are getting what we want and we are paying a competitive price for it, then, in assessing ‘value for money’, we would have to assume that we know what we want”*, said Deputy Facilities Director at CABO. *“We should know what a competitive price is for our requirement; operate in highly developed market standardised commodities; and can measure all aspects of contract performance in ‘hard’ terms”*.

Accordingly, CABO FM made informed choices at the point of purchase and the performance of service delivery was monitored according to established conventions, making direct comparisons possible. ◀

8.3.2.2.1.4 CONTROLS ASSURANCE STANDARDS

▶ CACE FM further used *Controls Assurance Standards* to measure the efficiency and effectiveness of FM contracts and contractor controls. Self-assessments were

carried out against the standards. In the context of controls assurance, it involved getting the right people and processes together to openly and honestly examine the workings of the organisation against the controls assurance standards. The concept of self-assessment is summarised in Figure 42 in chapter five.

The assessors developed a strategy and plan which involved a series of meetings with the senior management and other relevant FM related staff covering all the relevant standards, and some follow-up work by internal audit to gather additional evidence. A draft report and action plan was circulated to the participants for comment and subsequently, the final report was produced. ◀

8.3.2.3 RISK MANAGEMENT

Risk is an inherent element within the decision-making process, and risk management may be seen as the ongoing process by which choice between alternatives is logically determined (McFadzean, 1993). The traditional role of risk management in organisations is often closely linked with the business insurance function which focuses on pure risks, which will lead to a physical or financial loss. The new paradigm of risk management is more holistic and assumes a preventative role in which potential crises are considered (Barton and Hardigree, 1995). Therefore, good risk management awareness and practice at all levels is a critical success factor for any organisation.

As emphasised in section 2.3.4.2.4 of chapter two, each FM process has been described with reference to the organisational need for the service and assumes that each decision about facilities has a business implication. This strategic FM focus must therefore focus on the management of uncertainty over time.

The extent of the business risk borne by the FM organisation is very significant in all organisations. Risks are managed continuously within FM organisations - sometimes consciously and sometimes without realising it. Increasing legislation and litigation has raised senior management awareness of the need for effective control. A range of facilities related risks is identified in Table 52 (Alexander, 1996c):

Organisation	Risk of loss of business
Human use	Risks to human life
Environment	Risk of environmental failure Risk to the environment
Physical	Risk to property Risk to physical failure
Financial	Risk of financial loss and viability

Table 54: The range of facilities risks [Source: Alexander (1996c)]

The aim of facilities risk management is to contain, reduce, transfer and avoid risks and constraints, both known and unpredictable, that facilities can impose on the operations of an organisation. Facilities risks can also be assessed in terms of (Nutt, 1999b):

- The types of potential risk, both hard and soft;
- The significance and degree of risk within each area;
- The effectiveness of existing risk management arrangements; and
- The contingency measures that are in place to respond to unpredictable risks if they occur.

▸ AT CABO FM, planning for risk involved considerable foresight and application ahead of the time when the risk may first occur. This implied that the integration of risk management process was required at the inception of any facilities service. The development of risk management policy statements, a clear list of responsibilities for risk, and the establishment of a business continuity and disaster recovery plan were seen as essential at CABO FM where sustainability of performance was dependent upon complex systems, technology and the physical product support of key FM personnel. ◀

▸ At CALA FM, the risk management process involved the following stages: identification, analysis, control and financing of risk. Risk identification further involved a comprehensive analysis of all present and future risks in the facilities business operation. These risks included organisational and managerial risks and a better understanding of “management risk” including the knowledge of the law and legal relationships, human factors and communications. ◀

Risk management is an integral part of the long-term approach of FM (Alexander, 1996c) and it aids long-term survival. The key skills required for effective risk management within FM are risk awareness and effective communication. Add to these the ability to prioritise risk control measures.

8.3.2.3.1 MEASURES

The risk management process within FM requires the examination of all aspects of risk facing the FM organisation. These risks are then measured, and methods of risk management to reduce or eliminate risk potential are then chosen. This section highlights some related issues captured through the case study analysis.

▶ CACE FM used “*Controls Assurance Standards*” as previously visited in section 8.3.2.2.1.4, to monitor its FM associated risks. The Trust board was responsible for the organisation’s system of internal control, including risk management. It had appropriate policies on risk management and seek regular assurance on whether the system is in place and functioning properly. Senior management was responsible for implementing the policies set by the Trust board.

Reduction in risk exposure through *more effective targeting of resources to address* key risk areas and enhanced reputation through public disclosure of achievements in meeting objectives and managing risk were a few among many potential benefits, that CACE FM had achieved through the application.

The risks identified from the self-assessment (as described in section 8.3.2.2.1.4 above) were included in the CACE FM’s risk register. The risk register was simply a repository for logging and dealing with known risks which were identified through self-assessment against the controls assurance standards and other types of risk identification and assessment. ◀

▶ At CABO FM, a frequently cited objective of facilities risk management was the effective planning of resources needed to recover financial balance and operating effectiveness after a facility loss. In this context, at CABO FM the FM team was well

positioned to undertake systematic and *periodic risk audits*, which supports the organisation's strategic decision-making process. ◀

▶ CALA FM had set up an *incident reporting system* as a measure for risk assessment so that once the risks within the organisation were known a proper evaluation can be made. As a result, the scope of the actual practice of risk management ranged to a broader and more inclusive “modern” view that often focuses more on the control of potential losses, that is loss prevention and loss minimisation as well as on more creative loss financing alternatives. ◀

▶ CAAB FM was in the process of identifying the feasibility of the application of the following quantitative measurement techniques to measure the risk assessments: *probability analysis, sensitivity analysis, scenarios and simulation*. Application of this “modern” view of risk management measurement systems was even more encompassing. It assumed a preventive role in which potential crises are considered. The risk management in FM was therefore involved with the analysis of speculative business risks in new and emerging markets, and sometimes with potential joint partners. ◀

8.3.2.4 SUPPLY CHAIN MANAGEMENT

Supply chain management is a strategic concept for viewing the supply chain as a single entity, with each linkage adding value, building strong relationships and reducing uncertainty as information and material flow is monitored and managed and is seen as a way of creating new knowledge through management of both the tacit and explicit knowledge within and across the supply chain (Nelson, 2000a). This is in line with Nonaka's (1991) view of the knowledge-creating organisation as that which taps into the “tacit and often highly subjective insights, intuitions, and hunches of individual employees” and makes those insights available for testing and use by the company as a whole.

The facilities supply chain consists of networks of organisations that cross industrial and international boundaries externally, (as well as internal functional and

organisational barriers), to produce value in the form of products and services for the ultimate customer.

Why is supply chain management important for FM? As a predominant management philosophy in the retail and manufacturing sectors, supply chain management is already taking hold and is helping to achieve the dual goals of cost reduction and customer service and it is already affecting the FM industry as the issues achieve greater strategic recognition as described in section 2.3.7 of chapter two. There are many success themes and variables concerned with the adoption of supply chain management approach in FM (Figure 58) (Ball, 1997):

- *The internal level of the supply chain* – which are internal to the organisation such as management, internal processes and internal integration; and
- *External level* – external to the organisation, including information, communication and external integration

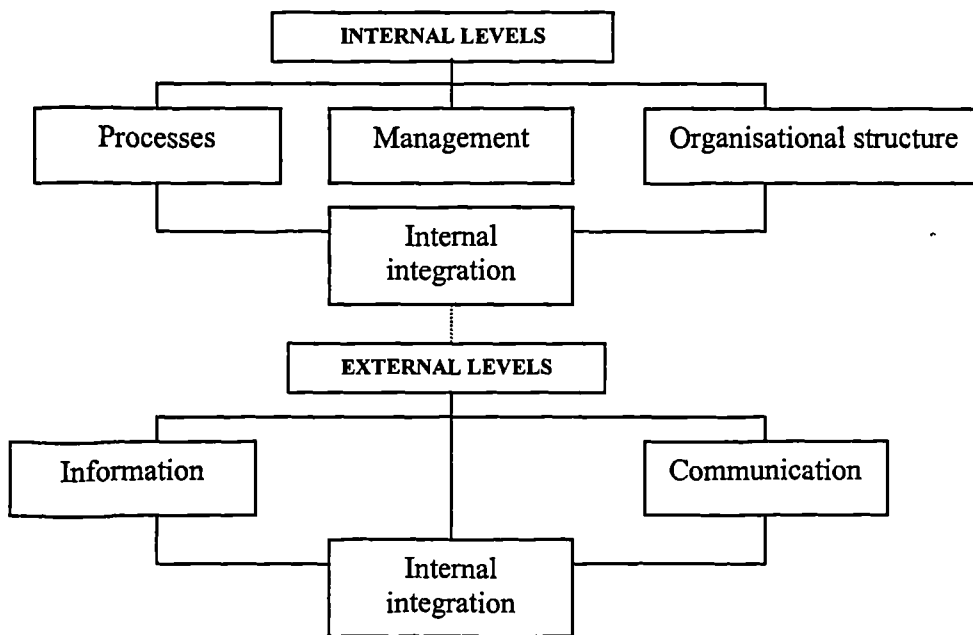


Figure 58: Success themes in supply chain management in FM organisations [Source: Ball (1997)]

Internal integration of processes, management and organisational structure is an attempt to achieve a closely integrated, customer focused material flow. This involves the reduction of traditional boundaries and a need for facilities managers to

communicate the supply chain management message. Indeed, it would appear that there must be internal partnerships and infrastructure in place for supply chain management to be successful.

Success at the external level is concerned with those themes that cover the “entire” supply chain, from source of supply to point of consumption, including information, communication and external integration. But truly effective supply chain management must go further than merely the point of consumption and include continuous feedback mechanisms as well as regular client contact (Ball, 1997).

Contracting out of elements within the FM supply chain is a topical issue, subject in some quarters to considerable debate and confusion. Outsourcing has arisen in part from the desire of organisations to concentrate on core competencies as identified in section 8.3.2.2 and this has been already dealt with in previous section 8.3.2.2.

To a FM organisation, the value of supplier partnerships, with non-core services providers in a FM setting, depends on creating better external (and in some cases internal) relationships and contracts. What makes FM services and suppliers suitable for partnerships?

► In this context, CACE FM had identified the following:

- FM is a cyclical process of planning, delivering and monitoring from service need to service result, measuring user responses and satisfaction. To satisfy such user requirements organisations need to form relationships with all the parties engaged in the processes that lead to the delivery of services;
- In addressing the question of the differences between FM and other supplier partnerships, they should consider which services are suitable for supplier partnerships, and what makes a FM supplier suitable for partnership;
- FM operates within a more specific context, and that of the provision of support services, most of which impact the core business indirectly. So the subject lacks a specific FM context; and
- A partnership is not a way of passing risk into the supplier. To get the best out of a supplier through partnership, it is probably best to know where you are on the partnership continuum: for which purpose you really need to understand what it is possible to achieve, how much

further there is to go, and whether you still want to go, and whether you still want to go there. ◀

▶ However, CABO FM had identified that supply chain relationships may not last, or even they may fail, for a number of reasons including: lack of management attention, the threat of future complementation, lack of common standards, etc. Therefore, supply chain management as an internal FM process required a high level of management and financial commitment to partnerships throughout the FM supply chain. ◀

8.3.2.4.1 MEASURES

8.3.2.4.1.1 I2I SELF-ASSESSMENT

The i2i (integrate to innovate) model is a five-level model for evaluating supply chain partners. The higher up the levels of the model, the more strategic the relationship. i2i is a five-level model (Figure 59). The five levels shown form a continuum, ranging from information transfer to innovation networks (see section 8.4.2.2 for more information in innovation applications). It is stressed that any given level requires a proportional investment of resources by participating partners to develop and support that appropriate sophistication of supply chain infrastructure and operation.

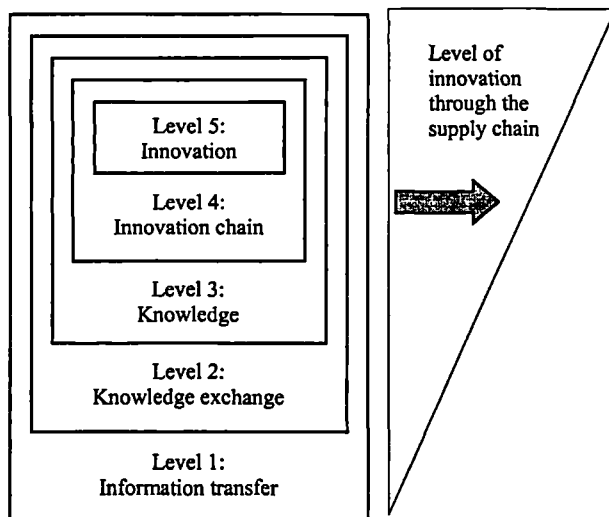


Figure 59: i2i model [Source: Barrett and Sexton (1998)]

Integration is seen to facilitate innovation, and is a way of sharing knowledge across the supply chain (Berrett & Sexton, 1998). The model (Figure 59) shows that the

higher up you are on the model, the higher the level of integration and the capacity to innovate across the supply chain and vice versa. This requires not only that partners should be ‘strategically and culturally’ matched, but also that their process capability must be complimentary to the level of relationship involved. It also involves a high level of trust and commitment, and the capability to be open and share knowledge across the supply chain.

▶ CABO FM started implementing the above framework as part of a research project that they were collaborating with the University of Salford (Nelson, 2000b) and continued to use it as the way of determining the current and the desired levels of the supply chain relationships. It has (Nelson, 2000b):

- Highlighted the areas where there was disparity between the current and desired levels, and showed at a glance areas where a gap analysis was required, and areas for further improvements;
- Generated discussion on supply chain management issues, some of which although previously known were not highlighted. It particularly generated discussion on what the organisation was doing right and areas that required change or improvements;
- Highlighted the differences in service delivery objectives between supply chain partners. It showed a clear picture of how strategic or important supply chain partners viewed each other. Where there was disparity in views, it showed that there were no clear standards or specifications in place for what needed to be done, nor for roles and responsibilities to get the work done right; and
- Prioritised areas for improvement by highlighting those areas where there was the most disparity. It however did not prioritise according to its importance to the organisation. ◀

8.3.2.4.1.2 SUPPLY CHAIN PARTNERSHIPS

Partnering is meant to be distinguishable from traditional client-contractor relationships (as identified in previous section 8.3.2.2.1.2). It represents a considered shift away from power plays, to a basis where common goals are established on which commitment, trust and mutual support are then built.

Facilities supply chain requires the facilities team to understand the requirements of the facilities supply chain partners and the key performance characteristics of the organisations in the supply chain (Nelson, 2000b). The strategy for managing fewer,

carefully researched suppliers will enable the facilities team to concentrate on building a mutually beneficial relationship, and one which will deliver best fit between the partners in terms of quality and value against a known level of risk.

▶ CAAB FM measured performance of the FM supply chain through the *status of the partnership* and emphasised that partnering had the following drivers for performance: timeliness, superior quality, flexibility, excellent communications, sharing of knowledge and benefits, an attitude for continuous improvement, mutual acceptance of benchmarking for improvement, collaboration and commitment and trust. Above measures were based on the assumption that performance was carried out by valid sampling of service received and results achieved. The focus was on exception analysis, supervision and audit, specific customer complaints and feedback and surveys, CAAB FM had further emphasised the need for complete understanding by both parties including: clarity in terms of what the objectives of above measures are, visibility and fairness of above measurements and the requirement for a partnership in evaluation and addressing problems. ◀

The partnering option is a potential opportunity for improving performance in both inward and outward FM processes. The outward end of the supply chain affords many opportunities for FM to influence performance. To be successful, partnering relationships need hard work and commitment. The results will be real, true added value for the business, improved customer satisfaction and importantly, people-satisfaction within the relationship. The facilities manager will be a key element in this new way of working within FM organisations. The opportunities and risks presented by this are significant, requiring sound business judgement based on comprehensive understanding of needs and direction.

▶ At CACE FM, longer-term commitment was achieved by means of *continuous organisational learning and investment in technology*. The partnership between the parties agreed on strategy and policy, received operational reports, monitored monthly performance and aimed to cement the partnership between the two bodies. The aim was to enhance service efficiency and reduce costs in those support services, which were vital in the generation of income to the trust. The service specification

was based on qualitative and quantitative statements and defined achievable deliverables. ◀

Partnerships succeed when there is openness, trust and commitment on both sides, and when both parties agree to share power, risks and benefits, and even then, success demands devotion of much time and hard work and staff involvement. Careful analysis of the probability of occurrence of risk and its likely impact on the provision of customer-focussed service and balancing that risk against profit/reward opportunity is a vital step towards a successful partnering arrangement.

8.3.2.4.1.3 LEVEL OF COMMUNICATION

On the operational side of supply chain relations, there is a requirement for rapid, timely, and accurate feedback on the relations that exist between the partners. It is vital that such understanding exists in order that continuous improvement programmes can be initiated to eliminate defects systematically drive excess cost, time and waste out of the service delivery system over time. An excellent communication system is required for this purpose.

▶ CACE FM, with the introduction of the PFI contracts had, identified the importance of maintaining FM supply chain relations and believed that a vital part of the process of FM supply chain integration was to maintain *effective communication* between relevant personnel within each organisation. With technologies such as Electronic Data Interchange, the efficiency of communication could be tracked. One of the measures that was utilised included *strategic information coverage ratios* (assess the current availability of information relative to anticipated needs). The CACE FM experience showed that FM partnership formations can secure better quality of services for customers, as well as improved value for money. ◀

8.3.2.5 WORKFORCE MANAGEMENT AND EMPLOYEE COMPETENCE

Taylor's scientific management theories described in section 2.2.2.1 of chapter two, are still much evident in many of the work practices involved with delivering FM services. For example, the workforce is trained to implement tasks which

management design, measure and control. Cleaning and security personnel undertake specific work routines, requiring little creative input, in a mechanically organised manner. The unregulated UK private security sector is characterised by high staff turnover and a variable quality of service.

The continuing move towards an externalised workforce presents a new challenge for FM. The hiring of contract labour either directly or through FM contractors will need to focus on competency based employment with emphasis on selection techniques which identify: temperament, assets, ability and desire.

▸ At CAAB FM, there was less emphasis on job descriptions, standardised work hours and more focus on project teams, payment for results, flexible, part time and multi-skilled working. On the other hand, large FM organisations like CAAB FM were becoming smaller and facilities managers had responsibility for fewer directly employed staff, but those that do remain were increasingly needed to be seen to improve not only the performance of their in-house teams but also that of the externalised workforce. The shift from internal to external labour may in itself not lead to a reduction in accommodation requirements. ◀

There are FM organisations which have adopted a separate human resources focus within FM. Today's consensus is that fundamental changes to the nature and organisation of work are underway, led by wave after wave of technological advance (Nutt, 1999b). These changes are profoundly altering the ways in which people work and the support facilities that are required. Therefore, the main FM objective on the employee context is to support the effective deployment of human resources.

▸ In justifying the use of employee competence as a critical success factor within FM, CASU FM explained that it would like to emphasise that employees were a resource and that human-resource capital and FM business process capital for example, were mutually reinforcing. ◀

▸ The principle at CACE FM was that the belief that people make the difference. It insisted on integrity and respect for personal values and believed that their success

depends on incorporating different cultures and people who make learning a life long experience. ◀

▶ In the case of CABO FM, senior management had been involved in setting goals for individual divisions and project groups. Experience within the organisation had shown that appropriately set and defined targets contributed both to motivation of employees and the eventual success of CABO FM. This culture had been incorporated into their performance measurement initiatives. ◀

8.3.2.5.1 MEASURES

Employee requirements involve the management of “place-flexible” and “time-flexible” facilities. Here it is probable that FM practices need to support individuals and their tasks, sectional operations and their project teams, divisions and their objectives, organisations and their business mission. Studies of organisation’s business plans show that goals for employee competence are seldom well articulated (CACE Business Plan, 1999). The measurements, which had been set frequently, appear to be based on attitude studies.

▶ Ensuring the *efficient and cost effectiveness management of the facilities workforce* was considered as important within CACE FM and relevant information was collected through *staff feedback*, development and implementation of relevant procedures, implementing facilities training programmes and production of skill metrics to cover all facilities staff. Further, CACE FM collected information relating to *skill levels* of its employees, *service level agreement satisfaction* with certain categories of employees, effectiveness of *performance incentives/performance standards*, and *employees satisfaction indices*. ◀

▶ Each year, CABO FM conducts an *attitude survey* and the purpose of this was for each unit to gain more knowledge and a deeper understanding of its own work and its employees. “Awareness” included an evaluation of each employee’s performance; it also indicated areas where improvement was needed and those where everything was satisfactory. The survey was FM organisational wide and covers: motivation and commitment, leadership, work efficiency, customer orientation and total quality. ◀

▶ “*Team work*” was an important concept in achieving employee competence and CAMA agreed that FM organisations must establish team performance objectives and measures for use within the organisation. Measures of team building and team performance at CAMA FM included: *internal survey on teamwork, number of integrated ventures, and percentage of teams with shared incentives.* ◀

▶ At CASU, for FM organisational success, employee related systems relied on systematic procedures and secure methods to support the management of FM operations at all levels. Measurement approaches of this kind included the following new FM measurement concepts:

- *Operational capabilities of employees; and*
- *Operational performance of employees* ◀

▶ “*Investors in People*” programme acted as a measure against employee related performance measures, at CACE FM, CASU FM, CABO FM and CASU FM. CASU FM’s “*Investors in People*” programme and staff appraisal schemes continued to provide the infrastructure for the identification, planning, delivery and evaluation of facilities and estates services staff training and development needs over the planning cycle.

CACE FM first achieved “*Investors in People*” award status few years ago and had worked hard towards re-accreditation in 2000. The Trust was constantly seeking to improve its processes and practices but specific improvements had involved revisions to the corporate induction programme, the publication of a course guide and revisions to the appraisal system to make it better suited to the organisation’s changing requirements. ◀

8.3.2.6 WORK ENVIRONMENT

Information concerning the work environment must be an integral component of the FM control system. The need for a dependable system of environmental performance measurement is rooted in the following realities (Fisher et al, 1992):

- Business activity has an ecological and social as well as economic impact;
- Business is increasingly held liable for environmental costs, as proven by the growing number of regulations, incentives and penalties;
- Environmental management often results in improvements to the bottom line through direct cost reduction or indirect increases in goodwill;
- Lower levels of management have become increasingly empowered, as reliable environmental reporting and performance measurement system is needed to provide information for making decisions and monitoring performance; and
- Allocation of scarce corporate resources towards solving work environment related problems requires persuasive evidence of the relative benefits of doing so.

A survey published by Healey and Baker (cited in Madeley, 1996) in 1994 revealed that the priorities of staff and facilities decision makers are different. But, more recently there has been a growing realisation that measures aimed at the soft issues related to people in the organisation could make a measurable impact on improving performance (Then, 1994). As discussed in section 2.9.1 of chapter two, Herzberg's motivation hygiene theory (Herzberg, 1959), proposed that workers might be simultaneously satisfied by intrinsic rewards and extrinsic factors such as the work environment. In manufacturing environments, technology is seen as a factor of production, but in the service industries such as FM it is seen as a tool, and will not in itself deliver savings in manpower (Madeley, 1996).

► In order to ensure that CACE workplace environment posed minimal occupational risk, the steps were taken to develop a positive health and safety culture and to control risks needed to be measured. FM organisations achieving success in health and safety, measure performance against predetermined plans and standards, assess their implementation and effectiveness in order to identify the need for possible remedial action. Monitoring activities also signalled management's commitment to health and safety objectives in general and was essential part of developing a positive health and safety culture. ◀

8.3.2.6.1 MEASURES

► Successful FM organisations use a number of key performance indicators relating to overall *health and safety performance* of the working environment, and the management of improvements as the basis for reviews at the highest level. CACE FM considered the following to lead the way in terms of workplace health and safety in developing its own specific measures (CACE FM Internal Document, 1999):

- Assessment of the degree of compliance with performance standards;
- Identification of areas where performance standards are lacking or inadequate;
- Assessment of the achievement of specific objectives; and
- Accident, ill health and accident data, accompanied by analyses of both the immediate and underlying causes, trends and common features.

At CACE FM, the most commonly used safety measures were *accident frequency rates* and *severity rates*. ◀

► At CABO FM, regular *employee surveys* were conducted to capture perceptions of employees about their working environments. Information was collected on the following from the employees (CABO Internal Document, 1999):

- Provision of sufficient flexibility in the work schedule;
- Provision of adequate training to get the job done;
- Rewards for individual contributions to the organisational success;
- Rewards for team contributions;
- Acceptable working conditions;
- Emphasis of quality of the work products;
- Existence of a spirit of co-operation and team work in the work area; and
- Provision of adequate tools such as computers, training programmes, reference material etc. to get the work done. ◀

Work environment related audits as, identified above, can be an effective means of identifying the relevant aspects of the organisation, its assets and its operations. Performance measures enables management and other stakeholders to: assess whether the organisation's activities have actually achieved the established

environmental policy and objectives, provide information of firm performance re-evaluation and re-design of corporate policy and objectives, and apply information on performance and societal changes to the re-evaluation and redesign of corporate policy and objectives.

8.3.2.7 CAPITAL ASSET MANAGEMENT

Asset utilisation is a concept developed by Japanese to give an indication about its usage so that operations could be ranked or compared (Madeley, 1996). Measurement of facilities assets or critical resource utilisation is important in order to maximise the contribution of services to the achievement of services schedules and plans. The measure can be easily understood and drilled down to determine areas for improvement or the causes of problems. It aggregates some of the most common FM operational measures into an index that allows facilities managers to review performance more effectively.

The information available to an organisation concerning its “good” and “bad” assets is invaluable in guiding the organisational decisions from acquisition and disposition to construction and maintenance. As the real property portfolio of each organisation is considerably different from any other portfolio, each organisation needs to develop and maintain information specific to that organisation’s property structure.

Analysis of asset utilisation should look at each of the contributing performance criteria in turn to identify variations in FM performance over time. This analysis identifies the root causes of poor performance and highlight where improvement efforts are required.

▶ The establishment and maintenance of effective life cycle management of assets and facilities services to meet the Trust mission were important areas that CABO FM looked at. Physical inventories of equipment, sensitive property and stores inventory were conducted in accordance with the NHS approved property management system. ◀

8.3.2.7.1 MEASURES

Measures concerning property performance available to an organisation should be arrayed so as to ensure that its management could learn about the consequences of their actions on real property performance, as well as the effect of real property on the overall performance of the organisation.

▸ Measurements of asset utilisation should be considered when planning capacity and scheduling operations to provide an understanding of expected service output. At CABO FM, *asset accountability rate* is used as the core measure to monitor the effective life cycle management of assets and facilities services. ◀

8.3.2.8 FACILITIES MANAGEMENT CULTURE

Like people, organisations possess personalities, they harbour values, attitudes and beliefs about the way that business should be done and the manner in which stakeholders are perceived and respected (Madeley, 1996). Culture is capable of change, influenced by strong leadership, procedures and policies, together with formal hierarchies for organisation, communication and reward.

Although organisational culture evades close definition it may be strongly felt in successful organisations, for example CAAB had a strong business, customer focused culture, which pervaded the entire organisation. Facilities were constructed as stage sets and CAAB believed with quality, create clear priorities, rules and processes, some of which although seemingly insignificant were fundamental to the success of the organisation.

▸ As identified above, culture of an organisation is a key determinant for corporate success and a strong influence upon the way that FM transacts its business. At CAAB, the way in which FM was able to respond positively by reinforcing the cultural recipes or delivering beneficial change was seen to be an enabler for corporate performance. In order to do this, facilities managers understood the core values and preferred way of doing things within the various entities of the CAAB. Understanding the subtle differences between various subcultures and the ability to

service disparate needs was a precursor to winning cooperation and implementing strategies. ◀

As identified in the four generation FM model in section 2.3.4 of chapter two, many FM organisations are transforming their cultures as means by which they may improve performance (Table 55):

Old culture	New culture
Public sector	Private sector
Inertia	Dynamism
Product focused	Customer focused
Inward facing	Outward facing
Hierarchical	Layered and composite
Controlled and delegative	Empowerment and autonomy
Directive	Team-working
Objectives and goals	Process focused
Loyalty for life	Itinerant
Stable	Uncertain
Status	Equality
Closed/secretive	Open/transparent

Table 55: Transformation of FM cultures [Source: Adapted from Madeley (1996)]

FM has a positive role to play in enabling the above transformation either by supporting the organisation as part of the holistic drive for change or by acting as a catalyst, leading the way for others to emulate. Facilities reflect the organisation’s attitudes and behaviour and are an intrinsic part of the culture of the organisation.

8.3.2.8.1 MEASURES

▶ CAAB FM had identified the following beliefs which reflected the culture in “excellent FM organisations”: *job satisfaction, superior quality and service and economic progress*. It was suggested that if these same beliefs were to be adopted by the CAAB facilities team; the effect would ripple into other parts of the organisation and act as a catalyst for greater performance. ◀

8.3.3 DISCUSSION

Concentrating on the internal processes involved in a FM organisation can help to align the behaviour and activities of the participating teams towards a common goal. It makes the various teams' behaviour more consistent and uniform, which in turn improves their capability and leads to better results and improved supply chain relationships. Without this focus and alignment towards common goals, the activities of the different team members could start to contradict each other, thus damaging the effectiveness of the team as a whole.

Due to fast changes in the market place and clients' increasing expectations, task oriented or functional thinking has become outdated. Many managers in FM now believe in process thinking. But belief in itself is not enough, and the problem has been how they should implement this thinking in FM organisations. Identification of critical success factors and related performance measures provide a good basis for such initiatives within FM organisations.

The FM internal processes primarily analyses the FM organisation's internal processes. The analysis often includes identification of the resources and capabilities which the organisation needs to upgrade. However, increasingly links between the organisation's internal processes and those of other collaborating organisations are so close and this requires consideration here as well.

8.3.3.1 TYPES OF INTERNAL FACILITIES MANAGEMENT PROCESS RELATED CRITICAL SUCCESS FACTORS AND ASSOCIATED MEASURES

The process of deriving critical success factors and associated measures for the internal FM processes represents one of the sharpest distinctions between the theory developed in this thesis and traditional FM performance measurement systems identified in section 2.10.3.2 of chapter two. As section 3.3 of chapter three has already discussed, traditional performance measurement systems focus on controlling and improving existing responsibility centres and departments. The limitations of relying exclusively on financial measurements are, of course, well known, according

to section 3.3.1 of chapter three. Fortunately, most FM organisations today have moved beyond using financial measurements as their primary method for performance evaluation and control and they are trying to supplement financial measurements with measures of quality, customer satisfaction etc. Table 56 summarises the critical success factors and related measures relating to FM internal processes captured throughout the theory development process in this thesis.

Critical success factor	Associated measurement tools
Operational service efficiency	Post-occupancy evaluation Service standards Benchmarking Maintenance management
Contract management	Service level agreements Procurement partnerships Performance based outsourcing Controls assurance standards
Risk management	Controls assurance standards Periodic risk audits Incident reporting systems Probability analysis
Supply chain management	Level of communication Application of supply chain framework Supply chain partnerships
Workforce management and employee competence	Cost effective management of facilities workforce Attitude surveys Team work Operational capabilities Investors in people
Work environment	Overall health and safety performance Employee surveys
Capital asset management	Asset accountability rate
Facilities management culture	Job satisfaction Economic progress

Table 56: Types of FM internal processes related measurements – Definitions

8.3.3.2 EXPOSING FACILITIES MANAGEMENT INTERNAL PROCESS RELATED CRITICAL SUCCESS FACTORS AND RELATED MEASURES

The objectives in the internal business processes perspective collectively assure that an effective FM program is established within the core business to:

- Support customer needs;
- Provide efficient life cycle management (accountability, utilisation and disposition) of direct operations of FM; and
- Maintain oversight of entities that have FM programme responsibilities.

Within the FM organisation, there are a number of internal business processes (as listed in Table 56) that require focused management attention to ensure requirements and expectations are met as effectively as possible, whilst accommodating cost efficiency issues addressed in the FM financial processes, in section 8.5.2.1.

The following table (Table 57) summarises the extent of “exposure” of different critical success factors and associated measures as summarised in Table 56 above, across the case study organisations.

Critical success factors and related performance measures	Case study							
	CACE	CAAB	CAMA	CASU	CALO	CALA	CABO	CASA
Operational Efficiency	✓	✓	✓	✓	✓	✓	✓	?
Contract management	✓	✓	✓	✓	✓	✓	✓	✓
Risk management	✓	✓	?	✓	×	✓	✓	×
Supply chain management	✓	✓	×	×	×	?	✓	×
Employee competence and workforce management	✓	✓	✓	✓	?	?	✓	?
Work environment	✓	?	?	?	?	?	✓	?
Capital asset management	?	?	?	?	?	?	✓	×
Facilities management culture	?	✓	×	×	?	×	×	×

✓ = Performance issues exposed

× = Not exposed

? = Don't know

Table 57: Types of critical success factors (and performance measures) exposed in case studies relating to FM internal processes

8.4 MEASUREMENT OF LEARNING AND GROWTH

8.4.1 WORKING DEFINITION/PROCESS

Customer and internal business process measures identify the parameters that the FM organisation considers most important for competitive success. The target for success keeps changing and intense competition requires that FM organisations make continual improvements to their existing products and processes and have the ability to introduce entirely new processes, which expand capabilities (adapted from Kaplan and Norton, 1992). Learning and growth issues look at such issues, which include the ability of employees, the quality of information systems, and the effects of organisational alignment in supporting accomplishment of organisational goals (Olve et al, 1999). FM innovation is important because it promotes individual and organisational growth – factors that are crucial to future success of the FM organisation. Support for FM innovation equates to recognition of the link between top-level strategic objectives and activities needed for reskilling and motivating employees; supplying information; and aligning individuals, teams, and organisational units with the FM organisation's strategy and long-term objectives. Processes will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them (Kaplan & Norton, 1996).

Learning and growth issues also take on increased importance in FM organisations that are undergoing radical changes. In order to meet changing requirements and customer expectations, employees may be asked to take on dramatically new responsibilities, and may require skills, capabilities, technologies, and organisational designs that were not available before. Further, learning and growth issues enable the FM organisation to ensure its capacity for renewal, a pre-requisite for survival in the long-term. In this category of FM critical success factors the FM organisation should consider not only what it must do to maintain and develop the know-how required for understanding and satisfying customer needs, but also how this can sustain the necessary efficiency and productivity of the processes which presently serve the customer.

Managers in several FM organisations have noted that when they were evaluated solely on short-term financial performance, they often found it difficult to sustain investments to enhance capability of their people, systems, and organisational processes (adapted from Kaplan and Norton, 1996). Expenditures on such investments are treated as period expenses by the financial accounting model so that cutbacks in these investments are an easy way to produce incremental short-term earnings (Kaplan and Norton, 1996). The theory developed in this thesis in performance measurement in FM stresses the importance of investing for the FM future, and not just in traditional areas for investment, such as new equipment and new service research and developments. Equipment and R&D investments are certainly important but they are unlikely to be sufficient by themselves. FM organisations must also invest in their infrastructure – people, systems and procedures – if they are to achieve long-term financial objectives of the core organisation.

There are three principle categories of learning and growth that were exposed through the theory development process in performance measurement in FM:

- Employee capabilities;
- Information systems capabilities; and
- Motivation, empowerment and alignment.

The following section further elaborate these critical success factors and associated measures in these three broad areas of learning and growth FM issues.

8.4.2 EXPLORING CRITICAL SUCCESS FACTORS AND MEASUREMENT TOOLS FOR MEASURING LEARNING AND GROWTH PERFORMANCE IN FACILITIES MANAGEMENT

8.4.2.1 STRATEGIC FACILITIES INFORMATION AND MANAGEMENT

The majority of organisations today will have their existing service portfolios defined within the remit and parameters of the organisational operation. These service portfolios will obviously be defined either out of an absolute minimum of facilities service provision required to support the core business, the maximum service

attainable, or, as is more likely, somewhere, in between (Featherstone, 1999). Barrett (1995) refers to this need to improve FM service in all relevant organisations. The service development of the FM function within organisations, if done properly, significantly improves the facilities service provision within organisations. Therefore, an essential part of improving FM services within organisations involve identifying FM service developments within organisations.

Since know-how to an ever-growing degree is a perishable commodity, it will become increasingly important to decide which core competencies the organisation should cultivate as a basis for its future development (Hamel and Prahalad, 1994). As a consequence of this strategic choice, the organisation will also have to determine how to obtain the know-how which it will still need in areas where it has decided not to have its core competence.

A model, which has proved useful in developing competence strategies is the competence matrix shown below (Figure 60) (adapted from Hamel and Prahalad, 1994):

		Market	
		Existing	New
Core competence	New	What new core competencies will we need to build to protect and extend our status in current markets?	What new core competencies would we need to build to participate in the most exciting markets of the future?
	Existing	What is the opportunity to improve our position in existing markets by better leveraging our existing competence?	What new products or services could we create by imaginatively deploying or recombining our current competence?

Figure 60: Competence matrix [Source: Adapted from Hamel and Prahalad (1994)]

In addition to developing FM competency strategies as discussed above, it is also important to describe the internal infrastructure for transmission of information and the process of decision-making in general terms.

▸ In this context, Facilities Director at CABO emphasised the importance of responsiveness of FM department to changes and requirements and management of facilities related information. ◀

8.4.2.1.1 MEASURES

▸ CABO considered access to dynamic and strategic information and management systems as an important function in terms of achieving future success within FM and used *systems access* as the core measure in evaluating the effectiveness of information and management systems. Systems access defined the *extent to which reliable FM system measures were in place and communication throughout the FM organisation*. Further, CABO FM considered *percentage of external customer communication plan completed* and *percentage of internal customer communication plan completed* as core elements of the above strategic measure of systems access. ◀

▸ CACE FM had established a communication plan directed at both internal and external customers and determined *the percentage of the communication plan that was actually completed during the period*. Based on the measurement outcome, CACE FM reviewed the communication plan results and determined if plan adjustments were needed to ensure that FM objectives are achieved. ◀

This measure intends to demonstrate the degree that information supporting FM organisational business plan aims and objectives are shared with both external and internal customers, and provides feedback on the communication plan's elements and frequency of use.

8.4.2.2 INNOVATION

Everyone appears to be stressing the need for organisations to innovate if they are to survive and prosper. But what is innovation, and is it always good? Innovation is

defined by Barrett & Sexton (1998) as, “*The effective generation and implementation of a new idea which enhances overall organisational performance.*” The ability to create and manage innovation effectively is strongly linked to competitiveness (Barrett and Sexton, 1998). It is closely related to the concept of new technology, which is the application of new scientific or technological developments that has practical value to the organisation.

▶ “Be one step ahead of the rest” was a common theme identified at CACE FM. Facilities Director of CACE mentioned that: “*We realise new ways to do things. We foster an environment where creativity and imagination are highly regarded: where problems become opportunities for innovative solutions*”. ◀

8.4.2.2.1 MEASURES

In measuring learning and growth issues relating to FM, it is often required to resort to “surrogate measures”, for instance measuring the amount of resources spent on development or training rather than the results.

▶ Innovate in order to improve its position in the industry was a common belief within CAMA FM. Director of CAMA FM commented: “*We have to begin to innovate in order to improve our position in the industry*”, and indicated the use of *FM service development cycle time and number of service development project in the pipe line* as core measures. ◀

▶ CAAB FM, for example, measured the *share of cost from services* introduced most recently, as a kind of performance indicator of the success of the development process and the actual ability to innovate. The new learning that has taken place was usually a rather elusive concept, particularly if it was necessary to determine to what extent new developments have been useful, or how it can be expected to contribute to future success. ◀

▶ *Measurement of the innovation success rate* was an important measure of CACE FM’s innovation capabilities and the effectiveness of the technology development and implementation process. The objective of this measure was to monitor and hence

increases the proportion of innovations that have a positive impact on the business, reducing the amount of effort that was wasted on failed innovations and improving the effectiveness and efficiency of the innovation and technology development processes.

Positive impact on the FM business – determined whether an innovation had been a success or failure. The way in which this is defined depends on the nature of the FM innovation. As with the new services introduction related innovation, this measure considered the benefits of the innovation as well as the cost of development and implementation. ◀

However, it is important that in improving the effectiveness of FM innovation, members of the FM organisation are not discouraged from making suggestions. Therefore, it is important that idea generation is encouraged.

▶ *Number of ideas/suggestions for improvements received monthly* was used at CAAB FM to encourage generation of ideas where there was considered to be insufficient input into service development and improvement of the performance of the FM organisation. It is worth noting that CAAB FM proactively encouraged ideas and suggestions. To be most effective, this measure had become part of evolving measurement of idea generation and implementation. Measurement of the number of ideas and suggestions encouraged increased volume of ideas and suggestions. ◀

It is not always easy to collect data regarding the generation of new ideas and is often difficult to define what constitutes discrete data. For this measure to be effective, there is a need for a mechanism to identify and record the generation. Such a system is important to ensure that ideas are monitored and their effect is maximised.

8.4.2.3 PROFESSIONALISM AND STAFF DEVELOPMENT

For the FM Organisation to maintain its existing relative performance it must continually improve. Therefore, it is important to emphasise the importance of the “people factor” in terms of their contribution and interaction within the FM process.

Ideas for improving processes and performance for customers must increasingly come from front-line employees who are closest to internal FM processes. Lloyd (1998) states that this incorporation of the human factor within the management of facilities should encourage a culture where continuous improvement is championed, and that this should come from within facilities discipline itself, partly through the implementation of flatter FM structures. In terms of the FM structure, this philosophy reinforces the undesirability of reporting through to the higher strategic levels of the core organisation (section 2.3.4.2.4 of chapter two). This shift requires major reskilling of employees so that their minds and creative abilities are mobilised to achieve organisational objectives.

8.4.2.3.1 MEASURES

8.4.2.3.1.1 INVESTORS IN PEOPLE

▶ CASU’s “*Investors in People*” programme and *staff appraisal schemes* provided the infrastructure for the identification, planning, delivery and evaluation of FM services staff training and development needs over the planning cycle. CASU FM was promoting a comprehensive quality management approach for the service and pursuit of a staff training and development programme underpinned by the “*Investors in People*” initiative to improve individual and team working performance standards. In particular, CASU FM was taking various actions to deliver appropriate staff training and development, refine policies, practices and procedures, improve client liaison and feedback, and pursue competitive pricing in the interests of efficiency, cost effectiveness and achievement of client satisfaction. ◀

8.4.2.3.1.2 TRAINING AND DEVELOPMENT

Training – is any activity provided by the organisation to enhance an employee’s skills or capabilities. Training includes internal and external training courses and “on the job” training, although in the case of “on the job” training it may be more difficult to identify specific “offers” of training and the training is less likely to be voluntary.

Training take up measures the willingness of the FM organisation's employees to undertake education and training. This provides an indication of how willing employees are to improve their skills and abilities in order to improve their contribution to the organisation.

The FM organisation must recognise that its employees have to think, to problem solve, and to ensure quality. They must be regarded as problem-solvers, not variable costs (Stockdale, 2000). All employees must contribute value by what they know and the information they can provide. Investing in, managing and exploiting the knowledge of every employee is critical to the success of the FM organisation. A focused selection of initiatives should be carried out to effect improvements in processes within FM organisations. The offer of training programmes to employees to help them see the systems more effectively and efficiently is vital in this sense. The initiatives have to be integrated and linked to the overall FM strategy.

▶ Outwith the CASU mainline training and development programmes, CASU FM continued to update professional and technical skills and knowledge in order to keep up-to-date with rapidly changing legislation and technology relevant to the various professionals active in the facilities service. The recognition of continuing professional development as a right for each individual was one which was encouraged in order to sustain the medium to longer-term innovation of the service.

CASU FM had set *targets for staff development and training* and examines the ways to translate the CASU training and development policy commitments to a wider FM audience. ◀

▶ Developing a world-class workforce was a major theme at CALA FM and they believed in developing their personnel, so that they have skills to execute both its existing and future jobs effectively. Estates and Facilities Manager of CALA FM stated: “*Additionally, organisational changes will require new skills, our employees will require training, and we use hours of training and percentage of training offers that are accepted as the respective measure*”. It was also a measure of the future success of training programmes and an indication of their design. It indicated

whether the human resource management process designs or selects training courses that employees want to attend, as well as employee satisfaction with the training programmes. ◀

▶ The CASU FM spent considerable time finding relevant measures for the *staff development and improvement perspective* and identified certain measures like number of training days, absenteeism, and staff turnover. ◀

In addition, following issues were also captured (as listed in Table 58) through the case studies relating to training and development of FM:

Case study organisation	Issue captured	Exposed measurements
CABO FM	Skills and competency development	Employee development plan status
CABO FM	Frequency of training programmes	Number of training programmes introduced per period
CASU FM	Demonstrate support for change	Cultural programme status
CALA FM	Trained workforce: continuous learning in core competencies	Number of training hours per employee
CACE FM	Availability of training courses	Percentage of training courses that match organisational requirements and employee's personal requirements
CACE FM	Employee satisfaction with training programmes	Percentage of training course participants that are satisfied/dissatisfied with the course or programme

Table 58: FM employee training and development: issues and related measurements

8.4.2.3.1.3 EMPLOYEE ALIGNMENT

▶ *Employee alignment* was being considered as a major objective at CACE FM and *percent of FM employees having performance expectations and training requirements that respond to strategic FM organisational objectives* is the corresponding measure for employee alignment at CACE FM. Core elements of the above measures were: percent of scheduled training supporting strategic FM objectives, number of training courses completed by FM employees during the period, percent of FM staff with an individual development plan based on strategic FM objectives and percent of FM staff that received an annual review of

performance against the FM organisational objectives. CACE FM used individual development plans, performance standards and training schedules as data sources to monitor the above measurement. ◀

▶ In order to align the organisation through technology, CAAB used IT (information technology) to enable the employees to share and collaborate knowledge across the organisation. One of the facilities managers interviewed commented: “ *The CAAB FM is large and geographically dispersed, and there was no formal vehicle upon which to share best thinking. Recently, a comprehensive IT system has been introduced to overcome this*”. Accordingly, CAAB FM used *percentage of employees using IT* as the related measure. ◀

8.4.2.3.1.4 STAFF STRATEGIC AWARENESS

This is a key measure of the availability of the appropriate skills required to achieve organisational objectives, improve access to strategic information and effectively execute FM processes identified as in section 8.3. This measure intends to demonstrate the degree to which employees are aware of the FM organisational objectives and provides feedback on success rates for: completing training that supports FM organisational objectives, incorporating FM organisational objectives in individual development plans and completing annual performance reviews against FM organisational related performance standards.

▶ CACE FM believed that effective inventory control of the strategic awareness should be based on the strategic requirements of the organisation. As a result, *employee training index* and *employee satisfaction index* were being used to execute it. ◀

8.4.2.3.1.5 EMPLOYEE TURNOVER

▶ At CACE FM, *employee turnover* measured the rate at which employees leave the organisation. Accordingly, CACE FM measured employee turnover by means of percentage of employees that leave the organisation in a given period of time and with the average length of service. The employee turnover measure also included

analysis and comparison by skill type. Trends of particular skills leaving the organisation are important when planning recruitment and training policies as well as policies for staff retention. ◀

Clearly the rate at which people leave provides an indication of the level of employee satisfaction with the organisation, as dissatisfied employees are more likely to leave.

8.4.2.4 KNOWLEDGE RESOURCE

Krogh and Roos (1996) believe that the way an organisation manages knowledge is a function of the epistemological stance that the organisation adopts. According to the authors, there are three such epistemologies:

- *Information processing* – whereby the organisation believes that the more information processing capacity employees have, the more knowledge they develop;
- *Network* – where the organisation believes that knowledge is the outcome of interaction among people in networks and so investing in connecting people in the organisation is a primary concern; and
- *Self-referential* – where knowledge is a private, history dependent process which individuals attach meaning to.

Whitaker (1996), on the other hand, believes that knowledge is context dependent and that organisations should focus attention on exposing contextual information. Blacker (1995) views knowledge not as something which employees have but as something that they do. He has developed a typology of organisations along two dimensions: emphasis on collective to individual contributions and focus on familiar to novel problems.

With regard to the above general definitions of knowledge, FM knowledge is at a primitive stage of development and its terrain largely unexplored (Nutt, 1999a). It will be an orienteering route, starting from a position that can be characterised as “information saturated”, “data rich”, but “knowledge poor”. FM knowledge resource has three main sources, according to Nutt (1999a):

- Knowledge of property and construction;
- FM knowledge; and

- Knowledge of facilities design and use

FM knowledge continues to be borrowed from other fields, and knowledge tends to be holistic, yet face up to the “real” issues of design for the future management of facilities in use (Nutt, 1999a; 1999b).

▶ The ultimate objective of any organisation must be to achieve self-managing workers who are motivated to achieve high quality, capable of achieving high quality, and able to exhibit “self control”. Barrett (1995) identifies this concept as “organisational learning” within FM organisations. CACE FM encouraged individual learning and identified expanding its awareness and understanding by questioning and challenging its actions and assumptions as the key to individual learning. ◀

It is also important to share FM knowledge generally within the organisation (Featherstone, 1999). It is no use trying to elevate the position of the organisation’s facilities function, and trying to increase the facilities power base, whilst not establishing a two-way facilities learning process between the FM organisation and all facilities users. All organisational stakeholders should be able to contribute to the development of the facilities function within the organisation, and appropriate mechanisms should be adopted which allow regular consultation with these stakeholders. Lloyd (1998) argues that this approach should reduce the percentage of organisational facilities failures through the adoption of an open learning process. It is not hard to see, therefore, that this reduced failure rate could, in turn, lead to a greater acceptance of the facilities function at a higher strategic level within the core organisation due to an increase in perceived competence of the facilities function by senior management.

8.4.2.4.1 MEASURES

▶ *Employee satisfaction* with specific FM based training programmes were being used at CACE FM as an index of the quality of the specific FM related training programmes as perceived by the participants. It measured whether CACE FM designed or selected courses that satisfy the requirements of the employees and whether they were delivered in a manner that was accessible to those that attend. It

was important to ensure that satisfaction with specific FM training courses was maximised and that they were delivered in the most accessible manner as possible, as this affected the amount that was learnt and the effect courses have on individuals and the organisation. ◀

▶ *Skills gaps* were a key measure used by CALA FM of the availability of appropriate specific FM skills required to achieve organisational objectives. This measure compared the specific FM skills available within the organisation in comparison to the skills required. In addition to the specific job related skills, FM competencies and ability and willingness to acquire new FM knowledge and training were some of the examples of specific FM skills that were also being considered at CALA FM. ◀

8.4.2.5 RESEARCH AND DEVELOPMENT

The role of R&D in its contribution to the success of the organisation has had increasing importance since the origins of the concept of R&D management. In the 1950's, R&D was managed as an isolated activity and considered as an overhead like any other cost in the budgeting process (Pacitti, 1998). Today, however, R&D is managed as an integrated activity – integrated with the commercial, manufacturing and marketing functions of the enterprise. Different functional units within organisations have now started to contribute to R&D from which FM cannot be disassociated.

The knowledge-based organisations of this era assess their performance not only in terms of profits, but also in terms of intellectual assets and ability to create and apply new ideas in the market place. Knowledge distribution is monitored and employees are expected to create new knowledge as a way of adding value to the corporation and to the customer (Pacitti, 1998).

▶ CACE FM continued to be committed to integrating R&D into its mainstream activity. Having reviewed and realigned the research themes within the Trust more closely to mirror the relationships with other directorates, the FM directorate worked with theme leaders to support and encourage high quality research in FM. The main

focus for R&D in CACE FM was to promote R&D with respect to NHS plan (section 5.3 of chapter five) and controls assurance initiatives (section 8.3.2.2.1.4 above). In particular, the CACE FM was to ensure that high standards of research were maintained and that Trust wide practices take into account outcomes of research. Areas of work that will be undertaken include: identifying and providing R&D training, auditing research practice and research implementation and setting standards for best practice in research. ◀

8.4.2.5.1 MEASURES

The trend towards development of R&D activities may also be connected to the increasing concern for performance measurement in the R&D function, which has been made more accountable for its activities in recent years and has therefore become more visible (Szakonyi, 1994). The length of time to achieve returns from longer-term research investment is much greater than it is for development, where returns are often immediate. Development activities tend to be more focused, more justifiable and easier to measure.

The performance measures used to assess R&D, per se, have become increasingly qualitative in nature (Pillai and Roa, 1996; Griffin and Page, 1993) for example, the emergence of R&D benchmarking (Bean and Gros, 1992). The importance of the role of knowledge in the R&D organisation has solicited performance measures which are non-financial and focus on the “softer” outcomes of product and service development, for example, customer satisfaction, performance of the process itself and so on.

In this context, FM research and development can only be measured if it is clear about what these processes do and do not include. What does an organisation obtain for its ‘good costs’? Knowing how much has been spent obviously gives less confidence than would an indication of what has been accomplished. For this reason a growing number of FM R&D operations have long been searching for measures of the same quality as number of patent applications – in the case of basic research : published scientific articles (adapted from Olve et al, 1999).

► Yet, CACE FM claimed real use of the R&D measurements and to have gained considerable benefits from them. Facilities Development Manager discussed the format, use and the benefits of a simple but effective multi-project monitoring tool based on *output performance measurement* procedure. The tool was used to measure the “economic benefit” stemming from FM related R&D accomplishments implemented within CACE FM. ◀

► CAAB FM used *project goals achievement ratings* to measure specific FM related R&D initiatives. Annual rating per project of actual achievements vs. goals were analysed accordingly. Performance comparison between different R&D initiatives and identification of improvement opportunities were few of the advantages that CAAB FM achieved through this process. Some of the benefits realised were: improved productivity, improved clarity of the statement of objectives for each project due to better communication between those who set objectives and those who have to agree to them, encouraged staff dealing with R&D activities to be more efficient about reaching objectives within time and budget and insight in more and less cost effective types of R&D activities. ◀

► *R&D spend* was another measure that CACE FM used to monitor R&D activities relating to FM. R&D spent reflected the amount of resource directed towards the systematic search for innovations and indicates the commitment of the organisation to developing new FM services and processes in order to maintain competitiveness. The amount spent had a direct impact on the innovative outputs of the FM organisation. It was regarded as one of the key inputs to the FM innovation process as identified in section 8.4.2.2. CACE FM measured R&D spent based on R&D expenditure as percentage of operating costs where as R&D expenditure relates to research and development costs of FM activities. This measure was an output to the R&D process, as the level of resources available had a significant effect on its output. As a result, it assessed the development of FM services process and the strategic importance of developing new FM processes. ◀

One should be aware that R&D is only one of the key elements within the innovation process, as identified in section 8.4.2.2. R&D related activities relating to FM have

been identified separately from innovation under FM learning and growth issues, as it is important to note that the amount of R&D spend does not always translate into innovative FM processes.

8.4.3 DISCUSSION

FM learning and growth captures the ability of employees, information systems, and organisational alignment to manage the business and adapt to change. Processes will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them (Kaplan and Norton, 1996). Learning and growth issues takes on increased importance in FM organisations that are undergoing radical change.

Hinks (1999) argues that the success criteria for FM are more likely to be associated with innovation. He further suggests that predominant features of good FM in the future may major on value, adaptability, novelty, support for new processes, or timelines, and herein lies the performance assessment challenge for FM.

In order to meet changing requirements and customer expectations, employees may be asked to take on dramatically new responsibilities, may require skills, capabilities, technologies and organisational designs that were not available before. Continuous improvement in FM processes and service capabilities is therefore critical for the long-term success of the “vital” FM organisation. The only sustainable competitive advantage comes from out-innovative competition (Stockdale, 2000). When considering the dynamics of innovation, what processes are currently in place within the FM organisations that enable opportunities to be seized in the face of technological change? Section 8.4.2.2 addresses these important issues. As identified in section 8.4 above, learning and growth issues relating to an FM organisation develops objectives and measures to drive the FM organisation’s learning and growth. These will provide the infrastructure that will enable the identification of the drivers for achieving the outcomes in the other three issues identified in sections 8.2, 8.3 & 8.5 respectively.

Similar to the objectives in the other areas identified in sections 8.2, 8.3 & 8.5, learning and growth related FM performance measures identify issues relating to where the program must excel to achieve breakthrough performance. The learning and growth objectives provide the infrastructure needed to enable the objectives in the other perspectives to be achieved. This perspective is important as it promotes individual and organisational growth – issues that are critical to future success. Support for this perspective equates to recognition of the link between top level strategic objectives and activities needed for reskilling and motivating employees; supplying information; and aligning individuals and teams with the FM organisation’s strategy and long term objectives.

8.4.3.1 TYPES OF FACILITIES MANAGEMENT LEARNING AND GROWTH CRITICAL SUCCESS FACTORS AND ASSOCIATED MEASURES

Learning and growth issues take on increased importance in FM organisations in order to meet changing requirements and stakeholder expectations. Following table (Table 59) lists out performance objectives identified within the case study FM organisations which, if not achieved, would likely result in a significant decrease in customer satisfaction, FM system performance, employee satisfaction and effective financial management.

Critical success factor	Associated measurement tools
Strategic facilities information and management	Extent of reliable FM systems in place Communication
Innovation	FM service development cycle time Share of cost from new services Innovation success rate Number of ideas and suggestions
Professionalism and staff development	Investors in people Training and development Employee alignment Staff strategic awareness Employee turnover
Knowledge resource	Employee satisfaction Skills gaps

Research and development	Output performance measurement Project goals achievement ratings R&D spend
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Table 59: Types of FM learning and growth performance measurements – Definitions

8.4.3.2 EXPOSING FACILITIES MANAGEMENT LEARNING AND GROWTH CRITICAL SUCCESS FACTORS AND PERFORMANCE MEASURES

FM organisations need to remove the obstacles that stand in the way of creativity and to reward people for being innovative and creative. Everyone in the FM organisation should be given the task of coming up with new ideas and although it is a risk, employees should be given the freedom to explore. The best FM innovations come from a base of knowledge. In this context, several critical success factors were identified through the case studies in relation to innovation and growth in FM organisations and each performance measure and critical success factor is summarised in Table 59 above. These critical success factors are supported by at least one measure that indicate the FM organisation’s performance against that objective, exposed through the case studies (Table 60).

Critical success factors and related performance measures	Case study							
	CACE	CAAB	CAMA	CASU	CALO	CALA	CABO	CASA
Strategic facilities information and management	✓		✓	✓	?	?	✓	×
Innovation	✓	✓	✓	✓	✓	?	✓	?
Professionalism and staff development	✓	✓	?	✓	?	✓	✓	?
Knowledge resource	✓		?	?	?	✓	?	×
Research and development	✓	✓	×	?	?	×	✓	×

- ✓ = Performance issues exposed
- × = Not exposed
- ? = Don't know

Table 60: Types of learning and growth critical success factors and associated performance measures exposed in case studies

8.5 MEASUREMENT OF FINANCIAL IMPLICATIONS

8.5.1 WORKING DEFINITION/PROCESS

Financial performance measures indicate whether the organisation's strategy, implementation, and execution are contributing to improvement in profitability. They show the results of the strategic choices made in the other perspectives. By making fundamental improvements in their operations, the financial numbers will "take care of themselves", according to Kaplan and Norton (1992).

In FM organisations, financial measures are important as they indicate the ultimate value that the FM business provides to its stakeholders. Optimising the cost efficiency of the FM organisation therefore ensures that the maximum amount of funds are available for accomplishing the primary mission of the FM organisation and its sub-organisations. Facility managers must ensure that FM organisation's operating costs are optimised in order to meet the challenge of creating FM programmes that work better and cost less.

Financial implications strive for optimum efficiency in FM organisations. To achieve that, relevant financial processes need to be analysed to determine: the cost and performance trends over time and process changes that can be implemented to produce optimum efficiencies. Success for entities charged with FM organisational responsibilities should be measured by how effectively and efficiently these entities meet the needs of their constituencies.

In the public arena, the "financial" perspective differs from that of the traditional private sector. Private sector financial objectives generally represent clear long-range targets for profit-seeking organisations, operating in a purely commercial environment (Procurement Executives Association, 1998). Financial considerations for public organisations are generally measured by how effectively and efficiently they meet the needs of their stakeholders. Therefore, in the government sector, the financial perspective emphasises cost efficiency, that is, ability to deliver maximum benefits to the stakeholder per unit of cost.

8.5.2 EXPLORING CRITICAL SUCCESS FACTORS AND RELATED MEASUREMENT TOOLS FOR FINANCIAL FACILITIES MANAGEMENT

8.5.2.1 VALUE FOR MONEY/COST EFFICIENCY

Minimising integrated costs to achieve sustainable competitive advantage by integrating the various portions of the value chain to achieve the lowest fully-allocated total cost are among the financial objectives of today's FM organisations.

Achieving cost efficiency is important because optimising the cost efficiency ensures that the maximum amount of funds is available for accomplishing the primary missions of the FM organisation. One of the interviewees explains this as: "*In order to improve our efficiency and reduce our costs, we need to consider integrating our core processes*".

► One of the objectives of any FM organisation is to strive for optimum efficiency in its FM processes. To achieve this, CABO FM analysed its FM processes to determine cost and performance trends over time and FM process changes that can be implemented to produce optimum efficiencies. ◀

8.5.2.1.1 MEASURES

8.5.2.1.1.1 ESTABLISH AND MAINTAIN COST DATA

► Striving for optimum cost efficiency of FM operation at CABO was monitored regularly. Core measure for this financial related element was to *establish and maintain cost and performance data for targeted FM processes*, for example, physical inventory. This measure was intended to provide trend data for use in determining cost efficiency for targeted direct FM operational processes and provide feedback on those FM processes that were the major cost drivers. Data for this measure was collected through cost accounting and performance databases at CABO FM. ◀

8.5.2.1.1.2 COST EFFICIENCY

As identified by Featherstone (1999), many FM services are delivered with cost efficiencies in mind. Although cost control is obviously a very important aspect of any organisational balance sheet, it is important to appreciate the benefits that can be realised through adding non-fiscal value to the organisation. Added value in the management of organisations' facilities and user environments could help the organisation in many respects, for example, to retain the best staff and deliver excellent services.

▶ CALO FM used *determining of the efficiency* (cost versus performance) indicator to monitor optimum efficiency of its FM operations. This measure established the level of efficiency for major direct FM processes and provided feedback on the efficiency of those FM processes. For each targeted FM process, cost and performance was reviewed based on the data collected, thereby determining which targeted FM processes were in need of improved efficiency. From the outcome CALO FM established a priority among the targeted processes in most need of improvement. ◀

8.5.2.1.1.3 REDUCTION OF SERVICE OPERATING COSTS

Cost reduction is important where a cost leadership strategy is being followed. However, reducing costs will always be important to improve FM organisations efficiency and profitability, in some cases. FM organisations can gain a competitive advantage through cost reduction as it enables price reductions to be passed on to its customers. This is an important measure as it helps to monitor the objectives of the service operations function.

▶ CAAB FM used reduction of operating costs as *a percentage reduction in operating costs in a given period of time* as an indicator to measure reductions in service operation costs. CAAB FM categorised operating costs as all of the cost incurred during the organisation's normal operations. Cost monitoring and reviewing were generally undertaken on monthly basis but it was believed that this should be altered if appropriate in given circumstances. ◀

8.5.2.1.1.4 COST OF SERVICE RE-LOCATION

The relocation of services is an important factor in ensuring that services are available when required to complete FM operations and satisfy customers' demand for the FM organisation's products and services. Cost of service relocation measures how cheaply FM services and operations can be transferred from one location to another. Measures of such relocation will have a significant bearing on whether relocation will take place and hence availability of infrastructure when required. As such the measures assess the ability of the FM organisation to respond to changes in demand for products and services and to changes in availability of infrastructure caused by such changes.

▶ CACE FM used *average cost of moving FM operations to new locations* as the measure for cost of services relocation. The data for this measure was obtained from the processes that use the measure, that is, strategy development and planning. These processes reviewed the availability of service infrastructure and compared it to requirements to identify required movements. ◀

8.5.2.1.1.5 COST OF ACQUIRING AND MAINTAINING BEST FACILITIES MANAGEMENT PRACTICES

Cost of acquiring and maintaining the best FM practices measures the cost of ensuring that the FM practices employed within the FM organisation are best practices. This includes the cost of identifying and implementing best FM practices and then ensuring that the practices employed remained "best".

Best practices are the best ways of undertaking an activity or process and best practices are identified by comparing the organisation's current activities with those who are considered to undertake those processes better than any other. Whilst an FM organisation strives to achieve best practice in all its FM processes and activities, in reality this is impossible as it would be too expensive. Therefore, the FM organisation must prioritise the activities and processes to be benchmarked.

▶ CASU FM used *average cost of acquiring/maintaining best FM practices* in a given period and *average cost of benchmarking* as measures for this perspective. At CASU FM, cost was a key determinant of the level of benchmarking and best practice. The given time period for the measure was dependent on the level and frequency of benchmarking activity and this process included identifying the processes or activities that need to be improved, identifying partners from whom lessons can be learnt and adopting practices that were considered to be the best, where appropriate. ◀

8.5.2.1.1.6 CASH RELEASING EFFICIENCY SCHEMES

Because FM is an overhead, for example to the NHS Trusts, there is enormous pressure to reduce costs and improve quality (Featherstone, 1999). The scope for large monetary savings through the application of a small percentage of facilities related cash releasing efficiency savings (CRES), is immense. Estates and Facilities Manager at CAMA FM commented: *“Every year, there is pressure for all NHS Trusts to achieve a CRES target. Within the financial year 1999/2000 within CAMA this CRES target was 1% of all the Trust expenditure”*. One inevitable manifestation of the facilities related CRES saving can be seen in the rationalisation and downsizing of the trust estate so as to reduce the running costs of the estate.

The above represents many considerable financial pressures in the system which would significantly reduce the real growth available for initiatives and improved performance.

▶ CABO used *cost reduction rates, percentage of indirect expenses as apposed to the total expenditure, units’ costs per transaction and cost target compliance* to measure CRES levels within the organisation. ◀

▶ As emphasised by the CAMA facilities and estates manager above, the NHS required over-spending Trusts to return a financial balance in approximately three years. CACE’s deficit in 1999/2000 was £ 4.5 million and therefore a financial recovery plan had been produced. Accordingly, CACE FM had agreed to implement and deliver the facilities contribution to the 2000/2001 phases of the financial

recovery plan. Key task in achieving this was to identify and implement agreed savings schemes within the directorate and the achievement was measured through the *budgeting process*. ◀

8.5.2.2 ASSET UTILISATION STRATEGIES

In the 1990's there were few organisations for which cost reduction is not a major driver (Madeley, 1996). Capital resources were therefore likely to attract attention at high level within the organisation, as this is where the major proportion of facilities costs was concentrated.

Asset utilisation is a concept used to compare or rank FM operations. Measurement of critical resource utilisation is important in order to maximise the contribution of FM processes to the achievement of schedules and plans. Analysis of asset utilisation looks at each of the contributing performance criteria, that is, availability, efficiency and quality in turn to identify variations in performance over time and this identifies root causes of poor performance and highlights where improvement effort is required.

8.5.2.2.1 MEASURES

Measurement of asset utilisation should be considered when planning capacity and scheduling operations to provide an understanding of expected service output.

▶ CABO used *asset utilisation rates*, percentage of savings against the budget for the management and disposal of the retained estate as indicators in asset utilisation strategy. ◀

Although asset utilisation provides a comparable financial related performance measure, comparing operations between organisations is not possible due to the large number of variables that cause performance differentials.

8.5.2.3 PROCUREMENT AND PURCHASING STRATEGIES

As previously described in section 8.3.2.2, the remit of FM activities within any organisation which can either be provided in-house, or be outsourced, extends through to the entire strategic and operational ranges of organisational FM activities. With the increased number of FM external contractors, the negotiations with the external FM suppliers have become crucial and FM organisations have realised the necessity to develop properly formulated procurement and purchasing strategies. (Procurement strategies as an internal process within the FM organisation is described in section 8.3.2.2.1.2).

▶ CABO FM gave priority to the operational value of facilities and the delivery of support services provided by the external suppliers and had developed a comprehensive “effective-life” framework for facility finance prioritising the “user value” rather than “asset value”. ◀

8.5.2.3.1 MEASURES

The cost of facilities represents a significant element of most organisations’ outlay. Ensuring that the facilities provided by the external suppliers are appropriate and delivered at best cost can benefit the core organisation at every level. By offering a full understanding of the way these elements interact, the facilities manager will not only ensure that specifications for the support service providers are appropriate, but will go on to ensure that procurement and purchasing strategies are monitored, service levels maintained and budgets adhered to.

▶ In this context, CABO FM kept records on *cost control effectiveness* to measure negotiated savings, to maximise contract cost avoidance, to understand procurement workload analysis to measure negotiated savings and to understand variance between the initial proposed amount for negotiated contracts and modification. ◀

8.5.2.4 FINANCIAL RESOURCE MANAGEMENT

Some of the key financial objectives of an FM organisation are to: ensure achievement of organisation's key financial targets, ensure production of balanced budget and continue to implement strategic financial solutions to the organisation's change including anticipated changes in the future. These objectives help to ensure the efficient and cost effective management of FM organisation's financial resources and to survive within the financial limitations of the FM organisation.

8.5.2.4.1 MEASURES

▸ In addition to delivering value for money, CABO FM was required to achieve *balanced income and expenditure* in managing its financial resources. Within revenue performance, CABO FM was required to deliver a balanced budget and out-turn and improved efficiency. ◀

▸ CAAB ensured the efficient management of its FM related financial resources through the *monitoring of monthly and year-end financial reports* and achievement of balanced budget. ◀

8.5.2.5 PROFITABILITY

Profit from new services may assess the contribution that they make to the profitability of the FM organisation. On the other hand, profitability provides one of the measures of success of the business, reflecting the efficiency and effectiveness of the organisation. Stakeholders place great importance on trends in profitability and it is a key driver of stakeholder satisfaction. The profitability of a FM organisation will be dependent on the business they are in. It is important to compare profitability with that of competitions and other organisations in the market sector in which the organisation operates. "Profitability" was initially identified as a "factor" during the factor analysis (section 7.3.3 of chapter seven) and its exposure through the detailed evaluation of case study material further emphasises its role within FM financial related objectives.

8.5.2.5.1 MEASURES

▸ CABO FM used *return on assets* as the core indicator to measure profitability. Further, it used income generated as an indicator as there have been different contracts awarded to CABO FM. This was an important measure as it assessed the success of the service in terms of market response. ◀

Monitoring the profit from services gives the FM organisation an idea of the contribution of service provided. It is most relevant for FM organisations that frequently provide services for other external clients. Further, it is important to compare profitability with that of competitors and other FM organisations in the market sector in which the FM organisation operates.

8.5.3 DISCUSSION

Financial performance is the result of operational actions, and financial success should be the logical consequence of doing the fundamentals well. As identified in section 3.3.1 of chapter three, traditional financial measures do not improve customer satisfaction, quality internal processes and employee motivation. By making fundamental improvements in their operations, the financial numbers will take care of themselves; the argument goes (Neely, 1998). Properly designed financial performance measures can enhance management planning, control and decision-making (Olve et al, 1999). The above objectives and measures promote organisational and individual growth that will provide long-term benefits to the FM organisation.

As emphasised earlier, in the government FM sector, the financial processes differ from those of the traditional private sector. Private sector FM related financial objectives generally represent clear long-term efficiency targets for profit seeking organisations, operating in commercial environments. Financial considerations for government FM organisations have an enabling or a constraining role. Therefore, success for government based FM organisations should be measured by how

effectively and efficiently these organisations meet the needs of their stakeholders. In this context, it captures cost efficiency, that is delivering maximum value to the customer for each pound spent and these issues are important in optimising the cost efficiency of the FM programme as it ensures that the maximum amount of funds is available for accomplishing the primary missions of the FM organisation. Facility managers must therefore ensure that FM operating costs are optimised in order to meet the challenge of creating business programmes that work better and cost less.

8.5.3.1 TYPES OF FINANCIAL FACILITIES MANAGEMENT CRITICAL SUCCESS FACTORS AND ASSOCIATED MEASURES

In today’s fast moving economy, financial issues relating to any organisation must be value-adding contributors and sources of business knowledge to the entire organisation. This situation is equally applicable to FM organisations. They can no longer simply process transactions and control and report financial results – they must be aligned to the overall organisational strategy, link its own strategies and strategic initiatives to strategic and operational budgets of the overall organisation and adapt feedback and learning systems to be used as a continual process to manage strategies and tactics. In this context, the following financially related critical success factors were exposed in this thesis (Table 61):

Critical success factor	Associated measurement tools
Value for money/cost efficiency	Establish and maintain cost data Cost efficiency Reduction of service operating costs Cost of service re-location Cost of acquiring and maintaining best FM practices Cash releasing efficiency schemes
Asset utilisation strategies	Asset utilisation rates
Procurement and purchasing strategies	Cost control effectiveness
Financial resource management	Balance income and expenditure Financial reporting
Profitability	Return on assets

Table 61: Types of financial related FM measurements – Definitions

8.5.3.2 EXPOSING FINANCIAL FACILITIES MANAGEMENT CRITICAL SUCCESS FACTORS AND PERFORMANCE MEASURES

Similar to previous sections 8.2.3.2, 8.3.3.2 & 8.4.3.2, each critical success factor is supported by the following measures identified through the case studies (Table 62):

Critical success factors and related performance measures	Case study							
	CACE	CAAB	CAMA	CASU	CALO	CALA	CABO	CASA
Value for money/cost efficiency	✓	✓	✓	✓	✓	✓	✓	✓
Asset utilisation strategies	?	?	?	?	?	?	✓	?
Procurement and purchasing strategies	?	?	×	?	?	?	✓	?
Financial resource management	✓	✓	?	×	?	✓	✓	?
Profitability	×	✓	×	×	?	?	✓	?

✓ = Performance issues exposed

× = Not exposed

? = Don't know

Table 62: Types of critical success factors and associated performance measures exposed in case studies relating to financial FM

8.6 SUMMARY – PART ONE

This section has outlined several categories of performance measurement issues, uncovered primarily from the case study findings outlined in chapters five and six and quantitative analysis described in chapter seven. It is not the existence of these types of performance measures which is the important issue for facilities managers but as outlined in section 8.8, the way in which they are managed, that is, the exposure and the development of a shared understanding of the integration of each type of performance measure categorised under different sections (sections 8.2, 8.3, 8.4 & 8.5). The case study data provided evidence that it is always desirable to expose these performance bases, as it is the first step in achieving an understanding of the usefulness of performance measurement within FM organisations.

Even though several hundred global businesses have now adopted performance measurement techniques, even amongst committed advocates there are differing interpretations as to its deployment and use. The fundamental reality of business today, however, remains the need to be able to implement business strategy quickly. Even more so in difficult economic times organisations need to be able to adjust their strategy. However, for most organisations, strategy is still something new and which has little immediate impact. The reason for this is that deciding on the direction is not the prime problem. The issue comes in communicating that direction to the operational managers and employees, who can, through their day-to-day actions, make it happen. This is where a FM performance measurement system addressing both financial and non-financial issues is such a powerful approach, and why it is so much more than just a measurement system: it is a process for managing the FM business. A process for performance management has therefore become visible, which has the following fundamental components:

- Management can build and align around an architecture for change;
- The change architecture is cascaded through the organisation which is then mobilised for action; and
- A feedback and learning system is built which allows strategy development and implementation to become a continuous process.

The customer, internal FM Processes, learning and growth and financial issues reflect the FM organisation's standpoint and its perspective on critical success factors as identified in sections 8.2, 8.3, 8.4 & 8.5. However, that view is not necessarily correct and a well-balanced set of measures do not guarantee a winning strategy, they can only translate a particular strategy into specific measurable objectives. Failure to convert improved operational performance into improved financial performance should make facilities managers rethink the FM strategy or the FM implementation plan.

But, there is no doubt that a well-developed FM strategy, supported by a balanced set of operational goals and measures, are major ingredients of a successful FM performance. The need for supporting financial measures and understanding of their importance in today's changing environments also need to be appreciated. Provided operational FM improvements are properly handled at the implementation stage, the

financial perspective always provides the necessary confirmation and quantification of the “improvement effort” in bottom-line terms.

The concept of the performance management system is no guarantee of a successful strategy and vision but the great strength of the concept lies in the very process of building the system, a process which is an effective way to express the FM organisation’s strategy and vision in tangible terms and to gather support for it throughout the organisation.

Experience within the case studies has shown that appropriately set and defined targets contributed both to motivation of employees and the eventual success of the FM function. This culture was incorporated into the performance measurement theory development together with the perceived cornerstones of its success – innovation, competence and performance. Facility managers viewed these three cornerstones as determinants of success and firmly believed that growth and quality would result from their implementation.

PART TWO - PROSPECTS OF THEORY DEVELOPMENT

8.7 STRATEGIC PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

The continuous pressure for organisations to improve performance is a phenomenon of the increasingly competitive environment of the 1990’s. Whilst many organisations are now beginning to realise, as section 2.3.8 in chapter two has already identified, the potential contribution that facilities can make to the overall performance of the organisation which may be derived from the proactive management of support services. But, there are many that continue to overlook the opportunities and benefits. Whereas primary business functions such as sales, marketing, product development, and operations are seen to have a direct impact on business performance, facilities are often seen viewed as a non-core activity (Armiston et al, 1990). In this regard, FM is seen to have a direct impact on the

bottom line, but there are many more little obvious and indirect ways in which facilities performance enables that of the wider organisation (Madeley, 1996). But, in businesses where facilities represent a visible key to the organisation's success, FM is becoming a strategic issue and it is necessary to demonstrate the nature of performance links which may be built between FM and other functions within the business, and where opportunities exist to promote synergy. Performance measurement systems in FM could play a vital part in bridging the gap between these two extremes. As CACE Facilities Director described: *"Measurement is not an end to itself, but a tool for more effective management. The results of performance measurement in FM will tell you what happened, not why it happened, or what to do about it"*.

▶ CACE FM believed that measurements could provide the basis for the FM organisation to assess how well it was progressing towards its predetermined objectives, helped it identify areas of strength and weakness, and decide on next steps, with the ultimate goal of improving overall organisational performance. It also provided the data necessary for showing how activities support broader core organisational goals, and provided the data necessary for supporting requests for additional resources or for supporting new initiatives. ◀

In order for a FM organisation to make effective use of the results of performance assessment, it must be able to make the transition from measurement to management. Performance management concept describes the use of performance measurement information to effect positive change in organisational cultures, systems and processes, by helping to set agreed performance goals, allocating and prioritising resources, informing managers to either confirm or change current policy or directions to meet those goals, and sharing results of performance in pursuing goals (Procurement Executives Association, 1998). It must also be able to anticipate needed changes in the strategic direction of the organisation, and have a methodology in place for effecting strategic change. Successful accomplishment of these two tasks represents the foundation of good performance management.

Leading organisations agree on the need for a performance management system which is a structured methodology for using performance measurement information to help set agreed-upon performance goals, allocate and prioritise resources, inform managers to either confirm or change correct policy or programme direction to meet those goals, and report on the success in meeting those goals (Procurement Executives Association, 1998).

It is emphasised through the case studies that to effectively move from performance measurement to performance management, the ability to use performance measurement results to actually bring about change in the FM organisation need to be in place.

Performance measurement has already been described in section 2.6 of chapter two as a process of assessing progress towards achieving pre-determined goals, including information on the efficiency with which resources are transformed into goods and services, the quality of those outputs and outcomes, and the effectiveness of organisational operations in terms of their specific contributions to organisational objectives.

It is suggested that a more holistic approach would be of benefit (section 2.3.8 of chapter two), one that emphasises the positive aspects resulting from the combination of influences of FM on all business functions. Theory developed in performance measurement in FM described in Part one of this chapter could be proposed as a suitable means by which facilities performance may be seen to directly and indirectly impact upon the wider aspects of organisational performance, underpinning sustainable success of the FM strategy and requiring appropriate attention and recognition. In all cases it was clear that good communication and building of commitment was of the utmost importance. It was also very clear that the unique culture and existing organisational philosophy had to be incorporated into the FM performance measurement system for it to be viable and closely aligned to this was a need to link performance measurements with the organisational strategy as already identified in section 8.7.

A major task facing a FM organisation in attempting to introduce this balanced performance measurement and management system, as detailed in Part one of this chapter, is how to devise a set of measures explicitly linked to its strategy? Underlying this need is the essential condition that the strategy is widely understood and accepted within the organisation. Therefore, the primary focus of the theory development in Part one of this chapter is on translating the organisation's strategy into measurable goals through the identification of critical success factors and associated measurement tools. Having understood what is important for the business (as critical success factors), performance measures are set up to monitor performance. These must then be clearly communicated to all levels of management and staff within the business. This enables them to understand how their own efforts can impact on the targets set in respect of each perspective. Only by combining, measuring and thinking in terms of all aspects of performance can managers prevent improvements being made in one area at the expense of another.

8.8 FACILITIES PERFORMANCE MANAGEMENT – THE PROCESS OF LINKING MEASUREMENTS TO FACILITIES STRATEGY

Facilities strategy implies a purpose for which a direction is set over the long-term (Alexander, 1994a). It requires leadership and an understanding of the broader context in which facilities are operated. Management means the professional and effective deployment of resources and being totally accountable for results which are measurable.

It is important to realise that the organisational facilities function cannot exist in strategic isolation if the organisation is to effectively exploit its entire asset base to best support the delivery of core services. Accordingly, as identified in section 2.3.7 of chapter two, it was clear that FM has somewhat strategic importance in case study organisations.

► For facilities managers, the fundamental lesson which can be taken from CACE FM case study was that the most effective way of managing facilities is the

development of a strategic plan: one which accounts for and fits into the individual operation of the organisation. Without understanding the organisation, a facilities manager is unable to provide the best facilities solutions. CACE FM also illustrated that developing an effective FM strategy required the involvement of the facilities manager at all stages in partnership with the core organisation. The success of FM within CACE was due largely to CACE FM's understanding of CACE's long-term goals and its involvement throughout in developing a FM strategy. ◀

▶ As an example of strategic FM in action, the CACE FM case study illustrated how, by focusing on the overall business objectives of an organisation, a facilities manager can manage its resources to complement the core organisation's long-term goals. It also highlighted the effectiveness of adopting a partnership approach. ◀

What the case studies highlighted was how the value of FM can be improved through strategy implementation and by satisfying related critical success factors representing the FM strategy within the organisation. For many organisations, public or private, the first hurdle is knowing where the organisation stand in the market place to understand what action needs to be taken. This requires some form of accurate evaluation. What cannot be measured cannot be managed (Neely, 1998). So where does an FM organisation start? This thesis tries to provide solutions to this broad question by developing theory on performance measurement.

As already discussed in section 3.3.1 of chapter three, traditional performance measurement systems have sprung from the finance function. Thus they have a control bias. They specify the particular actions they want employees to take and then measure to see whether those actions have, in fact, been taken. In this way, measurement systems try to control behaviour.

Balanced measures representing both financial and non-financial measures, on the other hand, are well suited to the FM organisation of the future. They put strategy and vision, as identified in this chapter, not control, at the centre. They establish goals and critical success factors but assume that people will adopt whatever

behaviour and take whatever actions are necessary to meet those goals. The measures are designed to pull people towards the overall FM vision.

Therefore, the approach developed in this thesis is consistent with the initiatives under way in many FM organisations, that is, cross functional integration, customer supplier partnerships, continuous improvement, team accountability etc.

By combining customer, internal FM processes, FM organisational earning and FM financial issues, the FM organisation may have a better understanding of many FM inter-relationships. This understanding can help the FM organisation transcend traditional notions about functional barriers and ultimately lead to improved quality of decision-making and problem solving. Balanced measures therefore will keep FM organisations looking and moving forward.

Making constructive use of assessment results is critical if the FM organisation is to improve. Performance measures must provide intelligence for decision makers at all levels to assess towards achieving predetermined goals. Assessment results must be properly analysed and understanding what a particular result really means is important in determining whether or not it is useful to the organisation. Data by itself is not useful information, but it can be when viewed from the context of FM organisational objectives and other factors. Proper analysis is therefore imperative in determining whether or not performance indicators are effective, and results are contributing to FM organisational objectives.

Results must be used or no one will take them seriously, and this seems so obvious that it should not need to be stated. Nevertheless, assessments are often followed with little effective analysis of results, or honest attempts at improved performance. As stated above, critical success factors represents the FM organisational strategy and, therefore, performance measurement results can be used to determine gaps between specific strategic FM objectives and actual achievement. Whenever there is a gap between current results and an organisation's strategic objectives, there is an opportunity for FM organisational improvement.

In addition to tracking progress on past results, facilities managers can use the performance measurement concept to learn about the future. Managers get the opportunity to discuss not only how they achieved past results, but also whether their expectations for the future remains on track. If a FM organisation followed established strategies, but did not achieve target results, facilities managers then need to examine internal capabilities and assess whether the underlying strategies remain valid. Based on such analyses, facilities managers may adjust or redirect their strategies or identify new strategies. This focus serves as a foundation for effective process improvement and risk management. It also completes a feedback loop that supports decision-making at all levels of the FM organisation.

FM organisation can also use the performance measurement results to benchmark its performance against other FM organisations. Benchmarking helps to get a picture of how the FM organisation performs compared to others. It also serves as one input for developing target goals. However, as noted in section 2.10.3.2.2 of chapter two and section 8.3.2.1.1.3 of Part one of chapter eight, the strength of benchmarking is not in identifying best performance, but in learning best practices. That is, the FM organisation should identify, study, analyse, and adapt the “best practices” that led to the “best performance” and understanding the best practices helps facilities managers to make better-informed decisions about where and how to change their FM organisation.

Once performance measurement results are correctly analysed, communicated to relevant parties, used for development of any corrective action, and for revising performance measures as needed, effective performance management requires that the FM organisation considers strategic goals, that is, where it expects to be in the future, and to incorporate these goals into the performance management structure. The system developed in this thesis emphasises the placing of the FM organisation’s strategic vision at the centre of a performance measurement structure through the identification of critical success factors under different themes.

8.9 DISCUSSION

In the literature it is frequently argued that performance measures should be derived from strategy; that is, they should be used to reinforce the importance of certain strategic objectives (Skinner, 1989). Theory development in this thesis presents such a model for strategic performance measurement and management for high performance FM organisations. Evidence from Hackett Benchmarking Solutions, the U.S. management consultancy, which surveyed 1400 global businesses, shows that almost fifty per cent of companies apply some kind of strategic approach in their performance measurement programmes as identified in this thesis (Littlewood, 1999). Through such systems organisations are gathering critical non-financial data to help pinpoint problems, improve processes and achieve organisational goals – in ways that can be understood and used by all levels of the corporation, from line managers to senior executives.

Through the implementation of a strategic performance measurement and management system as detailed in this chapter, a FM organisation could monitor both its current performance (finances, customer satisfaction and business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems – that is its ability to learn and improve.

8.10 COMMON ISSUES DERIVED FROM PERFORMANCE MEASUREMENT THEORY DEVELOPMENT IN FACILITIES MANAGEMENT

8.10.1 LINKS BETWEEN BUSINESS PERFORMANCE AND FACILITIES MANAGEMENT PERFORMANCE

As already discussed in section 2.3.5.5 of Chapter two, a generic model of FM has been developed (Barrett, 2000), and this model (Appendix one) shows the relationships that a typical FM organisation would have within the rest of the business. A distinction is drawn between operational FM and strategic FM and the role of strategy to balance the two is highlighted. Case studies carried out and

illustrated in chapters five and six highlighted principle linkages to the above generic FM model especially the interaction with the core business on a regular basis to identify current facilities requirements.

The case for a strong link between FM and organisational performance was made by Duffy, as far back as 1988: “Costs are now made in new ways – not just how many pounds per square metre of construction, but real costs of occupancy related to how much per head of workforce – or even better, per rate and quality of information processed. FM at last makes it possible to bring up to board level the total picture of occupancy costs”.

▶ *“Strategic FM is seen to encourage a disciplined approach, and strengthens the links between facilities performance and the organisations objectives and purpose”,* commented the facilities development manager at CACE FM. Further, he mentioned; *“Facilities strategy increases the awareness of the value of making well thought out business decisions before embarking on property and facilities solutions”*. Reshaping the business has implied the reshaping of FM, the transformation of the facilities portfolio and the way in which it’s use and contribution is perceived. Under these circumstances, it was not surprising that FM has influenced the shape of the Trust’s objectives and it’s ultimate performance at CACE. ◀

For all of the case study organisations in this selected sample, FM appears to play a direct role in enabling performance of the core business, but the degree of significance clearly varies with the actual level of dependence.

8.10.1.1 CAUSE AND EFFECT RELATIONSHIPS

The key to the performance measurement approach in FM developed in this thesis is that within a FM organisation causal relationships exist among different critical success factors such as how a change in human capital causes changes in other areas. Through assessments of the FM organisation one can create causal relationships, which are tied to the FM mission. These relationships are initially a “best guess” and that is how causal relationships are first determined. Then these relationships are tested either with logic reality checks or multiple evaluations, or with statistics.

Identifiable cause-and-effect relationships will be an important aspect of the measurement system when choosing the appropriate indicators. It enables the translation of a financial aim into operational factors that will lead to that increased revenue. It clearly demonstrates the hypothesised cause-and-effect links, which can be tested using the FM measurement process.

8.10.2 GOOD PRACTICE PERFORMANCE MEASUREMENT

This thesis emphasises how to bring together different kinds of measures in a single comprehensive view of the entire FM business. In this sense, theory development in this thesis bring together customer related FM measures, FM internal process related measures, FM innovation and future potential issues and FM financial base. It is important that this view describes what facilities managers actually want to put in focus. Experience has shown that developing a this kind of measurement system and then using it in the ongoing exercise of management control is a good tool for strategic FM control as well.

Over the recent past, organisations have tried various methods to create an organisation that is healthy and sound. By requiring strategic planning and a linking of programme activities/performance goals to an organisation's budget, decision making and confidence in the organisational performance is expected to improve. Major changes are taking place in the way businesses are managed. Resources are diminishing, regulations are being monitored, and the traditional role of overseer redefined into a more positive role. This uncertainty, coupled with a continually changing environment, has forced managers to pursue new ways to meet future demands of the organisations.

“Short-termism” of traditional accounting principles can be counter productive; thus, the emphasis on non-financial measures is a welcome development. Critical success factors based performance measures identified in this thesis makes a compelling case for the inclusion of non-financial measures in a FM organisation's overall measurement system. The power of the framework comes from a second “balance” that goes beyond an ad-hoc collection of financial and non-financial measures. The performance measurement system tells the story of the FM organisation's strategy

that ultimately links all the measures to shareholder value. Non-financial measures, such as customer satisfaction, employee competence, and FM innovation belong to the performance measurement system only to the extent that they reflect activities a FM organisation performs in order to execute its strategy, and thus, these measures serve as predictors of future financial performance.

Implementing a performance measurement system as developed in this thesis, will provide:

- A common methodology and co-ordinated framework for all FM performance measurement efforts,
- A common language for facilities managers,
- A common basis for understanding performance measurement results; and
- An integrated picture of the FM organisation overall.

8.10.2.1 BOTH FINANCIAL AND NON-FINANCIAL MEASURES

As identified in section 3.3.1 of chapter three, the financial environment in which today's organisations do business puts new and different demands on management control and on the control systems which organisations use (Olve et al, 1999). Performance measurement incorporating non-financial measures has been a topic of great interest throughout most of the 1990s. This is because non-financial measures overcome the limitations of just using financial performance measures. "Soft" measures, such as employee satisfaction and commitment, are coming to the fore as protagonists of the business performance measurement revolution urge organisations to complement their traditional financial focus with softer data (Stone, 1996).

Taylor and Convey (1993) (cited in Stone, 1996) advocated that non-financial performance indicators should be limited in number so that they are used to measure the aspects of the organisation, which are critical to success. In this context, the choice of non-financial measures identified in section 3.3.1 in chapter three, is determined by the focus of the FM organisation, the people who are using them and what they are being used to measure the process or result. Non-financial facilities performance indicators are most frequently determined by organisations themselves

and although there are commonalities between organisations within the same sector, it is more likely to be a wider range even within one market as organisations display the view of their core competencies.

8.10.2.2 STRATEGY COMMUNICATION THROUGH MEASUREMENT

Renaissance Worldwide (1999) comments that today's business rationale is driven by value-added and knowledge based solutions, thus, strategy has taken a new meaning. According to Business Week (1998), "*Business strategy is now the single most important issue.....and will remain so for the next five years*". Yet Fortune (1999) magazine reports that, "*Less than ten per cent of strategies effectively formulated are effectively executed*". Therefore, the challenge to senior executives has become clear: they must implement business strategy effectively.

What factors stack the odds against successful strategic implementation?

Renaissance Worldwide (1999), has identified four barriers:

- *The vision barrier* – less than five per cent of a company's employees understand its vision. More often than not, an organisation's strategy is neither understood by those who implement it nor translated into objectives for those employees to meet;
- *The management barrier* – the organisation is focused on short-term performance, rather than long-term direction. Management systems are designed for operational control and tied to budgets, not strategy;
- *The operational barrier* – key processes are not designed to leverage the drivers of business strategy; and
- *The people barrier* – personal goals, compensation, training, knowledge building, and competencies are not linked to the implementation of strategy.

Simple identification of these barriers is not enough and the development of a value proposition to help the organisation surmount them is therefore important.

Theory developed in performance measurement and management in FM, as detailed in this thesis, helps FM organisations map out a clearly defined destination, as well as a plan to navigate by. The structure of the performance measurement system

provides a framework to translate strategy into operational terms by identifying the related critical success factors and associated performance measures so that it can be effectively communicated, understood, and acted upon. The process: align strategy with the FM organisation and resources, leverage hidden assets and knowledge, link people and processes, and create strategic feedback systems that accelerate organisational wide performance. The result: making strategy work – rapidly, measurable, knowledgeably.

8.11 EMERGING THEMES

In theory development in performance measurement in FM, the following table (Table 63) summarises some of the emerging themes:

Clear structure FM	Few and balanced performance measures Focus is on action Data shared within/across the organisation Revise frequently
Good enough performance measurement	Few detailed measures No reallocations Little reconciliation “Good enough” driven by top Focus on projections Analysis
Means to an end	Detailed measures are action oriented Measures are relevant Measures are concerned with assessing the effect of making a change Change and innovation
Focus on innovation	Sharing ideas and results is encouraged Purpose of PM is learning and improvement Focus on improvement through involvement where measurement is an enabler

Table 63: Emerging themes of FM performance measurement theory development

8.12 MAINTAINING PERFORMANCE MEASUREMENT KNOWLEDGE REPOSITORY

One of the most important features of any performance measurement system is that it is dynamic, that is it allows for enhancements over time, in light of changing circumstances. While some measurement concepts may seem timeless, the ever-changing character of the nature of FM dictates that maintenance of a current

measurement model be a priority. The model needs to be updated periodically to reflect statutory changes and there may be a need to discard measures that have not proved useful, or to modify existing core measures to enhance their utility. However, any system revisions will be made on a selective basis to ensure that the measurement framework permits FM organisations to gauge performance progress against a consistent baseline, and to ascertain and analyse meaningful trends.

8.13 SUMMARY – PART TWO

Becker (1990) advocates that good performance indicators shall be directly related to strategic objectives, and the identification and discussion of their facility implications will in themselves likely prove to be an eye-opening experience for business group managers unfamiliar with or sceptical about the importance of facilities to the organisation's ability to achieve its business goals. From the critical success factors and related measures identified in this thesis, it is clear that links exist between the FM strategy and its FM practice. They have further identified:

- Both financial and non-financial FM performance indicators;
- Relationships between FM performance indicators to stakeholders; and
- Performance indicators which FM directly and indirectly influence business performance.

This theory development is not regulatory. Nevertheless, with its identified critical success factors and core measures, the framework outlined in this thesis represents an assessment approach within which the FM organisations intend to achieve consistency and uniformity, to the greatest extent possible.

PART THREE – THEORY DEVELOPMENT AND VERIFICATION

8.14 THEORY DEVELOPMENT

8.14.1 DESCRIPTIVE – IDENTIFICATION OF THEORETICAL CONCEPTS

The identification of the different types of critical success factors, which can exist in the FM organisation and are detailed in Part one of this chapter, presents a new perspective through which to measure FM performance. The qualitative data presented in chapters five and six, and quantitative data presented in chapter seven, and theory development in chapter eight indicated that the performance measurement process begins and ends with the FM organisation's existing knowledge base.

The literature review in section 2.11.1 of chapter two indicated the need to understand the performance measurement in FM. Using the concept of the existence of different types of performance measures in the organisation (Kaplan and Norton, 1996; Neely, 1998; Drongelen, 1999) different types of performance measures were exposed through the identification of critical success factors which exist within FM organisations. Theory developed in Part one of chapter eight thus provides a basis upon which to investigate the existence of related performance measures.

8.14.2 PRESCRIPTIVE – MEASUREMENT TOOLS

Through the use of the assessment approach based on the developed theory, FM organisations could fundamentally re-design FM performance assessment. Theory development in Part one of this chapter establishes a FM performance assessment framework and, accordingly, core organisational strategy will be incorporated into the FM performance measurement system utilising the core critical success factors and measures identified in the theory development, and any additional measures that contribute to the accomplishment of the individual FM organisation's strategic goals and objectives.

In this perspective, chapter nine represents an analysis of the “theory development” against the current FM practice and intends to explore that use of the theory for changing practices in FM organisations.

8.15 THEORY VERIFICATION

The theoretical framework illustrated in chapter three was used in both the qualitative and quantitative research as the constructs were found to be reliable and valid. In this context, theory developed in this thesis is verified through the following processes:

- Comparison of developed theory with existing literature, as described in section 10.3.4 of chapter ten; and
- Practical validity of the theory developed was further verified by its application in a real life case study, as detailed in chapter nine.

The finding suggests that this process is not, in fact, a sequential one and that the success of theory development in performance measurement in FM is, fundamentally, dependent on the existing FM knowledge base. The performance measurement tools presented in chapter eight included the use of both financial and non-financial measures as a way of achieving the ‘balance’ among performance measures within FM organisations. This is supported by the findings of Brown and Laverick (1994), Stone (1996), Letza (1996), Rangone (1997), Bromwich and Bhimani (1994), Neely (1998), Lynch and Cross (1991), Lee et al (1995) and Olve et al (1999) that measurement systems based on only financial issues are rarely integrated with one another or aligned to the business processes.

8.16 SUMMARY – PART THREE

The FM organisation will benefit if it applies a balanced performance measurement system, as outlined in this chapter, that will contain performance objectives and measures. This model provides a strategic framework and indicates the elements of major importance for achieving overall corporate goals. Performance improvements that can emerge through the application of this system appear attractive to FM

organisations. In this context, chapter nine deals with justifying the use of the performance measurement system development.

The study further highlights the following issues:

- The need for clear institutional aims and communication of these aims among the relevant parties;
- The need for the existence of a satisfactory management interface between senior management and all other groups;
- The requirement for an existence of an effective performance measurement mechanism; and
- The need for FM organisations to gather information on stakeholder expectations, e.g. through an evaluation process, to be dealt with in a much more detailed, comprehensive and multi-focused way than tends to be the case currently at many FM organisations.

As seen in this chapter, the performance measurement theory developed for FM is not necessarily suited to all situations, and the culture within each FM organisation has to be of prime consideration in arriving at a specific set of performance measures. However, there is a clear need for the performance measurement system components to be reviewed and, where necessary, updated on a regular basis if the system is to remain both relevant and useful.

Performance measurement implementation among the FM organisations is an issue, which needs consideration together with the requirement to promote benchmarking and to develop an appropriate implementation guide. It is hoped that the outcome of further research will enable academics and practising managers to assess whether the theory developed in this thesis is likely to be successful in wider FM organisational context, as performance measurement has become highly successful in manufacturing and other services organisations.

8.17 SUMMARY OF THE CHAPTER

Measurement will provide the FM organisation with the basis to assess how well it is performing towards its predetermined objectives, help it identify areas of strengths and weaknesses, and decide on the next steps, with the ultimate goal of improving overall FM organisational performance.

The practice of FM is concerned with the delivery of the enabling workplace environment and the optimum support services that support the business processes and human resources. Therefore, the FM role is to meet the business challenges that confront the organisation it is supporting, as an enabler in the first instance. In the long-term, a sustainable FM role within organisations must be built upon an aspiration to continuously add value by providing appropriate and innovative facilities solutions to business challenges through the skilful manipulation of all business resources – the optimum balance between people, physical assets and technology. Performance measurement concept plays a major role in achieving these long-term objectives.

One of the hallmarks of leading-edge organisations – be they public or private - has been the successful application of performance measurement to gain insight into, and make judgements about, the organisation and the effectiveness and efficiency of its programs, processes and people (Procurement Executive Association, 1998). However, leading organisations do not stop at the gathering and analysis of performance data; rather, these organisations use performance measurement to drive improvements and successfully translate strategy into action. This is equally true in FM environments and every FM organisation, regardless of type, needs a clear and cohesive performance measurement framework that is understood by all levels of the organisation and that supports objectives and the collection of results.

In this context, theory development in FM performance measurement in this chapter was carried out based on the following arguments:

- Most FM organisations do not have a good process for managing strategy and most related FM organisations concentrate on control and short term performance. Facilities managers spend little time on understanding if the long-term is working;
- Most FM organisational processes are not strategically focused; and
- Many barriers to strategic implementation persist, and, therefore, new management systems need to be developed and implemented to enable better strategic growth management

Facilities management's ability to plan, anticipate and initiate change is enhanced if it utilises performance management tools such as the system developed in this thesis.

However, in the words of one interviewee from one of the case studies described in chapter six, *“The performance measurement system must be balanced in order to facilitate the achievement of the short, medium and long term goals and objectives of the FM organisation”*. Another said, *“It sets goals for FM and you can bring that back to the table and articulate what FM did and how it helped improve the process for those who are not directly engaged with FM”*, thereby re-emphasising the importance of such performance measurement systems within FM.

The theory development in this chapter provides the basis for the construction of a set of propositions for a “FM performance measurement framework”, which forms the basis for testing the “FM performance measurement tool” in chapter nine and the impact of this management and measurement process is the basis for the issues raised. Issues such as completeness of the performance measures, its applicability and the effectiveness of enhancing FM performance and barriers to implementation are the focus of the investigations reported in chapter nine.

Chapter 9

Use of Theory to Create a Performance Measurement Tool in Facilities Management

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

*“Facilities management practices need to be supported by an adequate knowledge base”
Bev Nutt (1999)*

9.1 OVERVIEW

Theory relating to performance measurement in FM has been developed through eight case studies and the quantitative analysis in the previous chapter. Thus, until this stage, this thesis has covered aspects of “observation”, “conceptualisation” and “reflection” of theory development in FM performance measurement. In this context this chapter intends to explore the use of the theory developed for changing practices within FM organisations. Subsequent sections present details on a workshop and a case study where the researcher attempted to generalise the theory development in a real life context to confirm the prescriptive spectrum of the findings

9.2 GENERALISATION OF THEORIES

In case studies, the intention is to establish general conclusions from particular facts and circumstances. However, it has frequently been pointed out that the impossibility of generalising the findings of a few cases to the whole population was an unavoidable inconvenience that spoils the whole investigation (Nieto and Perez, 2000). This criticism is founded on a prejudice of people exclusively familiarised with the application of statistical techniques. In this sense, it is important to remember that the multiple case study applications, as identified in section 4.17.5 of chapter four, do not represent elements of a sample but the study of a phenomenon under various carefully selected circumstances. Consequently, the intention of this chapter is to generalise the theory developed in chapter eight. The analytical generalisation results from the development of emergent theory in chapter eight will be confirmed by its application in some case studies. The main purpose of this process was to further confirm the validity of the theory development rather than to “test” the validity of the theory. However, the problem of generalising will remain outside of this field of study and the scope in this thesis, being at the same time the objective of other quantitative studies whose starting point is precisely the emergent theory from this thesis.

Therefore, this chapter provides a brief introduction to the practical applications of the theoretical framework developed in chapter eight and describes how it was applied in a case study organisation. This process is referred to as the identification of performance measurement tools, which represents the prescriptive findings of the research. The study re-focused on CACE FM, which is detailed in chapter five, and used the developed theory to design and implement a performance measurement system within its FM Directorate. The development of the prescriptive findings provided practical tools for improving performance measurement in the FM function, bridging the gap between theoretical findings on the one hand and practical tools on the other.

Prior to the above process, a series of workshops were carried out to validate the findings of the theory development identified in chapter eight and some brief information regarding this process is explained in section 9.5.

9.3 PLAUSIBILITY AND THE NEED FOR THEORY TESTING

The general approach that has been described in chapter eight is somewhat an inductive approach, a process by which explanations are developed by moving from a particular to the general: from observations to theory. Theories and explanations arrived at in this way are not the end of the explanation process (de Vaus, 1991) and these explanations need to be tested and this is because such *ex post facto* explanations, although consistent with the observed facts, are not necessarily compelling.

Theory development and testing is an ongoing process. Wallace (1971) (cited in de Vaus, 1991) has described the process of theory development as an ongoing interaction between theory and observation and between theory construction and testing. To test the theory, developed theory is used to guide the observations, moving from the general to the particular whereby observations provide a crucial test of the theory. The basic idea of this process is to derive from the general theory, more limited statements that follow logically from the theory. The key is to derive these statements in such a way that if the theory is true so will be the derived statement. Having derived more limited statements, data is collected relevant to

them to look at the implications of this data for the initial theory. This is the process of theory testing in this thesis and is probably best explained in the case study application described in preceding sections.

9.4 PERFORMANCE MEASUREMENT MODEL FOR FACILITIES MANAGEMENT

It is clear from the theory development described in chapter eight that the task of providing for and managing the facilities performance measurement within an organisational setting is a complex one. The identification of different types of critical success factors, and thereby to expose the relevant performance measures which can exist within FM organisations (Part one of chapter eight), represents a new perspective through which to measure facilities performance. The proposal for the theory development is justifiable on the premise that the facilities management performance measurement represents the embodiment of the organisational outcome as a support function to the core business.

The practical implications occurring from the results of this study are quite clear. It will enable the development of a performance measurement and management methodology for FM. By finding the constructs for the specified theoretical concepts identified in chapter three and detailed in chapter eight, facilities managers can be equipped with an effective tool to determine the value and the level of acceptance of each factor contributing to the FM organisation and to the overall organisational performance. Also this type of model will be particularly useful as it indicates the relationships between each constituent part, and will be helpful to determine which types of relationship will be more conducive to success. Facilities managers need to know the status of the organisational controllables so that they can manipulate them to make organisation-wide improvements in facilities performance. The proposed model in turn will offer a reference to assess the benefits of performance assessment in FM. By clarifying the nature of the relationship among variables of facilities performance, it will also be helpful to derive future decisions on investment FM activities.

9.5 FRAMEWORK VALIDATION

The theory generated from this study attempt to provide an integrated performance measurement framework in which the desired outcome of the practice of FM could be measured. In many respects, the emerging theory represent an attempt to present the integrated view of the FM role inherent in the provision of FM within core organisations as a business enabler.

In this context, this section represents the findings from a validation workshop conducted in order to further validate and generalise the components identified in the theory development in chapter eight. The participants of the workshop were drawn from a combination of respondents from the case study organisations, practitioners and academics in the field of FM. The focus of this research has been to develop theory explaining the performance measurement concept in FM. In this respect, a decision was made to present the emerging theory accompanied by supporting text. This choice was further influenced by the decision to use a workshop as one of the means of validating the theory derived form the study.

Out of the eight case study organisations participated in the case study investigations, four participated (two participants each) in the validation exercise together with 4 academics and 4 FM industrialists. In order to maintain impartiality during the workshop session, the researcher's role was confined to presenting the theory development and answering the questions that arose as suggested by Then (1996). An interactive polling tool designed to reduce the length of time required for an assessment was used during the workshop to capture feedback from participants. The interactive polling tool is an alternative data collection method to a questionnaire.

Figure 61 illustrates the hardware set-up of the interactive polling tool. An infrared keypad issued to respondents allowed them to answer/comment issues projected on a screen. Issues demanding comments were developed as statements. The interactive tool proved to be an effective method for gathering different perceptions in a short period of time. The keypads enabled respondents to give anonymous responses.

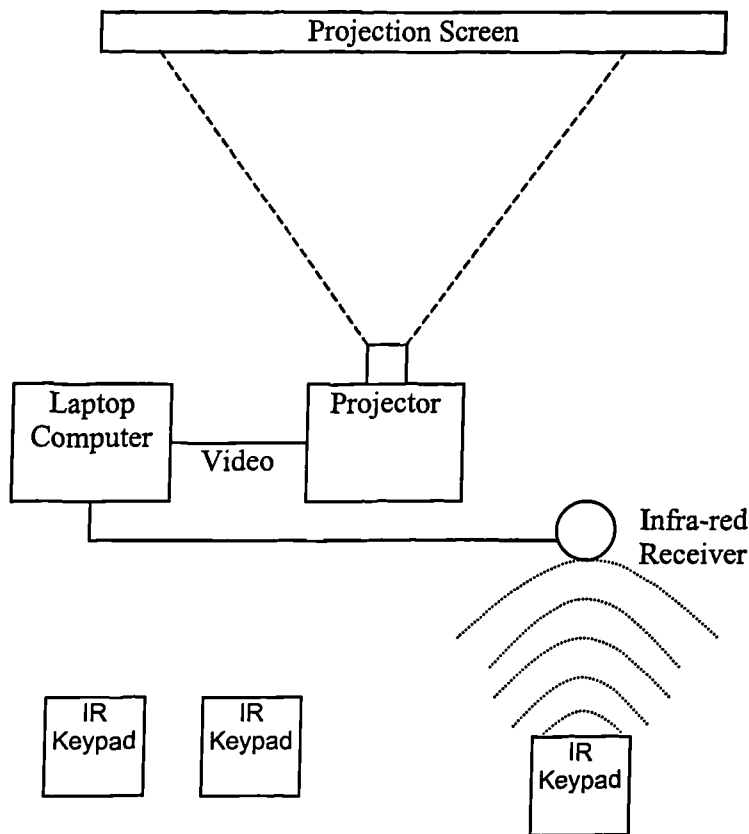


Figure 61: Interactive polling tool used at the validation workshop

The information provided by the workshops was of a similar quality to the traditional interview and questionnaire method. A presentation of selected slides illustrated the research process together with the theory development. Participants at the workshops were requested to score on a number of parameters following each presentation session and invited to add any comments and suggestions.

It is worthwhile to note that the validation workshop was arranged as part of a research workshop organised for one of the research projects carried out by the University of Salford. The validation process was carried out once the major purpose of the meeting was concluded. Through this process, the researcher was able to secure participation of industry leading FM experts together with leading academics in the FM field.

9.5.1 CHANGE IN PERFORMANCE MEASUREMENT SYSTEMS IN FACILITIES MANAGEMENT

Several studies (Neely, 1999; Olve et al, 1999; Gates, 1999) have noted a trend in changing performance measurement systems and have discovered a trend towards the development of strategic performance measurement systems as detailed in section 8.8 of chapter eight. A performance measurement survey carried out by Frigo (2000a) found out that over forty per cent of the respondents reported that they were in the process of changing their performance measurement systems. Of those, approximately seventy per cent had described the change as a “major overhaul” or “replacement” of the performance measurement system (Frigo, 2000b). The trend in changing performance measurement systems continues. This situation is equally applicable in FM, as identified in section 2.11 of chapter two. In the initial survey carried out by the researcher, it was suggested that there was a need to identify new ways to measure FM performance (section 2.10.3.1 of chapter two).

In order to assess the suitability of theory development in chapter eight in creating opportunities for improving FM performance measurement systems, participants were asked to give an overall rating of their existing performance measurement systems to show opportunities for improvement. On a scale of 1 to 6, with 1 equal to ‘poor’ and 6 equal to ‘excellent’, the average rating that participants gave their FM performance measurement systems was 2.33 (where 3.00 was “adequate”). During the workshop, 41.7 % rated their FM performance measurement system as “poor” and 58.3% as “adequate” to “good”. Nobody rated it as “very good” or “excellent”.

The parameters chosen for validating theory were mainly based on identifying the quality of the theory development. The “quality” parameters measured the following, based on Then’s (1996) categorisation for quality:

- 1 – Completeness;
- 2 – Robustness;
- 3 - Practical relevance;
- 4 - Ability to explain the performance measurement concept;
- 5 - A means to benchmark performance measurement outcomes; and
- 6 - A tool for mapping competence gaps

Each parameter had a descriptive scoring range from low to high corresponding to a numeric score of 1 to 5 respectively, 1 being “poor” to 5 being “excellent”. Responses to all the items were scored on a five-point Likert scale to measure respondents agreements/disagreements relating to the above issues and their practical implications, and where necessary their personal perspective of the item in question. This classification was used to record the responses for variables in most of the parts in the analysis. Table 64 summarises the findings relating to the above categorisation. The technique used to describe the results is descriptive statistics and the outputs of the workshop were transformed into the SPSS statistical package for further analysis. A broad summary is provided initially on results, followed by a detailed discussion of results for each performance measurement perspective.

Issue	Valid numbers	Missing values	Mean	S.Deviation
Completeness	12	0	4.25	0.75
Robustness	12	0	3.75	0.75
Practical relevance	12	0	4.00	0.60
Ability to explain the performance measurement concept	12	0	3.58	1.00
A means to benchmark performance	12	0	3.75	0.62
A tool for mapping competence gaps	12	0	3.5	0.8

Table 64: Responses on overall quality of the theory development

Taking the datum of the mean as the test of positive validation, the overall results were encouraging; all scoring values close to the mean. For “completeness of the theory development”, 16.7% voted as good, 41.7% as very good and 41.7% as

excellent. For “practical relevance”, the figures were 16.7%, 66.7% and 16.7% respectively.

The above data was analysed against the “completeness” factor and the findings are represented through the Figure below (Figure 62):

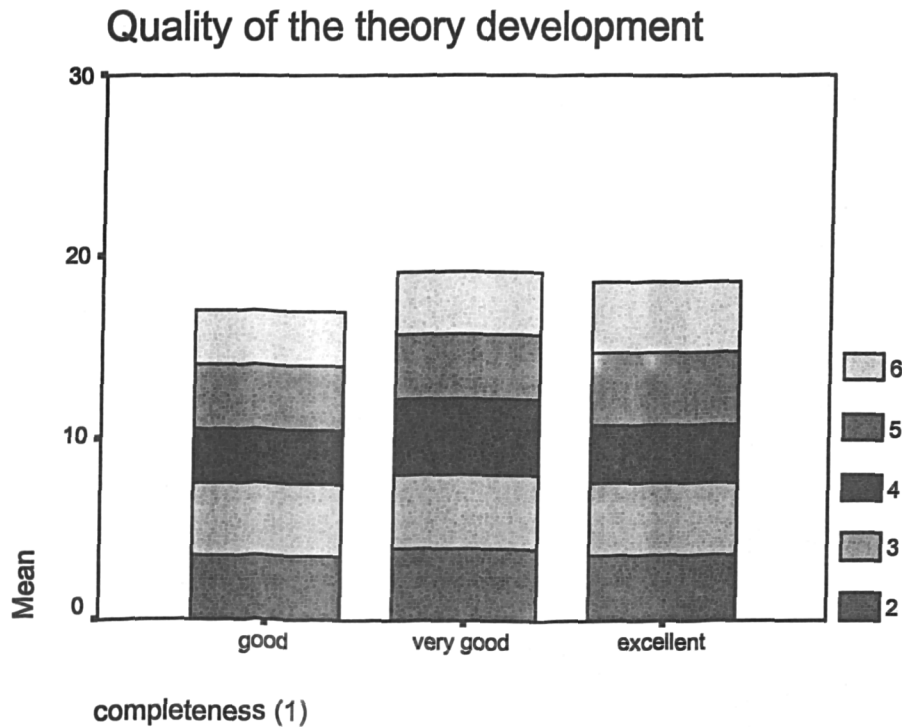


Figure 62: Quality of theory development – Responses

9.5.2 THE USE OF DEVELOPED THEORY AND ITS IMPLICATIONS

During the workshop, approximately 85% of the participants said that the developed theoretical framework was worth implementing. When asked to comment on the benefits of the approach, the participants focused on the following themes:

- A practical framework for implementing FM strategy;
- Use of leading indicators and particularly non-financial measures;
- Focus on few ‘vital’ performance measures;
- Able to understand the drivers of FM business success;
- Easy set-up and maintenance; and
- As a change management tool

The respondents were asked to rate, on a scale of 1 (strongly disagree) to 5 (strongly agree), their opinion of the above statements. Table 65 shows several factors that were assumed to be associated with the application of theory in practice.

Issue	Valid numbers	Missing values	Mean	S.Deviation
A practical framework for implementing FM strategy	12	0	3.5	1.0
Use of leading indicators and particularly non-financial measures	12	0	4.67	0.49
Focus on few 'vital' performance measures	12	0	3.58	1.08
Able to understand the drivers of FM business success	12	0	3.83	0.83
Easy set-up and maintenance	12	0	3.33	0.98
As a change management tool	12	0	3.17	0.94

Table 65: Issues associated with application of developed theory in practice

The following Table (Table 66) summarises the responses, in percentages for the issues which arose at the workshop about the participants' individual perceptions. The table is self-explanatory and it clearly shows the consensus among the respondents about the success of the developed performance measurement theory.

Issue	Poor	Adequate	Good	Very good	Excellent
A practical framework for implementing FM strategy	-	16.7%	33.3%	33.3%	16.7%
Use of leading indicators and particularly non-financial measures	-	-	-	33.3%	66.7%
Focus on few 'vital' performance measures	-	16.7%	33.3%	25.0%	25.0%
Ability to understand the drivers of FM business success	-	-	41.7%	33.3%	25.0%
Easy set-up and maintenance	-	25.0%	25.0%	41.7%	8.3%
As a change management tool	-	25.0%	25.0%	41.7%	8.3%

Table 66: Responses for different issues – As a percentage

As one of the potential benefits of the system, one participant responded; “*The system includes non-financial indicators of financial performance and this describes a new perspective to measure FM performance*” and “*Its possible help to draw management focus on the vital few performance measures*”.

Focusing on leading performance indicators, as a benefit of the measurement system, one respondent described the benefits of the system as “*the system includes leading non-financial indicators of financial performance*”. One of the potential benefits of the system, as supported by the respondents is it helped management to focus on the “vital few” performance measures.

9.5.2.1 FINDINGS RELATING TO THE RELEVANCE OF DIFFERENT CRITICAL SUCCESS FACTORS AND ASSOCIATED PERFORMANCE MEASURES

The validation workshop was further extended to find out the views of the participants of the different critical success factors and corresponding performance measurements exposed through the theory development in chapter eight. Respondents were asked to rate the performance measures in specific categories. Responses to all the items were once again scored on a five-point Likert scale (1=strongly disagree to 5=strongly agree with 2=disagree, 3=neutral and 4=agree). Performance measures in different categories overall received high ratings. The following tables (Table 67, Table 68, Table 69 and Table 70) summarise the findings. Analysis was carried out through descriptive statistics, using SPSS statistical package.

Issue– Customer related CSFs ad performance measures	Mean	S.D.	Poor (%)	Adeq uate (%)	Good (%)	Very good (%)	Excell ent (%)
Quality	4.08	0.67	-	-	16.7	58.3	25.0
Timeliness	3.67	0.78	-	-	50.0	33.3	16.7
Degree of partnership	3.92	0.67	-	-	25.0	58.3	16.7

Table 67: “Customer” related FM critical success factors

Issue – FM internal business processes	Mean	S.D.	Poor (%)	Adeq uate (%)	Good (%)	Very good (%)	Excell ent (%)
Operational service efficiency	4.25	0.62	-	-	8.3	58.3	33.3
Contract management	3.75	0.62	-	-	33.3	58.3	8.3

Risk management	3.83	0.72	-	-	33.3	50.0	16.7
Supply chain management	3.75	0.75	-	-	41.7	41.7	16.7
Workforce management and employee competence	4.42	0.51	-	-	-	58.3	41.7
Work environment	3.67	0.65	-	-	41.7	50.0	8.3
Capital asset management	3.92	0.79	-	-	33.3	41.7	25.0
FM culture	3.50	1.00	-	16.7	33.3	33.3	16.7

Table 68: “Internal FM processes” critical success factors

Issue – FM learning and growth	Mean	S.D.	Poor (%)	Adequate (%)	Good (%)	Very good (%)	Excellent (%)
Strategic facilities information and management	3.50	0.8	-	8.3	41.7	41.7	8.3
Innovation	4.08	0.67	-	-	16.7	58.3	25.0
Professionalism and staff development	3.92	0.67	-	-	25.0	58.3	16.7
Knowledge resource	3.92	0.67	-	-	25.0	58.3	16.7
Research and development	3.17	0.94	-	25.0	41.7	25.0	8.3

Table 69: “Learning and growth” related FM critical success factors

Issue – financial FM base	Mean	S.D.	Poor (%)	Adequate (%)	Good (%)	Very good (%)	Excellent (%)
Value for money	4.58	0.51	-	-	-	41.7	58.3
Asset utilisation strategies	3.67	0.78	-	-	50.0	33.3	16.7
Procurement and purchasing strategies	4.08	0.67	-	-	16.7	58.3	25.0
Financial resource management	4.25	0.75	-	-	16.7	41.7	41.7
Profitability	3.50	0.90	-	8.3	50.0	25.0	16.7

Table 70: “Finance” related FM critical success factors

Respondents welcomed the increasing identification of non-financial measures and agreed that they should be used more extensively in their FM organisation. They believed that non-financial measures reflect the critical success factors of the FM organisation. During the workshop, one participant considered: *“Many non-financial measures will show areas of concern long before the financial measures”*.

In summing up the brief analysis from the validation exercise carried out, it can be concluded that theory generated from this research was supported by the respondents. It appeared that the validation exercise had been invaluable in promoting performance measurement tools in FM in an organisational setting. The instant display of results from each question provided the basis for further

discussions. The manner in which problems occurs, and ways to resolve them, were typical of the discussions in the workshops.

9.6 THE NEED FOR A CHANGE IN FACILITIES MANAGEMENT – APPLICATION OF THEORY IN REAL LIFE CONTEXT

Generalisation, as identified in section 9.2 above, is a question of degree more than binary decisions, which can be carried out by means of specifying a combination of rules of deduction, which have their justification in the theoretical framework as well as the emergent theory (de Vaus, 1991). This section illustrates this in a study carried out to test the theory development within a case study organisation, CACE FM, which represents the central case of this thesis. According to Yin (1994) use of a single case study is justifiable where the case represents a critical test of existing theory.

9.6.1 HOST ORGANISATION

The host case study organisation was CACE FM, a Facilities Directorate of a NHS Trust as identified and described in chapter five. At the time of this research, its Facilities and Business Development Manager was taking part in a process that was used as a vehicle to promote performance measurement practices within estates and facilities. Therefore, the researcher's involvement with the theory testing process relating to constructs developed in chapter eight was welcomed by CACE FM.

9.6.2 THEORY DEVELOPMENT VERSUS THEORY TESTING

Observations require explanation but equally explanations need to be tested against the facts and its not enough simply to collect facts and nor is it sufficient simply to develop explanations without testing them against the facts (de Vaus, 1991). The development of good explanations involves two related processes: theory development and theory testing, the latter being the main focus of this chapter as the former being already dealt with in chapter eight. In this sense, theory testing differs

(Figure 63) in that it starts with a theory (de Vaus, 1991). Using the theory, it shows how things will be in the real world will be predicted.

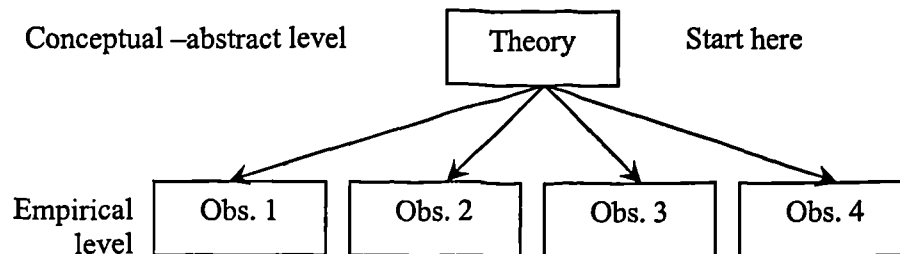


Figure 63: Theory testing [Source: de Vaus (1991)]

In this context, an attempt to make sense of a set of observations often uses existing theory provided the theories developed seem like reasonable summaries or accounts of what has been observed. This process has never been simple since the researcher always tries to make sense of what is seen, bring own commitments, biases and values with the researcher as the observations are interpreted. Therefore, an important thing is to realise this and to accept that the interpretations are likely to be clouded by the researcher's own commitments.

9.6.3 PERFORMANCE MEASUREMENT DEVELOPMENT METHODOLOGY

The Director of Estates and Facilities was keen to contribute to the project and agreed to collaborate in this study of deployment of performance measures. To minimise the researcher's bias towards the findings, steps were taken to minimise the researcher's commitment to affect the findings at this stage. Therefore, this process could be described as a facilitated, non-expert process as identified by Then (1996). That is to say, the senior FM team of the CACE FM developing the performance measurement system was facilitated through a series of workshops using the theory developed in chapter eight aiming to capture their knowledge of the FM business and

translate this into a balanced set of performance measures. The knowledge, therefore, came from the management team rather than the facilitator.

The process had three main phases (see Figure 64):

- Developing FM business objectives;
- Translating these objectives into appropriate performance measures; and
- The implementation of the measures

During the sessions, a rich picture developed as the key critical success factors relating to FM objectives, which were believed to be important to the organisation, were brought to the surface.

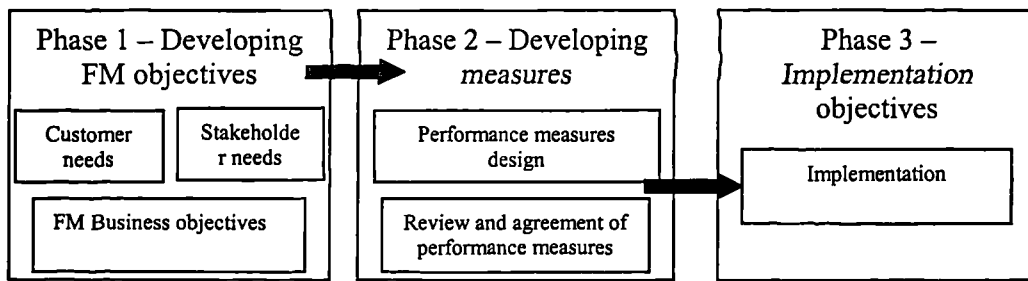


Figure 64: Phases of theory testing with CACE FM [Adapted from Bititci et al (2000)]

The second phase was to identify the individual performance measures which correspond to each of the top level FM critical success factors. During this workshop individuals were asked not only to pick the relevant measure, and how it was going to be calculated, but also why it was being suggested. Improved targets were also discussed and set together with outline suggestions of how the improvement could be initiated. The process identified a set of balanced performance measures aligned with the theory representing the FM organisation's objectives and, in doing so, made the CACE FM's strategy explicit. Involvement in the process helped the facilities managers in understanding the performance measurement system and created ownership of the measures developed. These measures were all presented and reviewed by the management to ensure agreement with the specific measures and commitment to their implementation. Particular emphasis during the review was placed on asking the questions "*What behaviour will the introduction of this measure*

generate amongst those being measured?” and “Is this behaviour desirable?”, as well as assessing the balance of the measures before the final set is agreed. The third phase was the phase in which the measures were implemented and the review process was set up. The workshops commenced in February 2001 and progressed through monthly workshops until May 2001, by which time a set of top level measures had been identified based on the definitions of the theory development identified in chapter eight, and implementation agreed.

The measures were implemented over six months through a series of monthly steering meetings, at which progress was reviewed and CACE FM believed that this was a continuous process. The resulting performance measures and related critical success factors are shown in the following Tables (Table 71, Table 72, Table 73 and Table 74):

Critical success factors	Measures/Tools
Timeliness	Patient environment assessment criteria, customer surveys, service response times
Quality	
Effective service partnership – responsiveness, co-operation and communication	

Table 71: Customer related FM critical success factors and corresponding measures

Critical success factors	Measures/Tools
Supply chain management	Stakeholder communication Monitoring by strategic and trust project board
Operational services	Control assurance standards Service standards
Risk management	Controls assurance (analysis of strengths and weaknesses against the risk management standard)
Contracts and contractor control	Performance against the controls assurance standards, Contracts and contractor controls standards
Environmental management	Controls assurance standards
Human resources	Controls assurance standards

Table 72: Internal FM process related critical success factors and corresponding measures

Critical success factors	Measures/Tools
Development of the estate – operational issues development	Controls assurance standards
Staff development programmes	Staff appraisal schemes, Customer care courses, sickness absence rates, life long learning and skills development programmes, investors in people, staff team briefs, personal development plans, interim and final appraisals
Strategic information and management	Quality development implementation – development and implementation of Estates strategy
Service delivery innovation	Effectiveness of service planning

Table 73: Learning and growth related FM critical success factors and corresponding measures

Critical success factors	Measures/Tools
Value for money	Budget variances, , Sickness absent costs , Benchmarking
Achieving the Directorates Financial recovery plan	Monthly review, monthly trust financial reports, identify and implement savings schemes agreed with the director of finance

Table 74: Financial related FM critical success factors and corresponding measures

Over four months the performance measurement system was updated through use and specific interventions. The use of performance measurement resulted in measures being added and removed from the theory development. Measures were added based on the components identified in the theory development when they provided particular insights into performance and were removed when the information they contained no longer added to the management of the FM function. Subsequently, the created performance measurement system was incorporated into the Directorate’s draft Business Plan for the next financial year. Researcher visited CACE FM in August 2001 and by that time, this process was still an on-going process at CACE FM.

9.6.4 PRESCRIPTION ON HOW TO IMPLEMENT PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

The primary focus of the theory development in FM performance measurement is to create relationships between the FM strategy and its measurements. Having understood what was important for the FM organisation, performance measures are set up to monitor performance and targets are set for improvement. These must then be clearly communicated to all levels of management and staff within the business. This enables them to understand how their own efforts can impact on the targets set in respect of each perspective.

Although the developed theory offers a sample template to choose different FM critical success factors and related measures, it is necessary to acknowledge that the precise format of the measurement system is probably an FM organisation-specific issue. A major task facing an FM organisation in attempting to introduce a balanced performance measurement system, is how to devise a set of measures explicitly linked to its strategy. Underlying this need is the essential condition that the strategy is widely understood and accepted within the FM organisation.

The key to success with the framework to measure the FM performance is the appropriateness of and quality of the measures and whether they are used to enable facilities managers to follow the FM organisation's systematic efforts to exploit the success factors considered most critical for goal achievement. Therefore, the measures must focus on the outcomes necessary to achieve the FM organisational vision and the objectives of the strategic plan. The great challenge is to find clear cause-and-effect relationships and to create a balance among the different measures in the selected FM critical success factors representing the FM strategy. This strategy includes:

- Suggesting measures; and
- Studying feasibility of recording of such measurements.

9.6.4.1 ACTION PLANS

In completing the measurement system, an action plan describes the specifications and steps to be taken in order to achieve the measurement levels. Goals must be set for every measure used. An FM organisation needs both short and long-term goals so that it can check its course continually and take the necessary corrective action in time. The action plan includes both the people responsible and a schedule for interim and final reporting.

9.6.4.2 CASE STUDY REVIEW

In this context, CACE FM had established a performance task force to strengthen performance measurement implementation within the organisation and to promote benchmarking (see Table 71, Table 72, Table 73 & Table 74). Through this process, CACE FM was hoping to place the performance measurement framework on a firm footing by stressing the need to: maintain data reliability using standard procedures, link performance measurement results to individual job descriptions and establish cross-functional teams to make necessary FM improvements. In addition to encouraging cross sectional benchmarking to improve FM performance, CACE FM is committed to making the results-oriented performance measurement framework a useful self-assessment, self-improvement and decision making tool.

Moreover, CACE FM will continue to use the performance measurement framework as the basis to:

- Serve as the central knowledge repository for all performance measurement related matters;
- Share best performance measurement implementation practices within the FM organisation and with other sister organisations within other NHS Trusts;
- Promote the use of this approach in other functional areas such as financial, human resources and program operations;
- Discuss new developments in the field of performance measurement and management including new success factors to the existing framework;
- Assess the need for changes in the core measures; and

- Map any changes in direction that may be appropriate, or develop proposals for consideration by the Trust as needed.

The FM performance measurement system developed in chapter eight is no guarantee of a successful FM strategy and vision, but the strength of the concept lies in the very process of building the measurement system, a process which is an effective way to express the FM organisation's strategy and vision in tangible terms and to gather support for it throughout the organisation. According to Olve et al (1999), an organisation can take several steps to encourage support for performance measurement improvement efforts within its organisation which are equally applicable in an FM context:

- *Make a communication at all levels* - senior management leadership at the top level of an FM organisation is vital throughout the performance measurement process. Management should have frequent formal and informal meetings with employees and managers to show support for improvement efforts and implementation initiatives;
- *Develop organisational goals* - goals need to be specified and published to provide focus and direction to the organisation. To be meaningful, they must include measurable objectives along with realistic timetables for their achievement;
- *Offer training in improvement techniques* - training should be provided to appropriate personnel to help them properly make performance measurement improvements;
- *Establish a reward and recognition system to foster performance improvements* - FM organisations should try to tie any reward and recognition system to performance improvement as measured by the overall organisational performance measurement system;
- *Breakdown organisational barriers* - the official uses of the performance measurement need to be spelled out to all employees in order to overcome unfounded fears about the perceived adverse effects of performance measurement. Stakeholders must be shown that a corporate effort toward performance improvement is the most appropriate course of action – that supporting the performance measurement system is in their best interest;
- *Co-ordinate responsibilities* - implementation of achieving the FM strategy through performance measurement should be a collaborative effort;
- *Demonstrate a clear need for improvement* - if demonstrating a genuine need to improve the FM organisation is not possible, failure is a vital reality;

- *Make a realistic initial attempt at implementation* - perfection will not be achieved in the first instance, therefore initial attempts are required to make progress in the process;
- *Integrate the performance measurement system into the organisation* - incorporating performance measurement and improvement into the existing core organisational management structure, rather than treating it as a separate system, will greatly increase the performance measurement system's long-term viability;
- *Change the corporate culture* - to achieve long-term success it is imperative that the FM organisational culture evolves to the point where it cultivates performance improvement as a continuous effort. Viewing performance improvement as a one-time event is a recipe for failure; and
- *Institutionalise the process* - creating, leveraging, sharing, enhancing managing and documenting performance measurement knowledge will provide critical "corporate continuity" in this continuous process.

9.7 TOWARDS A LEARNING FACILITIES MANAGEMENT ORGANISATION

The ultimate objective of any organisation must be to achieve self-managing workers who are motivated to achieve high quality, capable of achieving high quality and able to exhibit "self control" (Barrett, 1992a), and such objectives can be attained by creating "learning organisations". Olve et al (1999) describe a learning organisation as an organisation which is constantly developing and changing in a way that will keep the organisation competitive in the future.

In this context, in addition to tracking progress on past results, facilities managers can use the performance measurement concept to learn about the future. Managers gain the opportunity to discuss not only how they achieved past results but also whether their expectations for the future remain on track. If a FM organisation followed established strategies, but did not achieve target results, facilities managers then should examine internal capabilities and assess whether the underlying strategies remain valid. Based on such analyses, facilities managers may adjust or redirect their strategies or identify new strategies. This focus serves as a foundation for effective process improvement and risk management. It also completes a feedback loop that supports decision-making at all levels of the FM organisation.

Therefore, it could be argued, one of the main purposes of the theory development in FM performance measurement is to develop and support this concept of “learning organisations” within the FM setting as the measurement structure suggested in this thesis itself is a structure for describing an FM Organisation’s vision and objectives in understandable terms. It will serve as a language for discussions within the FM organisation, a means of interface between people who are jointly developing their view of the FM organisations in which they have a common interest.

9.7.1 PERFORMANCE MEASUREMENT SYSTEM, STRATEGIC DEVELOPMENT AND ORGANISATIONAL LEARNING

As illustrated in Figure 65, Kaplan and Norton (1996) see performance measurement systems as enablers of a circle of learning.

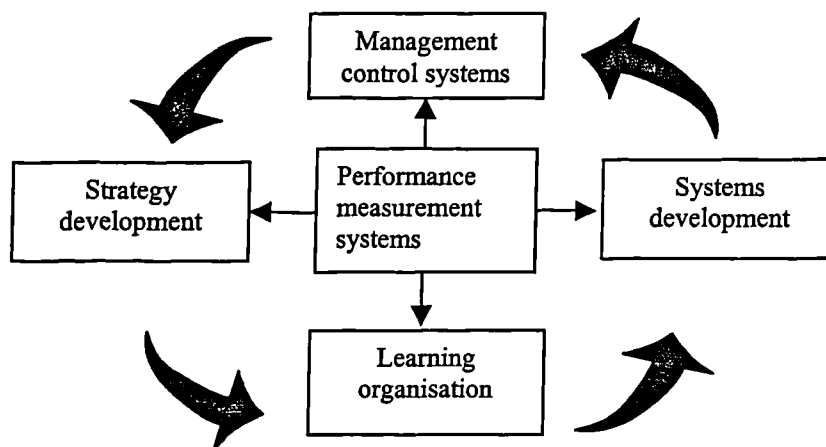


Figure 65: Performance measurement as an organisational enabler [Adapted from Kaplan and Norton (1996)]

In the theory development detailed in chapter eight, the role of the FM strategy was emphasised. The use of performance measurement systems contributes to discussions within the FM organisation, which leads to explicit vision in terms of FM strategies, measures and action plans. In the cycle shown in Figure 65, ideas on FM strategy are followed up through control of their implementation. The role which performance measurement systems may have as management control systems has received the greatest attention and, in section 8.8 of chapter eight, it was discussed how the theory development can broaden the concept of management control to one

of focusing the attention of organisational personnel on what has been identified as important.

Systems developed can prove decisive to success and only then can the FM organisation monitor developments on an on going basis and thus obtain specific measurements often enough to be capable of acting on the experience which it is acquiring. In this way the theory development can contribute to organisational learning.

Once performance measurement results are correctly analysed, communicated to relevant parties, used for development of any corrective action, and for revising performance measures as needed, effective performance management requires that the FM organisation considers strategic goals, that is, where it expects to be in the future, and to incorporate these goals into the performance management structure. Establishing organisational improvement structures and procedures will help to implement performance improvements and to make commitment to performance management.

An FM organisation can use the performance management data to support oversight and compliance activities. If performance measures are properly aligned with significant objectives, then review efforts addressed through the performance management system should be focused where they will have the most benefit. Reviews should analyse the causes of concern and identify appropriate remedies.

9.7.2 SHARING BEST PRACTICES

An FM organisation can also use the performance measurement results and associated performance management systems to benchmark performance against other FM organisations. It also serves as one input for developing target goals. However, the strength of benchmarking is not in identifying best performance but in learning best practices. That is, the FM organisation should identify, study, analyse, and adapt the “best practices” that led to the “best performance” and understand the best practices that help facilities managers to make better-informed decisions about where and how to change their FM organisation.

9.8 SUMMARY OF THE CHAPTER

The theme of this chapter has been to generalise the theory development described in the previous chapter which emphasised that theory development is an important goal of FM research. It has been argued throughout this chapter that theories should be empirically based and evaluated against empirical reality. Theories which have been tested have identified which observations might be relevant to a problem and theory testing therefore is central. Theories help to make sense of a set of observations by helping to see what broader concepts the observations reflect and by providing a plausible account of how observations relate to one another.

In this context, this chapter describes how theory has provided a context in which to place particular observations which helps to see the possible significance and meaning of observations.

The results from the validation workshop supported the theory development that has resulted from this research. The need for an integrated performance measurement system that considers facilities as a vital business resource supporting the realisation of the overall organisational objectives was endorsed by workshop participants.

The generalisation results from the development of the emergent theory described in chapter eight were confirmed by the case study re-visited. However, as previously mentioned, the question of generalisation will remain outside the scope of this thesis, but the body of evidence supports the theory that the performance measurement development described in chapter eight offers a medium to deliver a strategic vision of FM while providing an evaluation system. There is no doubt that the concept has delivered a totally new and radical approach to FM performance measurement. The system's performance measurement capability has been considered from a number of unique but valid perspectives including a comprehensive overview, which considers all key aspects of the FM function.

Performance measurement is not an end in itself, it exists only to show the way to future action. This requires interpretation of the results and the identification of what

is good, what is bad, and what needs changing. This chapter has further shown that theories are always tentative attempts to find some plausible explanations for a set of facts. They ought to be tested and be subject to modification and revision.

In this context, the next chapter presents the aspects of the research findings by bringing all ideas together to provide an overview. It starts by providing the main findings of different chapters and ends with a review of the implications of the theory development in this research in terms of generating new knowledge in FM followed by suggestions for future research in the field.

Chapter 10

Conclusions

POSITION OF THE THESIS

Chapter 1 Introduction to the research	Chapter 2 Theoretical background and review of literature	Chapter 3 Theoretical framework	Chapter 4 Epistemology and methodology
Chapter 5 Central case study	Chapter 6 Supporting cases	Chapter 7 Survey findings (Quantitative analysis)	Chapter 8 Interpretation and theory development: Performance measurement in facilities management
Chapter 9 Use of theory to create a performance measurement tool in facilities management	Chapter 10 Conclusions		

*"One never notices what has been done;
One can only see what remains to be done"*
Marie Curie

10.1 OVERVIEW

The context of this research is set against a period of rapid changes on a global scale where organisations are confronted by intense competition within business environments that is characterised by dynamic changes from all sides. In this respect, this research study has focused on the evolving role of performance measurement within FM organisations.

Discussions presented in previous chapters have already given a detailed account of the research's main findings. This final chapter of the thesis begins with a summary of the key findings from each chapter by discussing general aspects of the research findings bringing all ideas together to provide an overview as identified by Pacitti (1998). The contributions to theory and to practice and the limitations of this research are then discussed. The last section of the thesis indicates future research directions in the field based on the findings of the thesis.

10.2 SUMMARY OF CONCLUSIONS OF EACH CHAPTER

10.2.1 THEORETICAL BACKGROUND

The contribution that facilities services make to the success of organisations is being increasingly recognised in the literature (Alexander, 1996a; Barrett, 1995; Then, 1996; Doyle, 1992). This refers to the increasing importance of service to supplement the core organisation. Fitzgerald et al (1991) advocated that service based firms needed to measure their performance in six different dimensions – financial performance, competitive performance, service quality, innovation, flexibility, and resource utilisation. Research carried out by McFadzean (1995) concentrated on the relationship of an organisation as a whole with business results and the understanding of the link between business and FM. Hence many research programmes have been focused on identifying critical success factors in FM in modern business environments.

Part one of this chapter outlined a historical review of the role of FM within the context of general management theory and an overview of the role of facilities and their ongoing management issues. Further, it illustrated the trends of the FM organisation over the last two decades using the four generations of FM model. These trends are summarised in section 2.3.4.2.1 as “Tasks and Functions”, “Processes and Competencies”, “Resource Management” and “Strategic Facilities Management”. Hence, concepts such as core competence, FM processes, and more recently interest in performance measurement in FM has come to the forefront of the FM literature as tools to manage the integrated FM organisation.

A theoretical overview of the concept of performance measurement is reviewed in Part two of this chapter. The review of the literature on performance measurement aims to address the main issues of the field, and some of the reasons for the different ways in which performance measurement are examined in the literature. The prescriptive writings on the concept of performance measurement were discussed in section 2.6 of chapter two. Throughout this Part, the importance of performance measurement in today’s organisations has been highlighted, together with evidence of how this revolution came about.

Part three of this chapter reviewed current performance measurement applications in FM through the means of an initial fact finding survey and follow-up interviews, based on which a reasonable case for the need for and benefits of performance measurement systems in FM environments have been made:

- To understand the core business influence on facilities;
- To meet current core business needs – assessment of the usefulness of FM;
- To ensure facilities perform to the expectations of the users; and
- To secure the future.

It has further identified through the extensive literature review that the following explorations are required in FM performance measurement setting:

- The service received by the customer;
- Its contribution to the core business of an organisation;

- Its support to business operations and productivity; and
- The effectiveness of its own FM arrangements.

If one already had knowledge of the situation in the FM sector, as a whole, the need for measurement systems to measure FM quality would have come as no surprise. Great interest was shown in the prospects of such theory development by both industrialists and academia. It was, nonetheless, a useful contribution to confirm this expectation.

The evidence from the literature review, initial survey and the pilot study repeatedly pointed to a lack of knowledge, organisational support or motivation among facilities managers and workforce to create integrated performance measurement systems and implement the performance measurement principles in FM.

10.2.2 THEORETICAL FRAMEWORK

A framework was proposed in order to provide a basis for the theory development in FM performance measurement. The framework was based on the existing theoretical concepts in different performance measurement theories identified in Part two of chapter two. The framework was further based on the strategic influence of FM towards its performance and it takes account of financial and non-financial measures in FM and the visibility of various performance measures through case studies.

The proposed theoretical framework and the resulting classification constituted a contribution in the form of a new tool to expose performance measures in FM. The model may be viewed as being a synthesis of work by Kaplan and Norton's Balanced Scorecard (1996); Barrett's (1995) systems view of FM; Neely's (1998) performance prism and Simpson's (1998) work on different elements of performance perspectives, even though the reader may find it closely related to Kaplan and Norton's Balanced Scorecard concept as described in section 2.6.6.2 of chapter two.

Using the proposed theoretical framework, it was envisaged that, through the case studies, issues would be exposed relating to FM performance measurement.

10.2.3 EPISTEMOLOGY AND METHODOLOGY

Part one of this chapter outlined the limitations of the research including social science research in general, the case study method in particular, and the subject area itself (section 4.5). Section 4.7 concluded that the study of performance measurement in FM organisations should take place within the context in which it occurs and should aim to provide descriptive accounts of the phenomenon. The use of qualitative research methods, such as the case study, are therefore the preferred method as quantitative research methods suffer from a lack of consideration of the contextual differences. However, the former method also suffers from a lack of generalisable results. The practice of combining both methods to overcome shortcomings in each was outlined in section 4.6 and was adopted throughout this research.

Part two of this chapter presented the research objectives and methods which, in the former case, are based on the findings of the literature review, the initial fact finding survey, the findings from the pilot study detailed in chapter two, and which, in the latter case, take into account the limitations of the research. Table 27 summarises the phases of the research.

The case study research was designed from Eisenhardt's (1989) process of building theory (present in Table 35) and takes into account the limitations of the case study method using the reliability and validity measures as proposed by Yin (1994) as outlined in section 4.5.1. The primary unit of analysis of the case studies in this research is the FM organisation. The FM sub-organisational level provided a more structured environment within which to study performance measurement and its effects and gave an insight into the ability of the FM organisation to adapt to the external environment through performance measurement applications. However, in order to obtain a more overall holistic view of case study organisations, initial interviews were aimed at collecting data at the core organisational level. This also helped to explain some of the events at the FM organisational level as it provided an insight into the context in which they were occurring.

In analysing qualitative data, techniques of the grounded theory approach were adopted including open coding and pattern matching (sections 4.17.10.1 and 4.20.1.1) and which are included in Eisenhardt's (1989) process of building theory from case study research. Furthermore, the use of data collection and data display techniques as proposed by Miles and Huberman (1984) were also used and found to be an effective way of managing the qualitative data. The grounded theory techniques were successful in providing tools to build the theoretical findings from qualitative data.

Section 4.19 outlines the survey research which forms the qualitative methods used during this research. The quantitative research in this thesis has a dual purpose. Firstly, to support the findings of the qualitative research and secondly, to indicate formal relationships between constructs which would otherwise have gone unnoticed in the qualitative data analysis. The statistical analysis which was undertaken on the quantitative data included factor analysis and correlation analysis. One must remember the sole purpose of the quantitative data analysis was solely for the purposes mentioned above and the findings of the quantitative analysis are inconclusive in statistical terms.

The summary in section 4.17.1 outlines a research strategy which aims to provide descriptive accounts of performance measurement in the FM organisation from which prescriptive tools are elicited.

10.2.4 CENTRAL CASE STUDY

The CACE FM case forms the central case study of the thesis. This organisation has been deemed as representing "best practice" amongst the cases investigated during the research on account of the mechanisms provided for managing performance measurement in FM. In addition, the organisation provides evidence for some of the trends which were found in the four generations of FM model including the strategic awareness of FM at the core organisational level, a focus on development as opposed to research and greater integration between the various functions of the organisation.

CACE FM was the Estates and Facilities Directorate of a Healthcare Trust located within the centre of the North West of England and provides a wide range of services to a multi-cultural and diverse population. The CACE FM recognised in its service that the cultural and economic diversification of its patients and visitors required services that are timely and sensitive in approach, ensuring the delivery of appropriate local and regional healthcare services.

Transformation within the core operation demanded a similar transformation within FM, one that would reinforce the performance links and enable the organisation to gain competitive advantage. An internal service culture evolved and new facilities strategies emerged, more closely aligned with the objectives of the core organisation, and more visibly connected with performance.

The information collected from the CACE FM case study provided exemplary insights into the generation of a performance measurement culture in FM, the alignment of FM functions to the core business and overall organisational effectiveness.

10.2.5 SUPPORTING CASES

This chapter presented seven case studies which support or build on the findings from the central case: namely, CAAB FM, CAMA FM, CASU FM, CALO FM, CALA FM, CABO FM and CASA FM.

Before CAAB converted to a plc status in 1989, it was a building society owned by its members, who subsequently became shareholders following the conversion. CAAB FM is a good example of an organisation which operated in a sector that had seen considerable changes in the last five years. The management of facilities was seen as a critical component in this realignment of the business. The CAAB case provided further evidence that performance measurement needed to be formally managed in an FM organisational setting. CAAB FM had moved its FM strategy forward to a point where the organisation was able to recognise and evaluate FM developments that may offer benefits in terms of added business value and business efficiency. CAAB FM encouraged seeing the relationships with the customers,

shareholders and communities as partnerships and encouraged sharing the responsibility for making these partnerships successful and, therefore, partners can expect to share in the rewards they bring.

The CAMA NHS Community Health Trust sought to provide health care services within the actual setting of the local community. Within the NHS it was only over the last decade that the art of FM, had emerged as an all-embracing philosophy by which the factors that govern facilities effectiveness were co-ordinated to improve health care and organisational viability. The prime criterion was, in terms of CAMA community health care FM, to sustain a satisfactory health care environment through the empowerment of key socio-technological factors. The facilities function had a major role to play in the delivery of quality health care. There were two perspectives from which this contribution can be judged, and they were in terms of the contribution made towards the Trust's strategic realisation/Trust's core aims, and towards quality of care received by patients. The performance assessment, or measurement, of the FM process represented an important strategic development of the facilities function within CAMA. Assessment data was fed directly into, and therefore greatly assisted, the strategic FM decision-making process within CAMA. This in turn helped add value to the corporate strategic management process within the trust.

CASU was a University, based within the heart of the modern centre of a major city in North East of England. The management and leadership required at all levels to move the service from already being efficient and effective at what it did, to a position of providing excellence that was represented by quality services in appropriate areas, at the right time, closely matched to client need at least possible cost, was the continuing challenge facing CASU FM. Facilities services were delivered to consistent standards, serving an increasingly demanding and diverse customer base. The development thrust of the CASU FM continued to be one built around the common university drive to deliver excellence throughout, by a clear quality strategy and encouragement of staff to fulfil their potential and maximise individual and team contributions.

Established in 1997, the CALO built on the strengths of the three previous local authority associations. The CALO organisation was unusual in that it contracted out the majority of its FM services, however that arrangement appeared to work extremely well in this case. Perhaps the most noticeable effect of this approach was that the facilities systems tended to be much more formal and structured and this was because the contracted staff were not necessarily always on site and so workloads had to be planned carefully to make the best use of people's time. CALO's FM had not been involved in strategic decision making in the past and the researcher was aware that CALO had little understanding of FM, and of how well the integration of this and the strategic influence, can enable CALO to deliver best value and best practice.

The CALA University was a modern University with a well-deserved reputation for excellence, situated in the North West of England. CALA FM aimed to provide advice and information on all land and property matters related to the university estate, ensuring quality of the built environment, establishing standards and maximising the use of the estate and facilities on sound value for money criteria and to provide an effective reactive maintenance service that ensured the estate operated efficiently and to agreed service standards. CALA FM, through its development plan, aimed to operate at a level that not only gave value for money but also strengthened customer confidence within the core business of the university by delivering an improved quality of service.

The CABO NHS Trust was formed in 1994 being previously part of a Health Authority situated within the North of England. The CABO's estate and facilities comprised a variety of buildings of varying ages and condition and associated services. FM within CABO covered a wide range of activities as identified in section 6.7.3 of chapter six, and the organisation had chosen both in-house and contracting out options to carry out day-to-day FM operations. Management of facilities and estate was supported by detailed information collection and analysis. The measurement process described in section 6.7.4 of chapter six was an example of one way in which CABO organisation learnt about its FM activities.

The CASA FM case was the final supporting case study in the thesis. Whilst the University of CASA already attracted students from a wide range of socio-economic and ethnic groups there were significant opportunities open to it. FM was in a state of rapid revolution. While the core activity of CASA had a mission and objectives, it was also correct to say that the CASA FM had a mission and objectives within the overall organisational scheme (sections 6.8.2.1 & 6.8.2.2 of chapter six). CASA defined FM as the support services and physical resources of the institution that were key to its business success. Whilst the higher education properties can contribute to high quality education, it was the interrelationship within the organisational context that provided the catalyst for improved performance. Performance evaluation played an ever-increasing role in building design as external and internal factors place more demands upon the facility. Measuring performance explicitly focused attention on feedback loops and this influenced behaviour. This was especially true for CASA which was entrusted with the responsibility of utilising public funds judiciously. Performance measures provided a mechanism to both learn from the past and evaluate contemporary trends in the use of facilities.

Summaries of above seven cases are illustrated in Table 41.

10.2.6 SURVEY FINDINGS (QUANTITATIVE ANALYSIS)

The quantitative analysis findings, which included factor analysis and correlation analysis, are presented in chapter seven. Factor analysis results provided variables which are representatives of the concepts of performance measurement outlined in chapter two. This allowed an exploratory examination of the relationships between these variables. Furthermore, the findings supported one of the assumptions of this thesis, that is the ability of the FM organisation to create performance measurement systems arises within its existing knowledge base.

Correlation analysis explained the possible relationships that might exist among different types of performance measures. One of the criteria helped to determine the contribution of performance measures to the FM organisational strategy, as identified in section 8.10.1.1 of chapter eight, was the existence of cause and effect relationships among different variables of the performance measurement system, that

is every measure selected for the performance measurement framework should be part of a chain of cause and effect relationships that represent the strategy. In this respect, correlation analysis tried to justify the existence of such relationships among the different variables. Some examples are illustrated in section 7.3.5 of chapter seven.

10.2.7 INTERPRETATION AND THEORY DEVELOPMENT – PERFORMANCE MEASUREMENT IN FACILITIES MANAGEMENT

The findings presented in part one of this chapter were related to the concepts of performance measurement, including different types of critical success factors (section 8.1) and the exposure of related performance measurement constructs. Drawing from the performance measurement literature, four broad types of performance measurement categories in the *FM organisation were interpreted* (customer relations, internal FM process, learning and growth and financial implications) and defined in sections 8.2, 8.3, 8.4 & 8.5. Critical success factors were exposed through case studies described in chapters five & six, and the quantitative analysis detailed in chapter seven. Each of these broad types of performance measurement was supported by different critical success factors and corresponding performance measures and was illustrated using evidence from the qualitative data captured through the case studies. The findings here provided strong evidence that, for performance measurement purposes, it is always desirable to expose critical success factors which are explicitly derived from the FM strategy.

The types of different critical success factors exposed and their corresponding measurements were summarised at the end of each performance measurement “theme” (for example, section 8.2.3.2). The discussion surrounding the exposure of different critical success factors provided the basis for the subsequent theory development in FM performance measurement, exposing the types of measures for the critical success factors having already been identified.

Part two of this chapter described in detail the prospects of the theory development and discussed the common issues derived from performance measurement theory development in FM. Links between business performance and FM performance was

examined. Case studies carried out highlighted principle linkages especially the interaction with the core business on a regular basis to identify current facilities requirements.

This section further emphasised how to bring together different kinds of measures in a single comprehensive view of the entire FM business. In this sense, theory development brought together customer related FM measures, FM internal process related measures, FM innovation and future potential issues and FM financial base.

It further identified the importance of strategy communication through measurement. As shown in section 8.10.2.2 of chapter eight, Renaissance Worldwide (1999) commented that today's business rationale is driven by value-added and knowledge based solutions. Thus, strategy has taken a new meaning. Theory developed in performance measurement and management in FM, as identified in this section of the thesis, helps FM organisations map out a clearly defined destination, as well as a plan to navigate by. The structure of the performance measurement system provided a framework to translate strategy into operational terms so that it can be effectively communicated, understood, and acted upon. Some of the other emerging themes including clear structure FM, good enough performance measurement etc. are listed in Table 63.

Part three of this chapter summarised the concept of "theory development", which is the main theme of this thesis, and argues that through the use of the assessment approach based on the developed theory, FM organisations could fundamentally redesign FM performance assessment. The theoretical framework illustrated in chapter three was used in both the qualitative and quantitative research as the constructs were found to be reliable and valid. Thus the theory development findings of this thesis are compared with other popular methods available in order to increase the validity and reliability of the study. The comparison and contrast with relevant and existing theories provided further theoretical validity for the thesis, as outlined in Table 35 of chapter four, derived from Eisenhardt (1989).

10.2.8 IDENTIFICATION OF PERFORMANCE MEASUREMENT TOOLS IN FACILITIES MANAGEMENT

Critical analysis of FM practice showed that a fundamental step for enabling a comprehensive implementation of the theory development described in this research must start with the establishment of good relationships with the organisation itself. In this context, in this chapter the performance measurement tools (that is, the prescriptive findings of the research) were tested in a workshop and subsequently in a real life case study. A validation workshop confirmed the completeness, robustness, practical relevance, and the ability to explain the performance measurement concept. It also provided a means to benchmark measurement outcomes and its use as a tool for mapping competence gaps.

Application of the developed theory in a case study (research re-visited the central case of the thesis, CACE FM case study for this purpose) helped the organisation to form a performance measurement framework which had explicit links to its FM strategy, and, in doing so, made the organisation's FM strategy explicit. Therefore, systematic application of the theory of FM performance measurement was likely to affect the effectiveness and efficiency of the FM process within the case organisation.

It is worth emphasising that the researcher understood that improvements in FM performance have to pass through a naturally evolutionary process, starting from improvements in quality and time and then progressing towards lower cost and service efficiency. Therefore, whilst the business survival may require the focus in one or two competitive criteria of the performance measurement framework identified in the short-term, it seems that a logical and evolutionary sequence is the most likely way to achieve sustainable competitive advantage in the long-term.

10.3 CONTRIBUTION TO THEORY

The main body of this thesis is an explanatory study which has tried to investigate the applicability and implementation of some core performance measurement principles in FM environments. The principles investigated were the "FM customer

base”, “FM internal processes”, “FM learning and growth” and “FM financial status”. The analysis uses empirical evidence collected in eight case studies, coupled with additional information assembled via other data collection methods.

Performance measurement principles under investigation have evolved throughout history and represent part of what is considered the interpretation of some of the core (see chapter three) performance measurement practices. Therefore, this study used these principles as the theoretical framework for analysing, determining new theory representing FM performance measurement practices. The following sections give detailed contributions of this thesis, to theory, by taking into consideration the research propositions described in section 4.15.2 of chapter four, as a comparison with existing performance measurement literature in FM, as a way of developing new theory, as an addition to FM existing knowledge base and as implications of the theory to FM management innovation:

10.3.1 PROPOSITION ONE - FACILITIES MANAGEMENT ORGANISATIONS REPRESENTED THE NEED FOR PERFORMANCE MEASUREMENT DEPLOYMENT

A major hypothesis set at the commencement of the study was that there would be a need to develop new performance measurement practices in FM. Hence, comprehensive analysis of existing literature and practice tried to identify that there is such a need in order to confirm, or deny such hypothesis. The subsequent items present the main findings of this research in this respect:

- It has been emphasised that, despite the considerable achievements of the last few years, the field of FM remains at a very early stage of development in which it has few secure methods of its own to underpin good practice experience;
- Large potential market for application, diversification of property professions and context for property professions have been identified as potential opportunities for performance measurement deployment in FM (see Table 18);
- The need for new approaches to measure performance in FM has been identified by highlighting the problems with existing approaches of performance measurement in FM;

- Performance measurement in FM is currently focused on operational level measures rather than measures representing the strategic FM issues;
- Performance measurement systems enrooted in general management literature (see section 2.6.6 of chapter two) hasn't been fully utilised by the FM community;
- Most of the existing performance models in FM do not explain the mechanisms through which FM can contribute towards the success of the core organisation;
- Current performance models to FM lack pure empirical support;
- Descriptive guidelines on performance measurement in FM has failed to generate useful guidelines for facilities managers; and
- Current systems lack generalisability;

As indicated above, there is no indication of how performance measurement activity is permeating within the FM organisation, leaving room for the identification of new ways of deploying performance measurement within FM organisations.

10.3.2 PROPOSITION TWO - THERE WAS EMPIRICAL EVIDENCE LEADING TO THE DEVELOPMENT OF NEW PERFORMANCE MEASUREMENT THEORY IN FACILITIES MANAGEMENT ORGANISATIONS

A major research construct set in section 4.15.2 of chapter four was that there would be empirical evidence in FM organisations matching the core performance measurement principles identified in chapter three as the theoretical framework. This process of searching for validation helped to refine these principles and interpret them for application in FM environments. Following items represent the main findings of this research in this respect:

- It was found, important theoretical replications for core performance measurement principles investigated in this thesis;
- General definitions of core performance measurement principles can be generalised to FM, but required creative adaptation when it comes to implementation in practice;
- There are great room for improvement in FM by using the theory development illustrated in this thesis as the base line.

10.3.3 PROPOSITION THREE – A GENERAL FRAME OF CLUSTERS OF PERFORMANCE MEASUREMENT MATRIX FOR FACILITIES MANAGEMENT HAS SET UP

Critical analysis of existing literature in FM indicated that performance measurement in FM requires the development and identification of more effective performance measurement mechanisms. New performance measurement techniques need to address the gaps of knowledge relating to performance measurement principles found within FM .

In this context, it is worth re-emphasising the importance of having a clear understanding of the underlying issues and organisational demands relating to performance measurement in FM (Varcoe, 1996a). In chapter two, the use of performance measurement concepts in the field of FM have been identified as relatively sparse and this has led to an over simplification of the role and the processes of performance measurement in FM organisations. The lack of empirical research can be attributed to the ambiguities in the field, making it difficult to approach.

By using a combination of induction, that is allowing concepts to emerge from the data such as types of critical success factors and corresponding measures, and deduction, that is testing the existing theoretical framework developed, this thesis has sought to advance the field by examining the subject of FM within the context in which it occurs. In general, this thesis has sought to provide insights into performance measurement and how it applies in the FM organisation. Furthermore, the use of quantitative methods in this field has been practically non-existent. The performance measurement questionnaire developed based on the initial qualitative findings was relatively successful in that the majority of the results supported the qualitative findings. This constituted a contribution to the FM field as it further established the validity of the constructs.

10.3.4 COMPARISON WITH EXISTING PERFORMANCE MEASUREMENT LITERATURE IN FACILITIES MANAGEMENT

Section 2.11.2.1 of chapter two describes the need to develop new theories relating to performance measurement in FM where as section 3.3 of chapter three identifies problems associated with current performance measurement systems. In this context, the identification of different types of FM performance which can exist in the FM organisation represents a new perspective through which to measure performance. The qualitative and quantitative data indicated that the performance measurement process begins and ends with the organisation's existing knowledge base. This finding is in line with Cohen and Levinthal (1990) (Cited in Pacitti, 1998) who say that the absorptive capacity of the organisation is a function of its existing knowledge.

The literature review in chapter two indicated that there are gaps over the availability and application of performance measurement in FM. Using the concept of existence of different types of performance measures in the organisation (Kaplan and Norton, 1996; Neely, 1998; Stone, 1996; Ghalayini and Noble, 1996), different types of critical success factors and associated performance measures are developed which provide a basis upon which to measure performance in FM organisations.

Discussions surrounding the balance between financial and non-financial performance measures in the research findings is similar to earlier research findings of Madeley (1996) who studied the amount of integration between different types of performance measures and the impact this had on the performance of the organisation as a whole. Furthermore, following their study in service industries, Fitzgerald et al (1991) proposed a framework consisting three main elements: a control model within which performance measurement is sited, a recommended level of organisational analysis for performance measurement and a range of dimensions for performance measurement. This supports the findings from this thesis that, leading FM organisations agree on the need for an integrated performance measurement system which emphasises positive aspects resulting from the combination of influences of FM on all business functions.

Brown and Laverick (1994) argued that the business performance measurement revolution has identified that traditional financial measures do not give a true reflection of corporate performance. Lee et al (1995) refer to this as, “traditional performance measures that enterprises have used may not fit well with the new business environment”. This research has confirmed this proposition. Hence, it is emphasised in this research, that there is a requirement for an integrated performance measurement systems for FM.

Further, section 2.6.6 of chapter two details different performance measurement frameworks, which have been tested for implementation as balanced performance measurement systems. The approach described in this thesis was built around the theoretical framework identified in chapter three and was built on theory and practice by combining concepts such as Kaplan and Norton’s “Balanced Scorecard” (1996), Neely’s (1999) “performance prism”, etc. Close links that the performance measurement theory developed for FM has with these different types of well-used performance measurement systems, particularly with the Balanced Scorecard concept as described in section 2.6.6.2 of chapter two, increases the validity of the findings.

In this context, the theory development findings of this thesis can be compared with many previously developed performance measurement theories as cited in sections 2.6.6 & 2.10.3.2 of chapter two. This reflects the all-encompassing nature of the field of performance measurement. For example, comparisons can be drawn specifically with the existing publications surrounding the subject area of the thesis, which includes performance measurement and management. Similarities can also be drawn with the theories of the management of FM in general including earlier studies of process capability assessment (Sarshar et al, 1999) and investigations of the interface between FM performance and overall organisational strategy (Alexander, 1996b; Madeley, 1996; Then, 2000). The comparison and contrast with relevant and existing theories provides further theoretical validity for the thesis, as outlined in Table 35 of chapter four, derived from Eisenhardt (1989).

The pace of change brought on by intense global competition and rapid technological developments in the recent past have meant that the assumption of stability in steady

growth is no longer true (Then, 1996), and this change has particular significance for the ongoing management of facilities. The derivation of appropriate performance measurement mechanisms to support facilities strategies that are continuously aligned with strategic business objectives was clearly an essential outcome of the theory development process into FM performance measurement. Thus, this study has attempted to develop theory that measures the practice of FM in order to fulfil this requirement.

10.3.5 ADD TO FACILITIES MANAGEMENT EXISTING KNOWLEDGE BASE

In the past two decades, FM has evolved from a set of heuristic ideas to a portfolio of somewhat developed concepts and principles. This has followed the typical path of knowledge development. By focusing on particular desired performance measurement outcomes, and working back to discover the relative importance of performance measurement variables in FM as determinants, an insight into the subject was provided. Moreover, by integrating different performance measurement perspectives into one theoretical model, a comprehensive framework was built which will help to understand the performance measurement in the FM organisation and its impact and value.

Theory development outlined in this thesis has further helped to include FM related performance measurement variables into the existing frameworks of FM which will ultimately provide an adapted model which researchers in the FM field can make use of in their attempt to build generalised theories of FM.

Furthermore, providing all-encompassing performance measurement definition for FM and operational measures of performance in terms of certain critical success factors representing the FM strategy will primarily help to expand the theoretical and empirical literature in FM.

10.3.6 IMPLICATIONS OF THE THEORY IN FACILITIES MANAGEMENT INNOVATION

One of the direct benefits of developing a deeper understanding of the performance measurement principles presented in this thesis is the possibility of transforming those ideas into innovative FM practices. Observations of performance measurement practices in FM has shown that the implications of performance measurement concepts in FM still is not fully understood. Hence, the use of performance measurement concept into R & D is, without doubt, a fundamental requirement for enabling higher efficacy of innovations in FM industry. In general, innovation contributes for reducing non-value adding activities in the FM sector and the researcher believes that the theory developed in this thesis provides a basis for such a culture within FM.

10.4 CONTRIBUTION TO PRACTICE

As already identified in section 2.3 of chapter two, the advancement of FM as a profession and a serious new discipline needs to be supported by good quality academic, as well as applied, industry-based research. Research in FM must have its primary focus and the need to address the nature of professional knowledge and practice and reflect on ways in which FM professionals actually develop their practice.

The practical implications occurring from this research are quite clear. As identified in section 8.10 of chapter eight, it has produced a framework for concentrating management attention to the most important FM critical success factors that directly impact upon the core business. Therefore, the contributions to the practice of FM of this thesis are centred around the types of performances measurement instruments developed as identified in chapter eight.

10.4.1 A FRAMEWORK FULFILLING THE OBJECTIVES OF SUPPORT SERVICES

Prospects of the theory development summarised in section 8.13 in chapter eight have argued that theories help to make sense of a set of observations by helping to see what broader concepts the observations might expose, what broader concepts the observations might reflect and by providing a plausible account of how various observations relate to one another. In this context, the performance measurement theory developed described how it has provided a context in which to place particular observations, and helps to see the possible significance and meaning of observations.

In this respect, a validation workshop together with a case study application was carried out to justify the reliability of the theory development. The results from the validation workshop supported the theory development that had resulted from this research. The generalisation results from the development of the emergent theory described in chapter eight, which was confirmed by the CACE FM case study revisited, were described in section 9.7 of chapter nine.

The system's performance measurement capability had been considered from a number of unique but valid perspectives including a comprehensive overview which considered all key aspects of the FM function. Therefore, chapter nine has further proved that theories are always tentative attempts to find some plausible explanation for a set of facts. They ought to be tested and be subject to modification and revision.

10.4.2 USE OF DEVELOPED THEORY AS A BENCHMARKING TOOL

The framework fully described in chapter eight can be used as the basis to conduct an audit of the existing knowledge base of performance measurement systems, their applications and implications for the FM organisation, and to understand the degree of consensus at different levels within the FM organisation. The distinction between performance measurement constructs at the various levels also provides an indication of the extent to which the FM organisation should seek to integrate various performance measurement functions contributing to the delivery of FM processes.

10.4.3 CREATING A LEARNING FACILITIES MANAGEMENT ORGANISATION

As already addressed in section 9.7 of chapter nine, the learning organisation is one which is constantly developing and changing in a way that will keep the organisation competitive in the future (Olve et al, 1999). In addition to tracking progress on past results, facilities managers can use the performance measurement theory in their respective organisations to learn about the future. Managers gain the opportunity to discuss not only how they achieved past results but also whether their expectations for the future remain on track.

Performance measurement tools identified from case studies are presented in chapter eight. The identification of performance measurement tools constitutes the prescriptive findings of this research and it is felt that they carry more external validity than the descriptive findings which are more context dependent. Case study descriptions (chapters five & six) and subsequent interpretation (chapters seven & eight) provided practical insights into how the FM organisation learns, and provided many examples of mechanisms which can be used to enhance learning and FM knowledge through the study of performance measurement implications within the FM organisation.

The practical implications of this thesis are therefore aimed at helping managers in FM organisations to manage the process of performance measurement and, in doing so, improve the efficiency of their organisations.

10.4.4 RAISING THE AWARENESS OF FACILITIES MANAGEMENT AS AN AID TO CORE BUSINESS

The original constructions of FM knowledge are seen as contributing to the conceptual thinking in an area of management. In particular, as section 2.10.4 of chapter two has already discussed, the promotion of a shift from regarding FM as purely a business overhead to a business resource that impacts on the performance of the other principal business resources of people, technology, information and finance is significant.

10.5 LIMITATIONS OF RESEARCH

10.5.1 QUALITATIVE

The limitations of case study research in general was discussed in section 4.5 of chapter four and the ways in which the researcher in this case attempted to overcome these limitations were presented in Table 30 in chapter four. In brief, the constructs used in this research were derived from the literature review and initial survey. The data collection phase of the case study research included series of interviews and document evaluation with as many FM team members as possible, in order to ensure internal validity. Furthermore the replication logic approach adopted across the case study organisations increased the external validity of the findings. The iterative tabulation of evidence from the case study findings using open coding, data reduction, and display, ensured that those constructs which emerged were valid, and that those which were not supported across the cases were rejected.

The problem of generalisability and external validity of the case study research does not necessarily apply in this research as the epistemological foundation of this research, which was outlined in section 4.20 of chapter four, described a theory building rather than a theory testing approach. It was never an aim of this thesis to produce a theory which could be directly applied to other settings, but to build a framework which would be flexible enough to be relevant in other settings and to provide the basis for further research. That is, the types of performance measures and associated critical success factors identified are not meant to be definitive but to provide the basis for the examination of performance measurement in FM organisations. The content of the framework for each organisation was different for each case study, and it is therefore important to define the framework within the context in which it applies, rather than to use it as a definitive tool.

10.5.2 QUANTITATIVE

The majority of the findings from the quantitative research supported the qualitative findings, providing construct validity for the measures used in the questionnaire. The

factor analysis findings were valid in terms of clearly representing constructs from the FM and performance measurement literature.

Furthermore, there is always a question of the extent to which a sample represents the population as a whole. The conclusions which should be drawn taking into account these limitations are that some of the quantitative findings of this thesis should be regarded as tentative and inconclusive.

Again, the purpose of the quantitative analysis in this thesis helps to diminish the problems of validity. As section 4.19 of chapter four outlined the roles of quantitative research in FM, it concluded that it should be used to identify formal relationships between constructs and never to provide causal explanations. In taking this into account, quantitative research in this thesis was used during the analysis of the qualitative data to indicate relationships between the variables, which would otherwise have gone unnoticed. The interpretations and theory development in chapter eight are based primarily on the findings of the qualitative data, using the statistical analysis to support these findings.

10.6 FURTHER RESEARCH

Throughout this research, academics and practitioners have expressed great interest in the performance measurement concept in FM. This was emphasised during numerous conference presentations delivered and workshops that the researcher conducted during the course of the research. The need for further research in the area is propelled by the recent developments in the FM knowledge base, that is to raise its awareness within the core organisational setting. The following recommendations for further research are primarily driven by emerging performance measurement strategies identified in this thesis:

- There is a need to uncover more critical success factors and corresponding performance measures relating to learning and growth issues of FM performance as there seems to be opportunities for such new explorations beyond the cases used for this thesis;
- The explanatory case study was a public service based organisation and, therefore, there is a necessity to justify the theory's application in

commercial based FM organisations. Such an application will further increase the generalisability of the theory development;

- There is also a need to understand the relationships that exist between the different types of performance measurement constructs identified in this research, for example, between customers' related issues and internal FM processes. By doing so, it will be possible to eliminate the constructs which do not have strong relationships among each other from the theoretical framework.
- Further development of the facilities performance measurement brief is required as facilities managers develop tools for communicating the performance measurement dimensions of FM. Methodology to operationalise their use to facilitate an integration with the core organisation's performance measures is needed. This will help to increase the extent of the current FM knowledge base.
- The development of further clarifications on where FM performance measurement leads in the future being based upon how useful FM is to the core business.
- Provide a cost benefit analysis of implementing performance measurement systems in FM organisations. This is one of the key issues to be addressed in future by FM researchers in the field as it would be of interest, both to organisations who have made the move to performance measurement, and to those who are considering it, to know exactly how much value is added;
- Further clarifying the FM organisational performance measurement process in its dependence on the existing knowledge base of the FM organisation. That is, observing how the content of the FM knowledge base impacts the FM organisation's ability to learn. This researcher is currently making preparations to take this area of further research forward;
- Examining FM organisational learning by observing the changes to the FM organisation's knowledge base taking into account that this process constitutes a learning process itself. In particular, changes to the FM knowledge base of the core organisation and the impact of this on other knowledge bases, would be an interesting study;
- The findings of this thesis are most visible in large FM organisations. The vast majority of businesses in the UK are small and in these companies FM is often integrated with other functions and may not play a major role. In large organisations, the importance of FM performance measurement is reasonably obvious, but this may not be true for small or even medium sized organisations. As large organisations continue to disaggregate, shed their workforces and downsize, the need for study in this area becomes increasingly important.

Hence, the clarification and development of the concepts relating to FM organisational performance measurement in this thesis provides a basis upon which further research can be conducted.

10.7 CHAPTER SUMMARY

This thesis has tried to develop theory in FM performance measurement. The very nature of FM presents a wide spectrum and this research has emphasised the need to adopt a broad range of perspectives.

This research has found empirical evidence within FM practice to match the theoretical concepts relating to performance measurement identified in the thesis: “Customer relations”, “FM internal processes”, “Learning and growth” and “Financial implications”. Corresponding critical success factors and performance measures exposed have been incorporated into a framework based on the developed theory. These are issues that need to be addressed by academics and practitioners in the field of FM since there was an indication of a good correlation between the degrees of integration among different elements of FM performance.

Prior to this research, but excluding popular cost benchmarking, little had been done with regard to the performance measurement in FM, especially in promoting the integrated performance measurement concept. A need for such mechanisms was identified through the pilot work and review of existing literature. The theory was developed based on the series of case studies. Through case studies, theory was developed to measure FM performance. The components of the theory were judged to be satisfactory and valid for their intended use. The theory was well received by academics as well as by the practising facilities personnel.

Although this technique is qualitative in nature, the findings have served to add to the growing volume of supporting evidence and body of opinion that recognises that FM is an emerging force for many organisations. It was further recognised that the theory would be better supported by a range of quantitative evidence. Paradoxically, the limitations of the study are proposed as it's forte. The strength of arguments presented is seen to rest with the extent of evidence rather than it's absolute depth.

Overall, this research has sought to produce useful measurement instruments for FM and has suggested that the quality of the instruments be improved through further applications in different FM settings.

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Appendices



APPENDIX 1 – BARRETT’S GENERIC FACILITIES MANAGEMENT MODEL

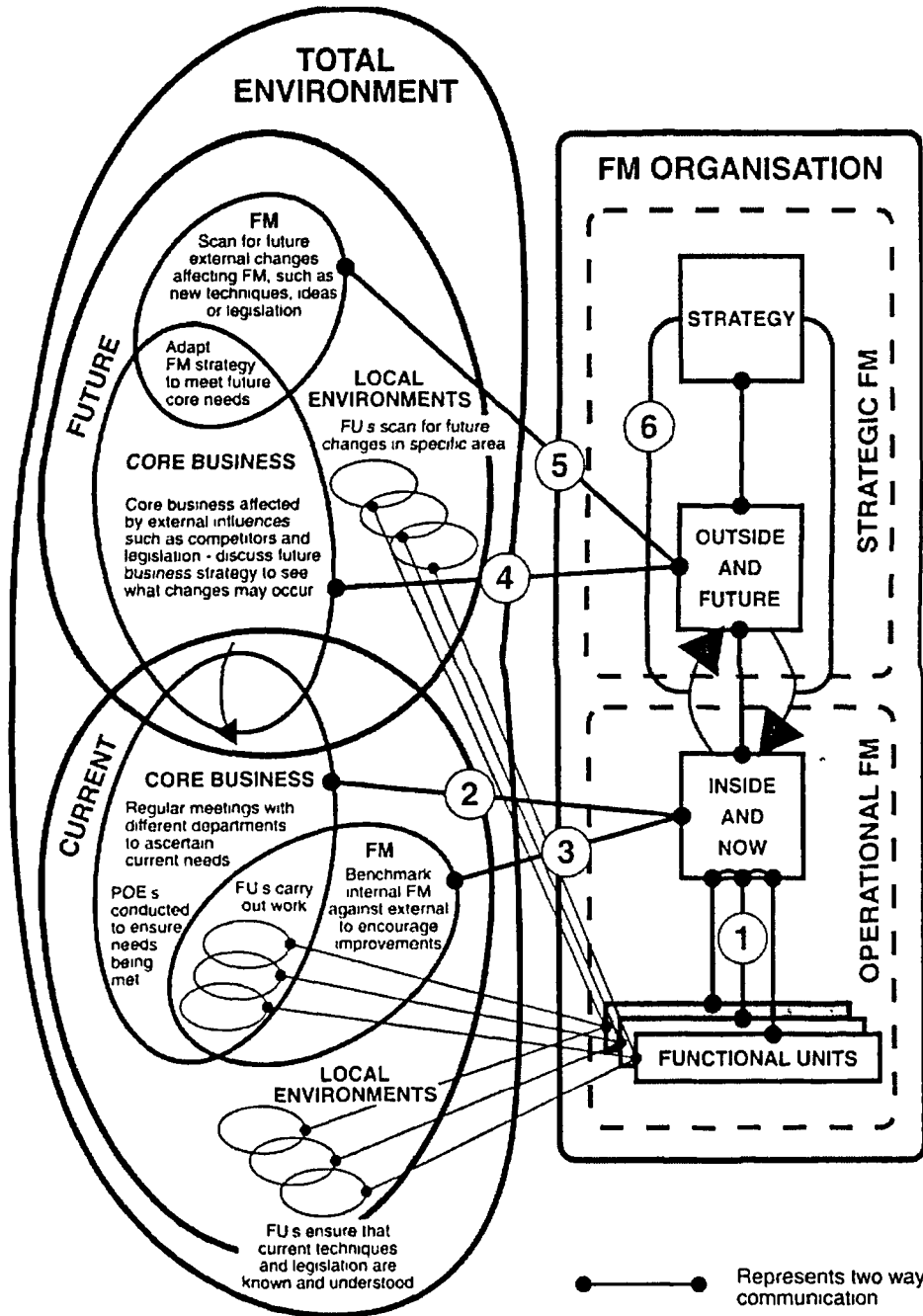


Figure 1.1 Generic model for facilities management systems.

APPENDIX TWO – COPIES OF QUESTIONNAIRES

(PART A) - QUESTIONNAIRE USED IN THE INITIAL SURVEY (DETAILED IN CHAPTER TWO)



Facilities Management Performance Measurement

Instructions for completing the questionnaire

1. Thank you for taking the time to complete this questionnaire relating varieties of issues on Facilities Management (FM) performance measurement. The purpose of this assessment is to collect information about the current FM practices within your organisation. The results of the questionnaire will be used, along with other information that will be collecting from your organisation, in assessing the current status of performance of FM organisations and ultimately provide data for the development FM performance measurement systems.
2. The survey is made up of statements about various aspects of FM issues. There are no right or wrong answers. For each statement, please rate your relative agreement or disagreement and the relative importance associated with it. Respond by not marking an answer only if you do not have enough information to respond to a particular statement. In responding, please consider only your personal, direct experience with the FM office and its services.
3. All responses remain completely confidential.

Definitions for the purpose of completing this questionnaire

- Facilities Management FM is the provision of a selected range of largely building-related support services to meet core business needs.
- Performance measurement Process of quantifying the efficiency and effectiveness of action
- Organisation The group of people with whom you work and the managers whose decisions or policies affect you.



Survey Questionnaire



SECTION ONE - GENERAL INFORMATION

1. Please state your job title: _____
2. How long have you been with the organisation? _____
3. Indicate the category which best describes your FM organisation:

Centralised organisation	
Site based organisation (single site)	
Small function residing in program office (office manager)	
Multiple site	
International	
FM office with limited authority	
FM office with unlimited authority	
Any other (please specify)	

SECTION TWO - FACILITIES MANAGEMENT GENERAL INFORMATION

4. Please assess the following statements according to your *personal perception* about your FM organisation. Meaning of scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

The function of the FM is that of managing the property in the best interests of the core business.	1 2 3 4 5
The aim of FM is to optimise running costs of buildings and to raise efficiency of the management of space and related assets for people and processes.	1 2 3 4 5
Its central rationale is management decision and implementation.	1 2 3 4 5
Its focus is on 'post-occupancy' rather than 'pre-occupancy' issues.	1 2 3 4 5
FM function provides solutions which directly benefit the core business	1 2 3 4 5

FM function contributes to the development and delivery of the business strategy	1	2	3	4	5
Long-term relationships are developed with customers.	1	2	3	4	5
All members of the FM unit take continuous improvement seriously.	1	2	3	4	5
There is evidence from customers that FM function has contributed to their satisfaction with the facility	1	2	3	4	5
FM function challenges historical practices which do not appear to benefit the business	1	2	3	4	5
Quality is the primary organisation goal.	1	2	3	4	5
FM needs to be represented at broad level if the organisation is be persuaded that a link exists between their physical environment and the operational efficiency of the organisation.	1	2	3	4	5

SECTION THREE - INTERNAL PROCESSES IN FACILITIES MANAGEMENT

A. Performance measurement systems

5. Indicate the category which best describes your FM organisation's *performance measurement system*:

It has no quality assurance system. Conformance with law and regulation is dependent solely upon individual employee initiative. There is no reliable system for distribution of guidelines.	
It utilises some performance evaluation techniques but they are not implemented in a systematic or comprehensive manner. It relies on external review activities to identify failures. Employees are not fully informed of changes.	
It has a quality measurement system that has been communicated to all employees. Process identifies strengths and weaknesses with lessons learned communicated to staff. Regulations and internal procedures are distributed to those who need them. Performance in key areas is measures over time.	
It has an effective performance measurement process in lace. The process has been communicated to all employees and they are actively engaged in the process. The effectiveness of the system is assessed and improved. Guiding principles are improved in many areas to encourage best practices and improvement. External review activities have not reported any systematic problems. Performance in key areas is measured over time and goals for improvement are established.	
It has an efficient and effective performance measurement system. It is recognised by those outside the office for the quality of its work products. Employees are engaged in the quality assurance process and are continually improving work products. The highest quality standards are maintained with a minimum of oversight or review. Internal procedures provide employees the necessary guidance to effectively do their job and encourage creative alternatives to improve performance. Performance in key areas is measured over time. Goals for improvement are established and goals are frequently met.	

B. Benefits of performance measurement

6. Please indicate the *benefits* you achieved through initiating performance evaluation practices in FM. Meaning of scale: 1 (had a large impact) to 4 (had no impact) and 5 (not applicable)

Identification of and solutions to problems in facilities.	1	2	3	4	5
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Overall increase in effective use of space and productivity.	1	2	3	4	5
Increasing the customer focus.	1	2	3	4	5
Increasing employee satisfaction.	1	2	3	4	5
Understanding of the performance implications of changes dictated by budget cuts.	1	2	3	4	5
Significant cost savings in the building maintenance process throughout the building life cycle.	1	2	3	4	5
Understand the strategy communication	1	2	3	4	5

C. Performance measurement implementation

7. How do you assess the following in respect of the *performance evaluation implementation* according to your personal opinion? Meaning of scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

Current performance evaluation practices have their root in manufacturing and that definition of performance evaluation does not match with FM.	1	2	3	4	5
Important to have a research strategy to focus performance evaluation process in FM	1	2	3	4	5
Little data is available to assess how extensively the use of performance evaluation techniques has diffused in FM organisations.	1	2	3	4	5
Performance evaluation as a concept has great potential and as a valuable tool for decision-makers at both strategic and operational levels.	1	2	3	4	5
Performance measurement will contribute towards achieving more economic use of facilities.	1	2	3	4	5
Performance evaluation provides a mechanism to both learn from the past and evaluate contemporary trends.	1	2	3	4	5
It is pertinent to consider how customers respond to or interact with the environment.	1	2	3	4	5
Sustained, demonstrable, management commitment is essential.	1	2	3	4	5
FM consultants from outside the organisation can aid in getting good performance measurements initiative.	1	2	3	4	5
What is needed in terms of performance evaluation outcomes is a balanced perception of both financial and non-financial measures.	1	2	3	4	5

8. In your opinion, how do the following statements *affect the lack of acceptance* (if any) of the performance evaluation process on the part of the facilities management professionals? Please mark the number, which corresponds with your opinion. Meaning of scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

The failure to provide a suitable definition for performance evaluation, applicable for FM.	1	2	3	4	5
There are no systematic attempt/measurement issues to empirically investigate the relationship among the FM practices and building performance.	1	2	3	4	5
There is no single theoretical model in performance evaluation to adopt in practice.	1	2	3	4	5
The difficulty in accepting the premise that things can be further improved based on performance evaluation outcomes.	1	2	3	4	5
The extent of management commitment is poor.	1	2	3	4	5

D. Best Practices

9. Indicate the category which best describes *best practices of FM processes at your FM organisation*.

It has no effective system to identify or share innovations or best practices. Any innovation is generally the result of some action by staff acting independently.	
It encourages staff to be innovative and to seek alternatives. Participation in professional organisations is also encouraged.	
It has initiated efforts to explore the feasibility of performance measurement techniques for process improvement the organisation support innovative initiatives.	
Some performance measurement activities are now underway. Has an effective system for identifying new technologies and innovations.	
It continually evaluates the process, products and services. It has instituted a fundamental re-thinking of its business processes to achieve dramatic improvements in critical areas of performance.	

E. Performance measurement initiative

10. Please assess what made you implement *performance evaluation practices* in FM. Meaning of scale: Meaning of scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

A response to competitive forces	1	2	3	4	5
A part of a long-term corporate vision	1	2	3	4	5
A result of external factors such as government requests etc.	1	2	3	4	5
A result of the realisation of the need to improve effectiveness of FM	1	2	3	4	5

Others (please specify): _____

11. Please indicate the *type of strategy* used at the stage of implementation. Meaning of the scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

Driven by the parent organisation.	1	2	3	4	5
Initiated on FM's own initiative.	1	2	3	4	5
A result of customer requests (external & internal).	1	2	3	4	5
The first quality initiative practised in the organisation and it led the rest of the organisation moves towards performance measurement.	1	2	3	4	5

Others (please specify): _____

12. How would you assess the following aspects according to their importance *as helping in effectively practising performance evaluation* in FM. Meaning of scale: 1(strongly agree), 2(agree), 3(disagree), 4(strongly disagree) and 5 (not applicable)

Linking the FM mission and strategy to the overall organisational performance and strategy.	1	2	3	4	5
Top management/administration support and commitment.	1	2	3	4	5
Thoroughly communicating the mission to all members of staff.	1	2	3	4	5
Utilisation of proper PE measurement tools/guidelines to understand the positive and negative aspects of the facility	1	2	3	4	5
Better communication of benefits of such an analysis.	1	2	3	4	5

Others (please specify): _____

F. Tools and Techniques

13. What tools and techniques are used to measure the performance?

Business excellence model (EFQM)	
Best practice Benchmarking	
Total quality management	
Customer satisfaction surveys	
Post-occupancy evaluation	
Evaluate return on funds employed	
Through observe of complains	
Employee indexes	
Measurement against service level agreement	
No method used	
Any other method	

Please specify: _____

G. FM Mission and Goals

14. Indicate the category which best describes *mission goals for continuous improvement* at your FM organisation.

It has no effective system for implementing and integrating quality activities. Performance improvement is typically dependent upon employee initiative alone.	
It is in the early stages of creating awareness and change in attitudes toward the importance of quality and customer focus. Key aspects of a strategy for continuous improvement are under development.	
It has implemented a system conducive to quality improvement. Senior management's commitment to quality has been communicated throughout the	

organisation. Responsibility for quality, continuous improvement and customer satisfaction is shared by all members.	
An effective quality culture is firmly entrenched throughout the organisation. It has a no. of quality improvement initiatives under way. Customer satisfaction is measured and assessed. Means for measuring success have also been implemented.	
It is a recognised leader in quality improvement through performance measurement	

H. Planning

15. Indicate the category which best describes the *planning process* at your FM organisation.

It has no established short term or strategic planning process consistent with its overall goals and objectives. Customer focus is typically creative, not proactive.	
It has initiated some efforts to implement strategic and tactical planning in the organisation.	
It has an established strategic focus. Planning activities for the short and long term are established. A focus toward achieving improved performance over time is set out in the long-range plan. The FM office assists in the development of strategic focus.	
It has an effective strategic plan which has been fully communicated to all employees. Goals and objectives for the major functions and operations of the office are established and evaluated. The office is actively engaged in the development of the office plan.	
The office is actively engaged in developing and implementing the office strategic plan. Office's contribution to the attainment of the goals and objectives are directly linked to customer focus.	

16. Please use the space below for any further comments:

Thank you very much for your time in completing this questionnaire. Your responses will be treated confidentially.

(PART B) - QUESTIONNAIRE USED FOR THE SURVEY ANALYSIS (DETAILED IN CHAPTER SEVEN)



Facilities Management Performance Measurement

Instructions for completing the questionnaire

1. Thank you for taking the time to complete this questionnaire relating varieties issues on Facilities Management performance measurement. Your contribution is greatly appreciated.
2. This questionnaire is part of a research project investigating the measurement and management of facilities management services. This questionnaire will ask your opinion about aspects of performance of overall facilities services and its provision. The purpose of this assessment is to test information on general practices and FM performance measurement in particular, collected through a series of case studies. The results of the questionnaire will be used, along with other information that will be collecting through different sources, in assessing the performance of the FM organisations and ultimately provide data for the development FM performance measurement systems.
3. The survey is made up of statements about various aspects of FM issues. There are no right or wrong answers. For each statement, please rate your relative agreement or disagreement and the relative importance associated with it. In responding, please consider only your personal, direct experience with the FM office and its services.
4. All responses remain completely confidential.

Definitions for the purpose of completing this questionnaire

Facilities Management FM is the provision of a selected range of largely building-related support services to meet core business needs.

Performance measurement Process of quantifying the efficiency and effectiveness of action
 Organisation The group of people with whom you work and the managers whose decisions or policies affect you.



Survey Questionnaire



SECTION ONE - GENERAL INFORMATION

1. Could you please state which industry your company belongs to:

2. Please state your job title: _____
3. How long have you been with the organisation? _____
4. Indicate the category which best describes your FM organisation:

Centralised organisation	
Site based organisation (single site)	
Small function residing in program office (office manager)	
Multiple site	
International	
FM office with limited authority	
FM office with unlimited authority	
Any other (please specify)	

5. Total employees in the organisation:

Less than 100	
Between 100 and 500	
Between 500 and 1000	
More than 1000	

6. Number of FM employees

Less than 50	
Between 50 and 100	
Between 100 and 500	
More than 500	

7. Please indicate the perspective from which you are answering this questionnaire:

The whole organisation	
A subsidiary of the organisation	
A business unit of the company	

As a service provider to the company	
As an external consultant to the company	

SECTION TWO - FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT

A. Performance measurement systems

8. Indicate the category which best describes your FM organisation's *performance measurement system*:

It has no quality assurance system. Conformance with law and regulation is dependent solely upon individual employee initiative.	
It utilises some performance evaluation techniques but they are not implemented in a systematic or comprehensive manner.	
It has a quality measurement system that has been communicated to all employees. Process identifies strengths and weaknesses with lessons learned communicated to staff.	
It has an effective performance measurement process in place. The process has been communicated to all employees and they are actively engaged in the process. The effectiveness of the system is assessed and improved.	
It has an efficient and effective performance measurement system. It is recognised by those outside the office for the quality of its work products. Employees are engaged in the quality assurance process and are continually improving work products. The highest quality standards are maintained with a minimum of oversight or review.	

B. Benefits of performance measurement

9. Please indicate the *benefits* you achieved through initiating performance evaluation practices in FM. Meaning of scale: 1 (had no impact) to 5 (had a large impact)

Identification of and solutions to problems in facilities.	1	2	3	4	5
Overall increase in effectiveness and efficiency.	1	2	3	4	5
Increasing the customer focus.	1	2	3	4	5
Increasing employee satisfaction.	1	2	3	4	5
Increasing the connection and the relevance of the FM department to the rest of the organisation.	1	2	3	4	5
Improved attitude of customers through active involvement in the evaluation process.	1	2	3	4	5
Understanding of the performance implications of changes dictated by budget cuts.	1	2	3	4	5
Informed decision-making and better understanding of consequences of design.	1	2	3	4	5
Built-in capability of facility adaptation to organisational change and growth over time, including converting of facilities into new uses.	1	2	3	4	5
Significant cost savings.	1	2	3	4	5
Accountability for facilities performance by design professionals and owners.	1	2	3	4	5
Improvements of design databases, standards and guideline literature.	1	2	3	4	5

C. Performance measurement implementation

10. How do you assess the following in respect of the *performance evaluation implementation* according to your personal opinion? Meaning of scale: 1(strongly disagree), 2(disagree), 3(neutral), 4(agree) and 5 (strongly agree)

Current performance evaluation practices have their root in manufacturing and that definition of performance evaluation does not match with FM.	1	2	3	4	5
Important to have a research strategy to focus performance evaluation process in FM	1	2	3	4	5
Little data is available to assess how extensively the use of performance evaluation techniques has diffused in FM organisations.	1	2	3	4	5
Performance evaluation as a concept has great potential and as a valuable tool for decision-makers at both strategic and operational levels.	1	2	3	4	5
Performance measurement will contribute towards achieving more economic use of facilities.	1	2	3	4	5
Performance evaluation provides a mechanism to both learn from the past and evaluate contemporary trends.	1	2	3	4	5
It is pertinent to consider how customers respond to or interact with the environment.	1	2	3	4	5
Sustained, demonstrable, management commitment is essential.	1	2	3	4	5
FM consultants from outside the organisation can aid in getting good performance measurements initiative.	1	2	3	4	5
What is needed in terms of performance evaluation outcomes is a balanced perception of both financial and non-financial measures.	1	2	3	4	5

SECTION THREE – FINANCIAL FACILITIES PERFORMANCE

11. In your opinion, how do the following statements *describe the use of financial information in FM* measurement process? Please mark the number, which corresponds with your opinion. Meaning of scale: 1(strongly disagree) to 5(strongly agree)

(F1) I very frequently receive financial analysis reports on the FM function	1	2	3	4	5
(F2) I am aware of the true cost of my FM services	1	2	3	4	5
(F3) My FM organisation's measurement system adequately covers the financial measures	1	2	3	4	5
(F4) I am advised of the impact of increasing/decreasing the FM budget.	1	2	3	4	5
(F5) I consider that I receive value for the FM services.	1	2	3	4	5
(F6)I am knowledgeable of how the FM costs compare to other similar organisations.	1	2	3	4	5
(F7) Traditional financial measures do not improve customer satisfaction	1	2	3	4	5
(F8) Service to be cost effective	1	2	3	4	5
(F9) Services are delivered with added value	1	2	3	4	5
(F10) Service provided is accountable for its users	1	2	3	4	5
(F11) organisation measures and takes maximum advantage of full range of cost effective opportunities	1	2	3	4	5
(F12) there are automated systems for appropriate and effective interfaces	1	2	3	4	5

with other administrative systems	
(F13) I have an idea on the financial status of my FM organisation	1 2 3 4 5

SECTION FOUR – CUSTOMER SATISFACTION PERFORMANCE MEASUREMENT

12. In your opinion, how do the following statements describe *the importance of customer satisfaction information in FM measurement process*? Please mark the number, which corresponds with your opinion. Meaning of scale: 1(strongly disagree) to 5(strongly agree)

(C1) FM services are available when customers need them	1 2 3 4 5
(C2) FM organisation works with the customers to develop FM strategies during all phases of the facilities system	1 2 3 4 5
(C3) the FM Organisation planning is done effectively in obtaining timely services	1 2 3 4 5
(C4) the FM organisation consistently meets critical milestones throughout the FM process	1 2 3 4 5
(C5) the FM organisation keeps the customers informed of the current status of facilities administration initiatives	1 2 3 4 5
(C6) customers are satisfied with the quality of service provided by the FM organisation	1 2 3 4 5
(C7) The administrative process facilitates team work between the FM organisation and its customers	1 2 3 4 5
(C8) FM administration personnel have adequate knowledge if the services being provided to stakeholders	1 2 3 4 5
(C9) There is a shared commitment among the FM participants in the FM system to improve quality	1 2 3 4 5
(C10) Customers are further satisfied with the responsiveness of the FM organisation	1 2 3 4 5
(C11) The FM organisation is flexible in trying to meet customers' specific needs	1 2 3 4 5
(C12) Customers are satisfied with communication between them and the FM organisation	1 2 3 4 5
(C13) FM staff is professional in dealing with customer requirements	1 2 3 4 5
(C14) FM organisations responses to customer suggestions and recommendations	1 2 3 4 5
(C15) The FM organisation communicates policy changes in an effective and timely manner	1 2 3 4 5

SECTION FIVE – FACILITIES MANAGEMENT INTERNAL PROCESSES

13. In your opinion, how do the following statements *describe the use of internal FM process related FM measurement process*? Please mark the number, which corresponds with your opinion. Meaning of scale: 1(strongly disagree) to 5(strongly agree)

(IP1) It has implemented a system conducive to quality improvement	1 2 3 4 5
(IP2) Responsibility for quality, continuous improvement and customer	1 2 3 4 5

satisfaction relating to facilities provision is shared by all members.	
(IP3) My organisation provides sufficient flexibility in my work schedule	1 2 3 4 5
(IP4) The organisation maintains a strong partnership with the contractors	1 2 3 4 5
(IP5) A spirit of co-operation and team work exists in my work area	1 2 3 4 5
(IP6) Performance data is collected, communicated to contractors and used in contracting decisions	1 2 3 4 5
(IP7) Good monitoring and evaluation systems – customer needs have been defined and used to improve the current processes	1 2 3 4 5
(IP8) Processes are proactively tuned to meet changing customer requirements	1 2 3 4 5
(IP9) Corporate policies exist for health and safety, environmental sustainability, community safety, public health, employment and regeneration	1 2 3 4 5
(IP10) Analyses best value initiatives to identify corporate and public sector costs and benefits rather than simply focusing on the effect on service budget	1 2 3 4 5
(IP11) The organisation is implementing a system designed to promote the selection of quality suppliers	1 2 3 4 5
(IP12) Performance of contractors and other service providers are continuously monitored	1 2 3 4 5
(IP13) Organisation has an efficient and effective quality assurance system to monitor contractor performance	1 2 3 4 5
(IP14) Delivers services through partnership arrangements	1 2 3 4 5
(IP15) Working conditions (e.g., noise level, temperature, ventilation, cleanliness, space, lighting etc.) Are acceptable	1 2 3 4 5
(IP16) Customer is an active participant in the contractor selection process	1 2 3 4 5
(IP17) Contractors are selected on price, delivery of service and quality factors	1 2 3 4 5
(IP18) More long-term relationships and share experiences are some key objectives of the FM organisation	1 2 3 4 5
(IP19) I would recommend my FM office as a good place to work	1 2 3 4 5

SECTION SIX – LEARNING AND GROWTH

14. In your opinion, how do the following statements *describe the use of learning and growth information in FM measurement process*? Please mark the number, which corresponds with your opinion. Meaning of scale: 1(strongly disagree) to 5(strongly agree)

(LG1) These are intended to drive improvement in financial, customer and internal processes	1 2 3 4 5
(LG2) Individual development plans are established. Successfully implemented, and monitored for all employees – work assignments provide continuous challenge for employees to develop and utilise knowledge, skills and abilities.	1 2 3 4 5
(LG3) FM organisation synergistically balances current operations with the needs of the future	1 2 3 4 5
(LG4) Technology leadership, continuous improvement, more effective management of the existing property source and products focus are some of the primary goals.	1 2 3 4 5
(LG5) The organisation has implemented a process to identify, track and	1 2 3 4 5

monitor employee training.					
(LG6) The process of developing new services has clearly improved in recent years	1	2	3	4	5
(LG7) Everyone in the FM organisation has access to these information systems	1	2	3	4	5
(LG8) Upon completion of training, the employee and management evaluate the effectiveness of the training provided.	1	2	3	4	5
(LG9) The FM organisation uses structured information systems for managing FM information	1	2	3	4	5
(LG10) The organisation has an effective system to ensure that all employees receive timely and pertinent training.	1	2	3	4	5
(LG11) The FM organisation carries out a review of the skills of external service partners when considering their appointment	1	2	3	4	5
(LG12) Notice to be taken to employees ideas for improvement/development of the FM service	1	2	3	4	5
(LG13) The FM organisation is actively engaged in developing and implementing the FM strategic plan.	1	2	3	4	5
(LG14) Employee turnover rate in the FM function is very low	1	2	3	4	5
(LG15) Making continuous improvements in the exercising of the services with regard to efficiency and effectiveness	1	2	3	4	5
(LG16) the organisation has instituted a fundamental re-thinking of its business processes to achieve dramatic improvements in critical areas of strategic facilities information	1	2	3	4	5

15. Please use the space below for any further comments:

Thank you very much for your time in completing this questionnaire. Your responses will be treated confidentially. Please print your name and address below (or attach your business card if you need to receive feedback of this analysis.

APPENDIX THREE – SPSS OUTPUT

FACTOR ANALYSIS

Chapter 7 – Table 42

Total Variance explained

Component	Initial Eigenvalues			Rotation sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	3.108	20.719	20.719	2.759	18.396	18.396
2	2.533	16.886	37.605	2.477	16.514	34.909
3	2.332	15.544	53.149	2.389	15.928	50.838
4	1.487	9.911	63.060	1.538	10.250	61.088
5	1.150	7.667	70.726	1.446	9.638	70.726
6	.995	6.634	77.360			
7	.904	6.025	83.385			
8	.698	4.650	88.036			
9	.629	4.193	92.229			
10	.562	3.744	95.972			
11	.397	2.645	98.617			
12	.207	1.383	100.000			
13	3.405E-16	2.270E-15	100.000			
14	1.645E-16	1.097E-15	100.000			
15	7.087E-18	4.725E-17	100.000			

Extraction Method: Principal Component Analysis

Rotated Component Matrix (a)

	Component				
	1	2	3	4	5
CP13	.941				
CP10	.941				
CP14	.587				
CP11	.565				
CP9		.949			
CP6		.949			
CP15		.537			
CP2			.965		
CP5			.965		
CP8					
CP3				.807	
CP1				.619	
CP12					
CP7					.716
Cp4					.703

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation
 (a) Rotation converged in 9 iterations

Component Transformation Matrix

Component	1	2	3	4	5
1	.748	-.519	.358	.096	-.185
2	-.166	.427	.825	.311	-.111
3	.633	.670	-.184	.030	.341
4	-.085	-.236	-.147	.834	.469
5	-.072	-.212	.369	-.444	.785

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Score Coefficient Matrix

	Component				
	1	2	3	4	5
CP1	-.071	-.161	.182	.354	.313
CP2	-.020	-.017	.421	.051	.051
CP3	.061	.060	-.139	-.096	-.096
CP4	.123	.022	.042	.494	.494
CP5	-.020	-.017	.421	.051	.051
CP6	.041	.393	-.002	-.041	-.041
CP7	-.054	-.017	.038	.509	.509
CP8	.064	.127	.162	-.191	-.191
CP9	.041	.393	-.002	-.041	-.041
CP10	.348	.067	.024	-.073	-.073
CP11	.202	-.038	.011	.210	.210
CP12	-.105	.090	.001	-.131	-.131
CP13	.348	.067	.024	-.073	-.073
CP14	.201	-.125	-.138	-.031	-.031
CP15	-.047	.191	-.030	.147	.147

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Transformation Matrix

Component	1	2	3	4	5
1	1.000	.000	.000	.000	.000
2	.000	1.000	.000	.000	.000
3	.000	.000	1.000	.000	.000
4	.000	.000	.000	1.000	.000
5	.000	.000	.000	.000	1.000

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Chapter 7 – Table 43

Total Variance explained

Component	Initial Eigenvalues			Rotation sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	3.329	17.519	17.519	2.790	14.684	14.684
2	2.470	13.000	30.519	2.327	12.245	26.930
3	2.032	10.694	41.213	2.128	11.202	38.131
4	1.685	8.867	50.080	1.729	9.101	47.232
5	1.505	7.919	58.000	1.564	8.230	55.462
6	1.309	6.887	64.887	1.438	7.566	63.028
7	1.220	6.422	71.308	1.372	7.223	70.251
8	1.143	6.015	77.323	1.344	7.073	77.323
9	.933	4.912	82.235			
10	.761	4.007	86.242			
11	.587	3.092	89.334			
12	.482	2.538	91.872			
13	.427	2.249	94.121			
14	.392	2.065	96.186			
15	.316	1.665	97.851			
16	.269	1.418	99.269			
17	.139	.731	100.000			
18	-1.094E-16	-5.759E-16	100.000			
19	-1.961E-16	-1.032E-15	100.000			

Extraction Method: Principal Component Analysis

Rotated Component Matrix (a)

	Component							
	1	2	3	4	5	6	7	8
IP16	.953							
IP12	.953							
IP13	.642							
IP6								
IP10		.951						
IP1		.951						
IP18			.814					
IP4			.769					
IP14			.739					
IP5				.785				
IP15				.678				
IP3					.817			
IP19					.698			
IP9						.845		
IP11						.640		
IP7							-.777	
IP8							.629	
IP2								.754
IP17								-.664

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation
 (a) Rotation converged in 11 iterations

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8
1	.793	.519	-.134	.051	.180	-.143	.146	-.079
2	.381	-.399	.721	.388	-.101	-.056	.007	.112
3	-.231	.615	.284	.250	-.190	.496	.147	.348
4	.017	.237	.541	-.728	-.883	-.023	-.236	-.240
5	-.251	.050	.263	.048	.897	-.041	.231	-.053
6	.141	-.268	-.033	-.453	-.080	.170	.753	.315
7	.280	-.202	-.134	-.190	.321	.522	-.511	.436
8	.106	-.145	.032	.102	-.007	.653	.139	-.715

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Score Coefficient Matrix

	Component							
	1	2	3	4	5	6	7	8
IP1	-.027	.423	.016	-.022	-.045	-.025	-.025	.058
IP2	.026	.105	.107	-.035	.028	-.006	.016	.561
IP3	-.037	-.047	.016	-.072	.542	-.029	-.099	.081
IP4	-.004	.112	.383	.089	-.106	-.154	.107	-.196
IP5	.024	.035	-.032	.461	.028	-.014	-.172	.060
IP6	.279	-.223	-.066	-.254	-.269	.058	.020	.273
IP7	.027	.013	.035	-.027	.097	-.098	-.579	.087
IP8	-.014	-.033	.077	-.179	.225	-.249	.458	.216
IP9	.054	-.011	-.090	-.121	.028	.611	-.018	.031
IP10	-.027	.423	.016	-.022	-.045	-.025	-.025	.058
IP11	.010	-.034	.135	.163	.063	.455	.081	-.104
IP12	.364	-.050	-.028	-.024	-.003	.037	-.058	.016
IP13	.188	.097	.058	.151	.058	.020	.048	-.088
IP14	.015	-.055	.333	.022	.068	0.060	-.252	.094
IP15	-.002	-.124	-.030	.372	-.077	-.020	.256	.028
IP16	.364	-.050	-.028	-.024	-.003	.037	-.058	.016
IP17	.086	.019	.156	-.191	-.006	.075	.068	-.489
IP18	-.027	-.018	.389	-.185	.031	.154	.049	.105
IP19	.099	-.050	-.042	.067	.444	.176	.036	-.049

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8
1	1.000	.000	.000	.000	.000	.000	.000	.000
2	.000	1.000	.000	.000	.000	.000	.000	.000
3	.000	.000	1.000	.000	.000	.000	.000	.000
4	.000	.000	.000	1.000	.000	.000	.000	.000
5	.000	.000	.000	.000	1.000	.000	.000	.000
6	.000	.000	.000	.000	.000	1.000	.000	.000
7	.000	.000	.000	.000	.000	.000	1.000	.000
8	.000	.000	.000	.000	.000	.000	.000	1.000

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Chapter 7 – Table 44

Total Variance explained

Component	Initial Eigenvalues			Rotation sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	3.256	20.352	20.352	2.964	18.525	18.525
2	2.187	13.667	34.019	2.345	14.653	33.178
3	1.729	10.803	44.822	1.613	10.079	43.257
4	1.514	9.461	54.283	1.485	9.279	52.536
5	1.362	8.511	62.794	1.440	9.000	61.536
6	1.100	6.875	69.669	1.189	7.432	68.968
7	1.003	6.272	75.941	1.116	6.973	75.941
8	.935	5.844	81.784			
9	.819	5.118	86.902			
10	.654	4.087	90.898			
11	.589	3.683	94.672			
12	.462	2.891	97.562			
13	.229	1.428	98.991			
14	.161	1.009	100.000			
15	9.010E-16	5.631E-15	100.000			
16	-2.148E-18	-1.343E-17	100.000			

Extraction Method: Principal Component Analysis

Rotated Component Matrix (a)

	Component						
	1	2	3	4	5	6	7
LG15	.963						
LG3	.963						
LG12	.893						
LG1		.955					
LG16		.955					
LG13			.795				
LG6			-.749				
LG2				.766			
LG11				.628			
LG14							
LG7					.791		
LG9					-.594		
LG4					.536		
LG5						.679	
LG10						.626	
LG8							.941

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation
 (a) Rotation converged in 11 iterations

Component Transformation Matrix

Component	1	2	3	4	5	6	7
1	.864	-.459	.011	-.139	-.020	.052	-.102
2	.483	.817	.140	.186	.220	.039	.061
3	-.024	-.164	.876	.436	-.076	-.166	.009
4	-.051	-.240	-.237	.652	.545	.369	-.156
5	-.056	-.113	.157	-.384	.788	-.362	.245
6	-.012	-.060	.165	-.134	-.032	.655	.722
7	.118	-.102	-.338	.428	-.162	-.522	.616

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Score Coefficient Matrix

	Component						
	1	2	3	4	5	6	7
LG1	.018	.418	.012	-.068	.003	.000	-.026
LG2	.005	-.174	.046	.548	-.071	-.067	.062
LG3	.334	.001	-.050	.028	.016	-.058	.060
LG4	-.030	-.067	-.270	.284	.354	-.428	.067
LG5	-.109	-.159	.073	-.135	.253	.595	-.032
LG6	-.017	.002	-.473	-.021	.042	-.093	.133
LG7	-.019	.028	-.005	-.128	.555	.046	.026
LG8	.009	-.023	-.052	.053	-.040	.073	.865
LG9	-.048	.061	-.118	-.010	-.417	-.084	.096
LG10	.065	.086	-.081	.173	-.080	.501	.161
LG11	.059	.135	.099	.393	.040	.064	.039
LG12	.306	.072	.033	.033	.008	.050	-.093
LG13	-.081	.071	.484	.035	.118	-.090	.078
LG14	.087	-.083	.253	-.306	.050	-.167	.311
LG15	.334	.001	-.050	.028	.016	-.058	.060
LG16	.018	.418	.012	-.068	.003	.000	-.026

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Component Transformation Matrix

Component	1	2	3	4	5	6	7
1	1.000	.000	.000	.000	.000	.000	.000
2	.000	1.000	.000	.000	.000	.000	.000
3	.000	.000	1.000	.000	.000	.000	.000
4	.000	.000	.000	1.000	.000	.000	.000
5	.000	.000	.000	.000	1.000	.000	.000
6	.000	.000	.000	.000	.000	1.000	.000
7	.000	.000	.000	.000	.000	.000	1.000

Chapter 7 – Table 45

Total Variance explained

Component	Initial Eigenvalues			Rotation sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	2.626	20.202	20.202	2.189	16.835	16.835
2	2.192	16.859	37.061	2.177	16.744	33.580
3	1.598	12.296	49.356	1.742	13.402	46.982
4	1.390	10.694	60.050	1.524	11.723	58.706
5	1.138	8.754	68.804	1.313	10.098	68.804
6	.912	7.013	75.817			
7	.812	6.247	82.064			
8	.742	5.709	87.773			
9	.693	5.330	93.102			
10	.528	4.064	97.167			
11	.368	2.833	100.000			
12	1.181E-16	9.087E-16	100.000			
13	2.583E-17	1.987E-16	100.000			

Extraction Method: Principal Component Analysis

Rotated Component Matrix (a)

	Component				
	1	2	3	4	5
FP2	.979				
FP7	.979				
FP4		.956			
FP9		.956			
FP10			.730		
FP6			.648		
FP8			.529		
FP5					
FP13					
FP1				.816	
FP12				.727	
FP3					.812
FP11					.670

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation
 (a) Rotation converged in 7 iterations

Component Transformation Matrix

Component	1	2	3	4	5
1	.589	.699	.345	-.198	.073
2	.705	-.460	-.386	.060	.373
3	.146	-.272	.652	.671	.173
4	-.024	.464	-.544	.679	.164
5	-.366	.102	.107	-.213	.894

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation

Component Score Coefficient Matrix

	Component				
	1	2	3	4	5
FP1	.063	.025	.006	.549	-.144
FP2	.466	-.030	-.006	.045	.070
FP3	-.111	-.072	.119	.080	.648
FP4	-.031	.444	-.014	-.010	.003
FP5	.149	-.008	-.276	-.057	-.051
FP6	-.016	-.013	.384	-.012	.165
FP7	.466	-.030	-.006	.045	-.070
FP8	.088	.106	.279	.123	.097
FP9	-.031	.444	-.014	-.010	.003
FP10	.009	-.067	.425	-.046	-.208
FP11	.029	.104	-.078	-.160	.510
FP12	.027	-.036	.031	.473	.087
FP13	-.081	.250	-.314	.297	.071

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation

Component Transformation Matrix

Component	1	2	3	4	5
1	1.000	.000	.000	.000	.000
2	.000	1.000	.000	.000	.000
3	.000	.000	1.000	.000	.000
4	.000	.000	.000	1.000	.000
5	.000	.000	.000	.000	1.000

CORRELATION ANALYSIS

Descriptive Statistics

Chapter 7 – Table 46

The descriptive statistics of the variables which emerged from the factor analysis are presented in this table:

	N	Minimum	Maximum	Mean
Service partnerships	44	2.25	5.00	3.9943
Quality	44	2.67	5.00	4.0379
Timeliness	44	3.00	4.83	4.0227
Contract management	44	3.00	5.00	4.3409
Operational service efficiency	44	3.00	5.00	4.3846
Supply chain management	44	3.00	5.00	4.3182
Work environment	44	3.50	5.00	4.3523
Risk management	44	3.00	5.00	4.1932
Innovation	44	2.00	5.00	3.9318
Strategic facilities information	44	2.00	5.00	4.0909
Staff training and development	44	3.00	5.00	3.9830
Financial resource management	44	3.00	5.00	4.3182
Value for money	44	1.00	5.00	2.9773
Profitability	44	2.33	5.00	3.7424
Asset utilisation	44	2.75	4.75	3.6989

APPENDIX FOUR – LIST OF PUBLICATIONS, PRESENTATIONS AND WORKSHOPS

PART ONE - LIST OF PUBLICATIONS ASSOCIATED WITH THE PHD STUDY

Year of publication	Authors	Title of the paper	Published in	Additional information
2001	Amaratunga, D. & Baldry, D.	Nature of Facilities Management Performance and its Relationships to the Core Business	Journal of Facilities Management	Accepted for Publication
2001	Amaratunga, D. & Baldry, D.	Moving from Performance Measurement to Performance Management	Journal of Facilities Management	Accepted for Publication
2001	Amaratunga, D. & Baldry, D.	Case Study Methodology as a means of Theory Building: Performance Measurement in Facilities Management Organisations	Work-study Journal	Vol.50, No.3. Pp. 95-105
2001	Amaratunga, D. & Baldry, D.	Facilities Management issues in the Public Sector	Public Service Review: Home Office	Spring, 2001. Pp. 100-106.
2001	Amaratunga, D. & Baldry, D.	Qualitative and Quantitative Research in the Built Environment: Application of “Mixed” Research Approach	Work-study Journal	Accepted for Publication
2001	Amaratunga, D. & Baldry, D.	The Debate about Quantitative and Qualitative Research in Built Environment: A Question of Method or Epistemology?	In the Proceedings of Bizarre Fruit International Postgraduate Conference	School of Construction and Property Management, The University of Salford, Salford, UK. Pp. 129-149.

2001	Amaratunga, D. & Baldry, D.	Process Improvement through Performance Measurement: The Balanced Scorecard Methodology	Work-study Journal	Vol. 50, No. 4/5. Pp.179-188
2000	Amaratunga, D.	Performance Measurement of Higher Education Facilities: The Balanced Scorecard Approach (Note: This paper is based on the "RICS Education Trust Award for 1999" received by the researcher)	RICS Research Paper Series	ISBN – 0953 3761 17
2000	Amaratunga, D. & Baldry, D.	Performance Evaluation in Facilities Management: Using the Balanced Scorecard Approach	In the Proceedings of COBRA 2000 RICS (Construction and Building Research Conference).	Royal Naval College, University of Greenwich, UK. Pp.1-16.
2000	Amaratunga, D. & Baldry, D.	Assessment of Facilities Management Performance in Higher Education Properties	Facilities Journal	Vol.18, No.7/8. Pp.293-301.
2000	Amaratunga, D. & Baldry, D.	Effective Process Management in Facilities Management through Performance Measurement	In, "Performance Measurement – Past, Present and Future", edited by Professor Andy Neely	Centre for Business Performance, Cranfield School of Management, UK. Pp. 8-16.
2000	Amaratunga, D. & Baldry, D.	Theory Building in Facilities Management Research: Case Study Methodology (Note: This paper received the "RICS Award" for the Best Research Paper)	In the Proceedings of the Bizarre Fruit Postgraduate Conference	School of Construction and Property Management, University of Salford, UK Pp.107-123,
2000	Amaratunga, D.	Assessment of Facilities Management Performance	Journal of Property Management	Vol. 18, No.4. Pp.258-267

2000	Amaratunga, D., Baldry, D. & Sarshar, M.	Assessment of Facilities Management Performance – What next?	Facilities Journal	Vol.18, No.1/2. Pp. 66-76
2000	Amaratunga, D. & Baldry, D.	Assessment of Facilities Management Performance in Higher Education Properties	In the Proceedings of BVFM VI: The sixth FMGC Conference on Best Value FM Research: More from the Leading Edge	Sheffield Hallam University, UK. Pp. 1-12.
1999	Amaratunga, D. & Baldry, D.	The Balanced Scorecard: A Universal Solution to Facilities Management	International Journal of Facilities Management.	Accepted for Publication
1999	Amaratunga, D. & Baldry, D.	Building Performance Evaluation of Higher Education Properties: Towards a Process Model	In the Proceedings of COBRA 99 RICS (Construction and Building Research Conference, 1999	School of Construction and Property Management, The University of Salford, UK. Vol.2. Pp.45 - 56,
1999	Amaratunga, D.	The Balanced Scorecard	Departmental Research Paper	School of Construction and Property Management, The University of Salford, UK.
1999	Amaratunga, D.	Post-occupancy Evaluation of Higher Education Buildings	Departmental Research Paper	School of Construction and Property Management, The University of Salford, UK.
1999	Amaratunga, D.	Building Performance and Post-occupancy Evaluation: Closing the Loop (Note: This paper received the “Runners-up Award” of the International Essay Competition for PhD students)	Building Research and Information Journal	Building Research and Information, Langdon Consultancy and the Building Centre Trust.

1998	Amaratunga, D. & Baldry, D.	Post-Occupancy Evaluation of Higher Education Teaching Spaces: A Methodological Approach (Note: This paper received “The University of Salford” Award for the Best Paper)	In the Proceedings of the Bizarre Fruit Conference, The Research Centre for Built and Human Environment	School of Construction and Property Management, The University of Salford, UK. Pp. 10-22.
1998	Amaratunga, D. & Baldry, D.	Appraising the Total Performance of Higher Educational Buildings: A Participatory Approach Towards a Knowledge Based System	In the Proceedings of the COBRA 98 RICS (Construction and Building Research Conference, 1998	Oxford Brookes University, Oxford, UK. Vol. 2. Pp.140-154.

PART TWO - LIST OF OTHER PUBLICATIONS ASSOCIATED WITH FACILITIES MANAGEMENT

Year of publication	Authors	Title of the paper	Published in	Additional information
2001	Aouad, G., Bakis, N., Amaratunga, D. & S. Osbaldiston, Sun, M. & Kishk, M.	An Integrated Life Cycle Costing Database – A Conceptual Framework	In the Proceedings of ARCOM (Association of Construction Researchers) conference	School of Construction and Property Management, The University of Salford, UK. Pp. 421-432
2000	Sarshar, M., Stokes, E. Nelson, M. & Amaratunga, D.	Process Modelling in the Facilities Sector: A Case Study	In the Proceedings of the Conference on Construction Information Technology 2000: Taking the Construction Industry into the 21 st Century	Reykjavik, Iceland. Pp. 801-812,

2000	Amaratunga, D., Sarshar, M. & Baldry, D.	Process Improvement Initiatives in Facilities Management	In the Proceedings of BVFM VIII: The 8 th FMGC Conference on Best Value FM Research: More from the Leading Edge	Sheffield Hallam University, UK
2000	Amaratunga, D., Sarshar, M. & Baldry, D.	Process Improvement in Facilities Management: The SPICE FM Approach	In the Proceedings of the Conference on Providing Facilities Solutions to Business Challenges – Moving Towards Integrated Resource Management, CIB Working Commission W70 – Brisbane 2000 International Symposium	Queensland University of Technology, Brisbane, Australia. Pp. 161-170.
2000	Amaratunga, D., Sarshar, M. & Baldry, D.	Process Improvement in Facilities Management: SPICE Approach	Business Process Management Journal.	Accepted for Publication

PART THREE – PRESENTATIONS

Year	Presented by	Activity	Additional information
2001	Amaratunga, D. & Sarshar, M.	Conducted a workshop titled: “Balanced Scorecard Development Workshop” for Facilities and Estates Directors of selected NHS Trusts	School of Construction and Property Management, The University of Salford, UK.
2001	Amaratunga, D.	Presentation made on “Use of Case Study for Theory Building” at the Research Methodology Workshop	School of Construction and Property Management, The University of Salford, UK.

2001	Amaratunga, D. & Sarshar, M.	Conducted a workshop titled: “Balanced Scorecard Development Workshop” for NHS Estates Management team	NHS Estates, Leeds
2001	Amaratunga, D.	Presented a paper titled, “Theory Building in Facilities Management Research: Case study Methodology”, at Bizarre Fruit Postgraduate National Conference.	School of Construction and Property Management, The University of Salford, UK.
2001	Amaratunga, D.	Presentation based on “Life after a Research Studentship: A Personal Perspective”	“BERN” workshop, The University of Salford, UK
2000	Amaratunga, D.	Presented a paper titled, “Performance Evaluation in Facilities Management: Using the Balanced Scorecard Approach”, at COBRA 2000 (Construction and Building Research Conference.	Hosted by the Royal Institution of Chartered Surveyors (RICS) and Royal Naval College, University of Greenwich, UK.
2000	Amaratunga, D.	Conducted a workshop on “Introduction to SPSS” for fellow Postgraduate Students and Staff of the School of Construction and Property Management	School of Construction and Property Management, The University of Salford, UK.
2000	Amaratunga, D.	Presentation on “Postgraduate Experiences on Research”, at the “Research Day”.	School of Construction and Property Management, The University of Salford, UK.
2000	Amaratunga, D.	Presentation on on, “Writing for Academic Journals: My Own Experience”	School of Construction and Property Management, The University of Salford, UK.
2000	Amaratunga, D.	Presented an outline on the PhD research titled, “Assessment of Facilities Management Performance”, at Salfords Postgraduate Annual Research Conference (SPARC)	Research and Graduate College, The University of Salford, UK.
2000	Amaratunga, D.	Presented a paper titled, “Process Improvement in Facilities Management: The SPICE FM Approach”, at the CIB W70 Working Commission on Facilities Management and Asset Maintenance	Queensland University of Technology, Brisbane, Australia.

2000	Amaratunga, D.	Presented a paper titled, “Assessment of Facilities Management Performance in Higher Education Properties”, at the BVFM VI: The sixth FMGC Conference on Best Value FM Research: More from the Leading Edge.	Sheffield Halam University, Sheffield, UK.
2000	Amaratunga, D.	Presented a paper titled, “Effective Process Management in Facilities Management through Performance Measurement”, at the “Performance Measurement – Past, Present and the Future” Conference.	Robinson College, University of Cambridge, UK.
1999	Amaratunga, D.	Presentation made on “Experience on Interim Assessment” at the Annual Research Workshop.	School of Construction and Property Management, The University of Salford, UK.
1999	Amaratunga, D.	Presented a paper titled, “Building Performance Evaluation of Higher Education Properties: Towards a Process Model”, at COBRA 99 (Construction and Building Research Conference, 1999)	Hosted by the Royal Institution of Chartered Surveyors (RICS) and the Research Centre for the Built and Human Environment at the University of Salford, UK
1999	Amaratunga, D.	Delivered a presentation on “Postgraduate Experience”, at the Postgraduate Workshop	Research Centre for Built and Human Environment, The University of Salford, UK.
1998	Amaratunga, D.	Presented a paper, titled, “Post-Occupancy Evaluation of Higher Education Teaching Spaces: A Methodological Approach”, at the Bizarre Fruit Conference	Organised by the Research Centre for Built and Human Environment, the University of Salford, UK
1998	Amaratunga, D.	Presented a paper titled, “Appraising the Total Performance of Higher Educational Buildings: A Participatory Approach Towards a Knowledge Based System”, at COBRA 98 (Construction and Building Research Conference, 1998)	Hosted by the Royal Institution of Chartered Surveyors (RICS) and the School of Construction and Earth Sciences, and the Centre for Real Estate Management of the Oxford Brookes University, Oxford, UK