Performance Measurement Applications in Facilities Management: An Investigation into the Future Directions

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Abstract

Facilities Management (FM) is very frequently described 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". The practical and strategic relevance of FM to organisations in all sectors of the economy is now increasingly recognised. Accordingly, organisations seek to improve their competitiveness by introducing a core business philosophy and restructuring to release senior management time and improve effectiveness. Managements have begun 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. Formulation of techniques that are capable of assessing "facilities performance" in terms of quality, cost and effectiveness, is therefore critical for "Organisational" and "FM" advancements. Research has emphasised that there is a clear need to measure FM performance which would integrate both the business and facilities domains. Accordingly, this paper summarises a literature review of current leading-edge performance measurement and management practices within facilities management organisations and conceptual models of performance measurement and management from other industries. Accordingly, the paper identifies the directions to develop performance measurement systems in FM with specific links to measure facilities relationships with those of the core business.

Keywords: Facilities management, performance measurement, core business

1. FM and its importance in todays' business environments

Facilities management (FM) has traditionally been seen as simply the management of buildings and building services. FM is a key managerial discipline and large corporations are increasingly recognising its importance in respect of achieving organisational goals and objectives.

A variety of definitions of facilities management have arisen:

- "An intergraded 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 organisaiton" [1];
- "The process by which an organisaiton ensures that its buildings, systems and service support core operations and processes as well as contribute to achieving its strategic objectives in changing conditions" [2];
- "The integration of multi-disciplinary activities within the built environment and the management of their impact upon people and the workplace" [3];
- "A process by which an organisaiton plans, delivers and sustains excellent support services in a quality environment to meet caning strategic business objectives at best cost" [4]

A number of basic issues may be derived from these definitions:

- FM is a function containing a series of linked activities demanding a requirement to co-ordinate all activities pertaining to the planning, design, and management of an organisation's physical resources;
- FM is responsible for co-ordinating planning processes and managing a building's continuing development and changing use patterns, as well as for maintaining the building
- The goal of FM is to contribute to organisation effectiveness by helping the organisation to allocate its physical resources in a way that allows it to flourish in competitive and dynamic markets.

but as shall be seen in due course:

- FM is not just about the maintenance and operation of buildings although so much of its activities are building-related. More accurately it is about the management of a range of services, of a variety of forms, which are necessary to support the primary activities of an organisation;
- These services are invariably people intensive which means that human resource management issues and the so-called "soft" issues are highly significant; and
- FM has no raison-d'etre or justification of its own - it only exists as a means to support the primary, goal-seeking, activities of the organisation. Nevertheless the potential impact of the efficacy of FM upon organisational success may be highly significant.

FM is intrinsically bound up with creating the conditions in which business effectiveness may be achieved. All decisions taken about FM are business decisions albeit subject to technical or organisational criteria. The business case for developing and applying the discipline of FM depends upon an understanding of the potential the approach holds for creating quality working environments to support key corporate activities. Effectively planned facilities and quality support services can generate significant business or organisational returns.

The conditions within which facilities are operated and developed, and therefore the contribution they can make to the organisation, need to be set at the most senior level in an organisation. Strategic business decisions about responses to market conditions, competitive pressures, statutory obligations, and organisational restructuring are all business decisions

which will have direct facilities implications. Company policies for production, marketing, human resource management, and finance each have profound significance for the manner in which facilities management services will be required to be delivered. In this context, following section highlights strategic role of FM.

2. Strategic Role of Facilities Management

FM has three facets in organisations: sponsorship, intelligence, and service management, according to Williams and Roberts (2000) [5]. CFM (2002) [4] identifies sponsorship FM role as the "translation" role with a strategic focus:

- Get the chief executive officer and senior management involved in the process and make them are of the possible outcomes;
- Strategy involves a change management process, which will have an impact on the built environment and the human resources;
- The focus of the strategy is the community, not the building or property, or a project;
- Every individual in the company (from top management to staff) see the project as a business project, which has an impact on the business objectives

Nevertheless it is true that many organisations remain blind or indifferent to the strategic potential of FM to stimulate strategic change or competitive advantage. Instead of being seen as a strategic tool the built assets and human resources and systems remain defined as an obligation or liability, that is as unavoidable costs and charges, cost centres rather than profit centres.

FM and the business or organisational sector may be able to reach a better understanding of each others needs and potential by the co-ordination of decision-making which demands a facilities input, and which would help to bridge the gap between primary business and support activities, i.e. core and non-core. There is a powerful need for a generalised set of principles for the contribution of FM to the defining of business problems, the analysis of options, and the strategic choice of solutions. The discipline itself needs to adopt a more strategic posture about its future path, by protecting and developing the distinctiveness of its range of management activities and mix of managerial and technical skills, thereby confirming its relevance to the whole business process.

This leads to another role, which FM is playing increasingly in performance measurement (PM). The need to monitor, assess and measure FM performance to enhance workplace productivity has become critical, particularly from the strategic point of view of FM.

3. Role of performance measurement within business environments

PM is mostly identified as a system which enhances individual performance to support or achieve the organisational goals [6]. As continuous improvement in a business cannot be gained without measurement of its performance [7], measurement of performance has been given a prominent place in any organization. Kagioglou *et al.,* (2001) [8] defines, the PM as "the process of determining how successful organization or individuals have been in attaining their objectives and strategies". Since PM systems encompasses supporting infrastructure a more wider definition has been given by Nelly (1998) [9] as the quantification of efficiency and effectiveness of past actions by means of data acquiring, collection, sorting, analysing, interpreting and disseminating. Cain (2004) [10] identifies PM as the first stage to any improvement process that benefits the end users with lower prices, and the organizations with higher profit margins whilst enhancing the quality of the product. Thus, it can be said that PM is an important aspect for any organization to evaluate its actual objectives against the predefined goals and to make sure that the organization is doing well in the competitive environment. Love and Holt (2000) [11] summarise the importance of PM as it: Ensure that customer requirements have been met (and if not, why); Enable establishment of achievable business objectives and monitors compliance thereto; Provide standards for business comparisons; Provide transparency and scoreboard for individuals to monitor their own performance; Identify quality problems and those requiring priority attention; Give and indication of the costs of poor quality; Justify the use resources; and Provide feedback for driving the improvement effort.

This section has highlighted the importance of PM in business environments. In this context, the following section identifies its role within Facilities environments.

4. Critical role of performance measurement systems within facilities environments

The importance of PM in FM organisations are been well documented in the literature. Alexander (1996) [12] identifies measurement of performance as one of "three essential issues for the effective implementation of a facilities strategy". Due to the increased complexity of FM organisations facilities managers are accountable for the senior management regarding the FM contribution to business results and for the economic health of the organisation, the senior management at the core of the business will want to know the performance of facilities. In addition, the contributions made by the FM organisation would be assessed by the stakeholders of the organisation. Thus, facilities managers are under pressure to improve the performance in FM organisations to justify their success to the management as well as to the stakeholders. In this regard PM can play a major role in FM organisations by providing periodic information about the attainment of goals and objectives in the organisation and can guide the management towards new directions to enhance the facilities within the organisation.

Amaratunga and Baldry (2002) [13] identify the ways in which FM could contribute to the performance of an organisation such as strategy, culture, control of resources, service delivery, supply chain management and, management of change. Spedding and Holmes (1994) [14] state that FM should not only focus on reducing the running cost of the building, but also should consider the effective and cost efficient ways of space management and achievement of organisational goals. Therefore, to identify the effectiveness of the contributions of FM functions, performance has to be measured. Thus, PM systems play a critical role in this aspect.

Facilities managers are increasingly valued for their entrepreneurial skills and knowledge of the core organisation, with the ability to pre-empt and translate the organisation's need for change into facilities strategies which underpin operational objectives to yield competitive advantage. Further more, strategic appreciation and development has been viewed as the corner stones of any facility management strategy. Thus, it can be argued that PM applications within FM organisations can assist the facilities managers toward achieving the strategies in the changing business environment.

The concept of providing one working space for all the employee activities of the organisation has been changed and the concept of "activity settings" which looks at different work settings ranging from open plan, meeting spaces, quiet concentration areas, conference rooms etc. has been emerged. Thus, corporate office space planning has become an important characteristic of FM organisations and the efficient and effective management of office environment has challenged facilities managers [15]. He argues that the old adage "you can't manage what you can't measure" fit the corporate infrastructure well. Thus, PM can play an important role in FM organisations by providing quantitative and qualitative data in terms of the effective use of the building space.

The above context shows the important role played by PM in FM organisations in way of providing valuable information regarding the attainment of aims and objectives of FM organisations. In this context, following section identifies current, leading edge, PM practises within FM organisations.

5. Current performance measurement and management practices within facilities management organisations

The importance of assessing performance in FM and a general need for the assessment of FM were discussed in the above section. 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.

The tendency of using the PM frameworks instead of the traditional measures can be identified in the PM applications in FM. For instance, the application of Balance Scorecard [16]. Further, the development of frameworks (Service Balanced Scorecard) based on the fundamental principles of Kaplan and Norton's Balanced Scorecard can be found which appraises the performance of property organisation's against their the strategic aims [17].

Process based approach to evaluate the performance in FM organisations can be found in the current FM literature [18]. This identifies the importance of process thinking in FM organisations as it would help to align the activities of the team members towards a common goal. They argue that even though the FM has been defined in many ways, most of these definitions identify the core competencies of FM as understanding business organisation, managing people, managing premises, managing services, managing the working environment and managing resources and recognise FM as a business process. One of such approaches is the application of the SPICE (Structured process improvement for construction environments) model.

Further, a survey as reported in Amaratunga & Baldry (2002) [19] as presented in

Table *1* presents a picture of PM practices within FM organisations. This random sample may have produced a lower proportion of respondent employing the measurement techniques.

Table 1: Use of approaches/techniques for the measurement of FM performance

Approach for the measurement of FM performance	***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	-	-

The use of a broad range of approaches to the measurement of performance in FM was confirmed by the survey and the interviews carried out. 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.

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. This leads to the exploration of similar applications within other industries from whom, FM can learn lessons forms. In this context, the following section highlights some of the most common PM approaches available within other industries.

6. A literature review of conceptual models of performance measurement and management from other industries

In order to overcome the problems associated with the traditional measures such as encouraging short-termism [20], [21]; inability to provide stakeholder perspective [22], [23]; lack of focus on the strategy [21] etc., and to facilitate the effective and efficient PM in the current business environment, various integrated and multi-dimensional PM systems have been developed.

The newly developed integrated performance frameworks have attempted to tie the performance metrics more closely with the firm's strategy and the long term vision [23]. This is due to the recognition of the importance of deriving the performance measures from organisation's strategy [24], [25], [26]. Further, it was argued that there is a need to align the financial and non- financial measures that fit within a strategic framework [27] and [28] where the non-financial measures reflect the organisational objectives while the financial measures indicate the bottom line results [29]. In addition the need of PM systems to provide a balanced overview was highlighted by many authors [30] and [31]. Accordingly, the following section discusses the common PM frameworks used in other industries.

The importance of deriving the performance measures from the strategy of the organisation has been recognised widely [24], [25], & [26] thus the newly developed integrated performance frameworks have attempted to tie the performance metrics more closely with the firm's strategy and long term vision [23].

7. Supply chain performance

Over the past two decades, manufacturing industry has changed in to a highly competitive field due to the emerge of foreign and local competitors. Due to this competitiveness many firms are adopting different strategies to secure their market share. One of such is merging with suppliers by forming long term strategic partnerships which is known as supply chain. Supply chain has been defined as 'a system whose constituent parts include material suppliers, production facilities, distribution services, and customers linked together via the feed forward flow of materials and the feedback flow of information' [32]. Several models have been developed [33] & [34] to measure the performance in manufacturing supply chain.

7.1 Evaluating managers' performance

Another strategy developed in the manufacturing industry is to build up the flexibility of the firms [35] to meet the goals of the organisation in a more dynamic manner. A study has been done in this area [36] by evaluating managers' performance through manufacturing flexibility measures.

7.2 Measuring the long term performance

Measuring the long term performance in manufacturing industry is another approach used [37]. Performance metrics such as advanced manufacturing technology usage, advanced management practices usage, globalization and cooperation capacity and the match between manufacturing capabilities and market requirements are considered to ascertain the long term performance.

7.3 Service Balance Scorecard

Traditionally the performance in Local Government Authority's are measured using financial measures such as occupancy cost to m2, full-time employees, lease cost, lease income, capital expenditure, total revenue etc. Service Balance Scorecard (SBS) has been developed to eliminate the problems associate with the aforementioned traditional measures and a study has been done in this area [17]. The SBS provides a new method to evaluate facilities linked to a Local Government Authority's by measuring the performance in terms of Financial perspective, Building perspective (how well the facility is used in terms of time), Services perspective (how well the facility delivers, services to the community in line with the Local Government Authority's objectives) and Community/customer perspective.

7.4 Satisfying the customer expectations

Even though the supply chain performances are traditionally focused on operational logistic activities, the trend has moved towards satisfying the customer expectations [38]. This has

driven the performance measurement towards strategic measures [39]. Research has been carried out to evaluate the supply chain performance using process capabilities, technology capabilities and organisation capabilities from operational and strategic point of view [38].

7.5 EFQM model

EFQM model is developed on the principle that "Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources and Processes" [40]. The model consists of five "Enablers" namely leadership, people management, policy and strategy, resources, processes, and four "Results" called people satisfaction, customer satisfaction, impact on society and business results. The enabler criteria concerned with how the organisation undertakes key activities while the results criteria are concerned with what results are being achieved. A logic called RADAR lies at the heart of the EFQM model consists of Results, Approach, Deployment, Assessment and Review. Thus, when using the model with an organisation, the Approach, Deployment, Assessment, and Review elements of the RADAR logic should be addressed for each Enabler sub-criterion and the Results element should be addressed for each Results sub-criterion.

The model has a non-prescriptive approach and can be used to carry out excellent quality management and self-assessment of the organisation. The organisation can use the model to develop their vision and goals for the future in a tangible and measurable way, help to identify and understand the nature of the business, identify the cause and effect relationships, use as a diagnosis tool for assessing the current status of the organisation [40].

7.6 Performance Prism

Performance prism consists of five interrelated aspects: Stakeholder satisfaction; Strategy; Processes; Capabilities; and Stakeholder contribution. Similarly to the BSC, the performance prism looks at the needs of stakeholders, but in a broader way. Further, performance prism does not limit by addressing the needs of shareholders and customers as in the case of BSC, but goes beyond that and addresses the needs of employees, suppliers, intermediaries, regulators, community as they too have a substantial impact on the project performance [41].

In most of the PM frameworks, the measures are derived from the strategy, but in the performance prism it is the other way around. The strategic, process and capability aspects of the performance prism have been derived by considering the requirements that is needed for the stakeholder satisfaction which is different from the general approaches of the PM frame works. Furthermore, performance prism identifies the reciprocal relationship between the stakeholders and the organisation. Therefore, focusing on the stakeholder contribution can be identified as a unique feature of the performance prism [42].

7.6 Other mostly cited models

In addition to the above PM frameworks, SMART (Strategic Measurement and Reporting Technique) developed by Wang Laboratories [43] which includes the internal and external performance measures, Keegan et al's (1989) [44] performance metrics based on the combination of cost and non cost measures can be identified. The Macro Process Model, developed by Brown (1996) [45] is based on the concept of cause and effect relationship of the organisation which shows the links between five stages of a business process (inputs, processing systems, outputs, outcomes and goals), and the performance measures.

The PM models used by other industries were reviewed in the above section. It can be identified that every model has its own set of advantages and disadvantages and the suitability of a model to a particular scenario is governed by these advantages and disadvantages.

8. Directions to develop performance measurement systems with specific links to measure facilities relationships with those of the core business

As discussed in section 4, PM plays a critical role by providing concrete evidence about the successful attainment of organisational goals and objectives in FM organisations. A criticism levelled at FM researchers is that they do not use the concepts of PM in as rigorous a manner as, for example, business performance theorists. Furthermore, they make no use of more general discussions of performance measures, e.g. the usefulness of constructing a PM framework for FM, and add PM into models of FM processes in the same way that they add project management techniques. The study of PM in a FM setting has therefore been somewhat superficial. However, it was identified in from the section 5 the positive motive of PM applications in the FM organisations.

The commitment from the people factor involved in FM organisations has a major role to play. For instance, evaluation of the efficiency and effectiveness of the existing building in terms of user satisfaction, identifying new improvements to buildings etc. are major roles of facilities managers. Therefore, similar to industries like construction, "people factor" can be considered as one of the important assets of FM organisations as improvements and challenges in the FM organisations can be met through the work force. The importance of human resource performance evaluation systems to organisations in general [46] & [47] has been highlighted by many human resource researchers. Further the need of aligning the human resource management applications of the firm with other management activities, creating a positive relationship between the organisational performance and the human resource practices focused on employee commitment are being well accepted in the studies done in other disciplines [48]. Therefore, such directions can be taken by FM organisations by measuring the performance of its workforce.

Quality of designs has been identified as an important dimension of buildings [25], [49], & [50]. However, due to the emphasis made by various authors [51[& [52], a new culture has been embarked in the UK construction industry towards measuring the performance [53] and more emphasis has been focused on the performance of the physical process [54] neglecting PM during the design stage. Lack of attention towards the PM during the design stage of buildings may forego the efficient and effective use of space within the building. Thus, measuring the performance during the design stage of FM organisations can be taken as a new direction.

The industries like manufacturing has identified the importance of creating long term strategic partnerships with both upstream and down stream partners such as suppliers, customers, and logistics service providers and the need of integrating and managing the multiple processes within and beyond the boundaries of individual organisations in the supply chain [55]. The research done in other industries revealed that the PM in supply chain facilitates the inter-understanding and integration between the supply chain members and the results indicates the effects of strategies and potential opportunities [56]. Furthermore, aligning the performance measures with the corporate strategy of the organisation have been well experienced by the PM studies in supply chain management in other disciplines as it would make sure that the supply chain processes are delivering the value to the customers and acting as a core competency of the organisation [39]. Further, PM of the whole supply chain and all of its entities has been identified as a strategic issue by many industries [57].

9. Conclusions

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 paper that performance measurement techniques available in general management literature haven't been fully transformed into FM literature, emphasising the research need in performance measurement in FM. The process should include links to the core business at a corporate level.

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