

**THE MOTIVATION OF QUANTITY SURVEYORS IN THE
MALAYSIAN CONSTRUCTION INDUSTRY FOR
IMPROVED JOB PERFORMANCE**

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Declaration

The researcher declares that the work presented in this thesis, to the best of his knowledge is original and his own work. Also neither the thesis in its entirety nor any portion of it has been submitted for application for another academic degree or qualification in another university or institution of learning. Other sources of information used in the study have been well acknowledged and referenced.

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List of abbreviations

BQSM	Board of Quantity Surveyors Malaysia
CIDB	Construction Industry Development Board
CIMP	Construction Industry Master Plan
CIOB	Chartered Institute of Building
CM	Construction Management
GDP	Gross Domestic Product
MCI	Malaysian Construction Industry
QS	Quantity Surveyor
RICS	Royal Institution of Chartered Surveyors
RISM	Royal Institution of Surveyors Malaysia
UK	United Kingdom

Abstract

The construction industry is significantly influenced by the competitive environment, and due to this, economy and quality of life have been affected and inevitably, the way people work has also changed in order to sustain them. In the construction industry, the employees' motivation is important, as it is the factor that contributes to the job performance, and this includes the quantity surveyors. Motivation is the key factor that influences people to do better by initiating action into achieving goal(s), resulting in higher performance. Meanwhile, performance of employees is the measure of the quality of an organisation. In construction, quantity surveyors contribute to the overall construction performance, mainly, by adding value to the contractual and financial management of projects starting from the pre-construction stage until post-construction stage. However, the way quantity surveyors carry out their work has changed in order to adapt to the challenging environment. Unfortunately, there is no available motivation framework regarding the quantity surveying profession that relates to motivation towards improvement of job performance. Therefore, this research is carried out focusing on the motivation factors of quantity surveyors from three types of organisations, namely: government agencies; private consultancy firms; and private contracting firms, and in the context of the Malaysian construction industry. This research adapts a mixed-methods research in order to achieve triangulation, where archival and document reviews; and questionnaire survey strategies were adopted. Two hundred questionnaire surveys were distributed using three mechanisms: web-based; email; and postal. Seventy one questionnaires were received and analysed statistically using the Kruskal-Wallis analysis and other related analysis using the SPSS software. To complement these findings, twenty two semi-structured interviews were carried out with individual quantity surveyors registered with the Board of Quantity Surveyors Malaysia. The interviews were analysed using content analysis through the Nvivo software after the transcription process was done. The result suggests that the motivation factors of quantity surveyors in the construction industry do not differ according to the different types of organisations; and hence, one conceptual framework for quantity surveyors, regardless of the types of organisations they work in/ with, is developed. The conceptual framework was developed and validated and will benefit the: individual quantity surveyors; construction organisations; professional bodies; and education institutions performance improvement when used correctly.

1.0 INTRODUCTION

1.1 Introduction

This chapter will present the rationale for this research. It will explain why motivation towards improved job performance is being conducted. This chapter provides a statement of the research problem and discusses the research aim and related objectives; research questions; benefits of the research; and contribution to knowledge. Exclusions, limitations, constraints, reservations of the research will also be highlighted in this chapter. This chapter will also provide a summary of each chapter in this thesis.

1.2 Background of the study

The construction industry plays a substantial role in many economies and is a major productive sector in Malaysia (CIMP, 2005), contributing to 4.3% of the national GDP in the year 2014 (EPU, 2015). The Tenth Malaysia Plan (10MP) which runs from 2011-2015 focuses on shifting the economy of Malaysia to a high value-added and high income economy through increase in productivity (MOF, 2012).

The construction industry has a domino effect on other industries which is why the construction industry is an important industry and is said to be the key contributor towards the nation's economy. The quality of employees has an important influence on organisations' performance (Smithers and Walker, 2010). Therefore it is important to maintain the quality of the employees by sustaining, or better, improving the motivation level of the employees in carrying out their roles and responsibilities. Employees' job performance is essential in an organisation because it will reflect the organisations' performance and this is also applicable to organisations in the construction industry. Construction industries are significantly influenced by the external competitive environment. Due to this, economy and quality of life have been affected, and inevitably, the way people work has also changed in order to sustain them. Some researchers noted that competing in job performance is the most important mode of competition in the construction industry (Ngowi *et al.*, 2005).

In the construction industry, the concern of the employee's motivation is important, as it is the factor that contributes to the job performance, especially since the construction industry is predominantly related to human management and the construction team has the temporary inter-organisational structure (Smithers and Walker, 2010). In Malaysia, the construction industry is also an important sector for the development of the nation since national construction industries generate one of the highest multiplier effects to other sectors of the economy (Salleh *et al.*, 2011). Whilst the Malaysian construction industry's GDP leads the other sectors (MOF, 2015), still, like many other countries around the world, the Malaysian construction industry continues to be threatened by productivity and performance issues (CIDB, 2008).

The construction industry is amongst the top sectors that contribute to the Malaysian nation's economy; therefore, the construction industry's human resources are identified to be the key challenge that has a significant bearing on the industry in fulfilling construction demand (EPU, 2010). Hence, various steps have been taken to improve the working performance of construction industry professionals in order to enhance competitiveness (Ibrahim *et al.*, 2010).

One of the ways to improve the working performance is through the implementation of the motivation practices which suits the individual quantity surveyors. According to Churchill *et al.* (1999), the determinant of performance, amongst other things is motivation. Meanwhile, Sonnentag and Frese (2002) interpret that motivation is acting as the only direct determinant of performance. Therefore, it can be inferred that motivation is a significant driver on the performance of the employee in the organisation.

The long history of motivational research has given rise to a wide variety of different theories which have been surveyed in several reviews, where the initial discussion concerned human needs, as it was found that the current value and importance in the basic concepts of psychology of human needs have always been protected (Sapmaz *et al.*, 2012). However, there is no single universal theory that can include all people, since humans are unique and have different needs, wants, priorities and goals.

1.3 Problem statements

Ibrahim *et al.* (2010) supports the notion that the construction industry is considered to be a major productive sector in Malaysia. However, the attainment of acceptable levels of quality in the construction industry has long been a problem. Cost overrun (Shehu *et al.*, 2014; Arditi *et al.*, 1985); delay in the construction completion (Larsen *et al.*, 2016; Ogunlana and Promkuntong, 1996); and late and non-payment (Azman *et al.*, 2014; Abdul-Rahman *et al.*, 2014); issues have been among the continuous performance issues in the construction industry, and including Malaysia. About 17% of government contract projects in Malaysia were either delayed by at least three months or abandoned (Sambasivan and Soon, 2007), while more than half of the Malaysian construction projects (55%) experienced cost overruns (Shehu *et al.*, 2014); and consequently, by minimising these construction issues, the performance of the Malaysian construction industry can be improved. According to Arditi *et al.* (1985) and Mansfield *et al.* (1994) the causes of cost overrun includes: price fluctuations; and construction delay. Meanwhile, the top causes of the project's delay in Malaysia are: contractor's improper planning; contractor's poor site management; and inadequate contractor experience (Sambasivan and Soon, 2007). Late or non-payment in the Malaysian construction industry are due to: local culture or attitude; delay in certification by consultant; paymaster's poor financial management (Azman, *et al.*, 2014).

As one of the contractual professionals of construction projects, quantity surveyors needs to ensure that the project is able to finish on time; and within the client's required budget. However, the problem of these two factors in construction projects is that, they are beyond the control of the quantity surveyors alone. The major feature of construction processes that the quantity surveyors need to be aware of is that they are notorious for their complexity (CIMP, 2005) which create occupational stress on the construction professionals (Gunning and Cooke, 2007); and people-reliant (Smithers and Walker, 2010); hence known as a stressful industry (CIOB, 2013) which contributes to major impacts on performance. Therefore the reasons of doing this research are to explore the role of the quantity surveyors in the Malaysian construction industry; and the area of motivation of the quantity surveyors towards improved job performance.

Another issue that lead to the decision of undergoing this research is the issue of the mismatch of the job scope of quantity surveyors. Human resources development is identified

to be the prerequisite in preparing a Malaysian workforce that is globally competitive and is a key thrust in the Tenth Malaysia Plan (10MP) (EPU, 2010). Individual job performance has been the crucial factor leading to the success of 10MP. Local collaboration among relevant bodies has been set up to improve the working performance and the image of Malaysia in all industries, including the construction industry (Ibrahim *et al.*, 2010) in order to improve productivity and performance. The construction industry is known as an industry of a project-based nature, which characterises the industry as an industry with insecure work, thus putting it as one of the most seriously challenging industries to manage the people employed within the sector, by the organisations of the industry (Dainty *et al.*, 2007).

A wide range of construction personnel are brought together as a team to work for a short period of time in order to accomplish the project objectives (Dainty *et al.*, 2007). In the construction sector, quantity surveyors contribute to the overall construction performance, mainly, by adding value to the contractual and financial management of projects starting from the pre-construction stage until the post-construction stage (Nkado and Meyer, 2001). However, the roles of quantity surveyors have undergone significant change in different countries over the last decade and the profession now faces several challenges that threaten its existence, mainly due to the competitive environment (RISM, 2011). There is some fear that quantity surveying may even disappear altogether as a formal profession (Frei, 2010). The number of quantity surveying firms in the Malaysian construction industry is increasing each year, which is worsening the competition situation of the industry (Abidin *et al.*, 2011). The competition has become fiercer as the clients' have become more: information technology savvy; complex; precise; and demanding, all which are threatening the traditional roles and functions of the quantity surveying profession (Nkado and Meyer, 2001). Due to the competitive nature, the Malaysian construction industry has also encountered the problem of having a shortage of qualified workers, which has also affected the quantity surveying profession (Hee and Ling, 2011) and thus, the problem could distress the profession's long term survival (Frei, 2010), thus, creating additional pressure in assuring the flexibility in employment and working arrangements (Ofori and Toor, 2009). Consequently, employers are often unwilling to invest in developing the employees' skill for the fear that the relationship will be temporary (Dainty *et al.*, 2007); and hence create insufficient skilled human capital and skill mismatches. The Eleventh Malaysian plan (11MP) proposed to provide Vocational Education and Training (VET) pathway, enhancing the impact of bridging programmes and soft skills training for graduates in various professions including the quantity surveying

profession (EPU, 2015) in order to improve job performance. Therefore, this research seeks to investigate the alternative of individuals to endure the challenges in this competitive industry in order to improve in the job performance from the perspective of the motivation area.

The third reason to do this research is due to the unavailability of framework in the area of motivation for quantity surveyors in the construction industry towards job improvement. Many workers in various countries, including Malaysia, and in various industries, including the construction industry, face significant employment-related issues, mainly due to: underpaid wages; lack of or minimal appreciation; lack of trust by the manager or supervisor towards the employee; and lack of career development (Islam and Ismail, 2008; Utusan Malaysia, 2014), which can contribute to the motivation level of employees to perform.

There are many factors of motivation that can overcome performance problems, and influence job satisfaction as well as the job performance of employees (Machungwa and Schmitt, 1983). However, little is known of the motivational factors underlying the performance of those who work within the construction industry, or if motivational factors differ for the various occupational groups within the sector (Smithers and Walker, 2010). Therefore, a better-informed understanding of the motivational factors could lead to the development of improved mechanisms for enhancing performance within the sector providing possible insights into the types of people that the industry currently attract and employ (Asad and Dainty, 2005) including quantity surveyor professionals. Mansfield and Odeh (1991) and Ogunlana and Chang (1998) have reviewed the motivation of construction workers and operatives. Meanwhile, Ruthankoon and Ogunlana (2003), Smithers and Walker (2010), and Oyedele (2009) are among the researchers whose studies focus on the motivation of construction professionals. However, there is a lack of material to date, dealing with the motivation of professional quantity surveyors (Bowen and Cattell, 2008), notable exceptions being the work of Bowen and Cattell (2008) who studied the job satisfaction of quantity surveyors in South Africa. Although both South Africa and Malaysia are developing countries, what may work in South Africa may not work in Malaysia. Both countries have a different environment and work culture, and therefore, there is a need for local research to address the motivational practices towards Malaysian quantity surveyors.

Although the theories come from thorough research and have been frequently referred to by many researchers, there is however, no single model of the motivation theory that can best summarise the motivation of employees in the work organisation.

1.4 Justification of the study

Complexity of the construction industry which include: cost overrun; delay in completion of a project; and late or non-payment issues; and the temporary nature of the construction industry which lead to mismatch of job scope, the performance of the individual quantity surveyors are affected. Although there have been recent researches on performance conducted in Malaysia, they are mostly focused on the services sectors (Nasurudin and Khuan, 2011; Salleh *et al.*, 2011). There are still limited studies focusing on investigating the performance of employees in the construction industry (Abdul-Aziz and Ali, 2004; Ling and Lim, 2010), and more particularly in relation to quantity surveyors in the Malaysian context: A study of the relationship of the skill level on job performance of various professions of public service employees (Salleh *et al.*, 2011); and a brief assessment conducted among officers of quantity surveyors in the Public Works Department (PWD) of Malaysia on performance of outsourcing quantity surveying services to private consultancy firms (Abdul-Aziz and Ali, 2004) are among these few studies. The first mentioned study, however, does not represent construction professionals and the second study is a brief study focusing on the performance of quantity surveyors working in private consultancy firms, and from the perspective of quantity surveyors working in the Public Works Department. Therefore, there is a need for local research to determine the roles of quantity surveyors and how this has changed in the past fifty five years. This study would also attempt to integrate the roles of quantity surveyors and motivation in order to improve the quantity surveyors' roles, i.e. improve job performance. There is a need to know the evolution of the roles of the quantity surveyor in order to study the relationship between motivation and the work performance of this profession.

Motivation has been widely researched and although there are many theories available to be referred to, there is no single theory or model that has been able to capture the full dynamics of motivated behaviours (Bong, 1996). Although Bong's research is on motivation in an educational setting, the study can equally be applied to the research of motivation in the

context of a work environment. Therefore, one possible solution for integrating numerous motivational constructs and findings is to create a general conceptual framework of motivation. The need of a comprehensive framework which can fully incorporate the dynamic interactions among motivational variables shall therefore be developed. Individual employees are the most important resource of an organisation with climate building and motivation of individuals crucial to the success of the organisation (Johnson *et al.*, 2013) and motivation is one of the factors that contribute to the enhancement of performance (Heavey *et al.*, 2011). This research wishes to examine the relationship between motivation and job performance. It will therefore focus on the job performance amongst quantity surveyors specifically from the motivation perspective, and in the Malaysian construction industry.

1.5 Research aim

To develop a conceptual framework on the motivation of quantity surveyors in the Malaysian construction industry through the impact, challenges, and effectiveness of the current motivational practices for achieving improved job performance.

1.6 Research objectives

- i. To critically review the literature on motivation, and document the motivation factors and practices in general, and especially in the area of construction;
- ii. To explore the role of quantity surveyors, generally, and specifically in the Malaysian construction industry for the last fifty five years;
- iii. To investigate and identify the factors that impact on the motivation of quantity surveyors in the Malaysian construction industry;
- iv. To ascertain the role of employers in the motivation of quantity surveyors in the Malaysian construction industry;
- v. To synthesise the current motivational practices employed by organisations, including the challenges and effectiveness of the practices in motivating quantity surveyors;
- vi. To synthesise the impact and effectiveness of the motivational practices on individual quantity surveyors in the organisation; and
- vii. To develop and validate a conceptual framework that encapsulates motivation and its practices towards quantity surveyors in the Malaysian construction industry.

1.7 Research questions

Based on the justification of the study in chapter 1.4, research questions arising are:

- i. What are the main motivation theories related to the construction industry?
- ii. To what extent does the motivation factor and employers' role affect the performance of the role of quantity surveyors in the MCI?
- iii. What are the main motivation factors that impact quantity surveyors?
- iv. What are the main roles of the employers in the motivation of quantity surveyors?
- v. To what extent are the challenges faced by employers in employing motivation practices in organisations?
- vi. To what extent do the motivation practices appropriately impact quantity surveyors in the MCI?
- vii. How effective are motivation practices on quantity surveyors in an organisation? (research question vi and viii in table 1.1)

Table 1.1 shows the mapping of the research questions, objectives, and chapters/ questions in survey of the study.

Table 1.1: Mapping of research questions, objectives, and questions in survey/ chapter

Research questions	Research objectives	Questions in survey/ Chapters
i. What are the main motivation theories related to the construction industry?	Objective 1: To critically review the literature on motivation, and document the motivation factors and practices in general, and especially in the area of construction.	Chapter 2 of the thesis.
ii. To what extent does the motivation factor and employers' roles affect the performance of the role of quantity surveyors in the MCI?	Objective 2: To explore the role of quantity surveyors, generally, and specifically in the Malaysian construction industry for the last fifty five years.	Answering questionnaire survey no. 6 until 9 of part 2, roles of the quantity surveyors. Chapters 3, 5, 6, and 7 of the thesis.

<p>iii. What are the main motivation factors that impact quantity surveyors?</p>	<p>Objective 3: To investigate and identify the factors that impact on the motivation of quantity surveyors in the Malaysian construction industry.</p>	<p>Answering questionnaire survey no. 10 of part 3, employers' roles in the motivation of the quantity surveyors.</p>
<p>iv. What are the main roles of the employers in the motivation of quantity surveyors?</p>	<p>Objective 4: To ascertain the role of employers in the motivation of quantity surveyors in the Malaysian construction industry.</p>	<p>Answering questionnaire survey no. 11 of part 4, employers' roles in the motivation of the quantity surveyors.</p> <p>Chapters 2, 5, 6, and 7 of the thesis.</p>
<p>v. To what extent are the challenges faced by employers in employing motivation practices in organisations?</p> <p>vi. How effective are motivation practices on quantity surveyors and to organisation?</p>	<p>Objective 5: To synthesise the current motivational practices employed by organisations, including the challenges and effectiveness of the practices in motivating quantity surveyors.</p>	<p>Answering questionnaire survey no. 12 and no. 13 of part 5, challenge and effectiveness of the implementation of the motivational practices.</p> <p>Chapter 2, 5, 6, and 7 of the thesis.</p>
<p>vii. To what extents do the motivation practices appropriately impact quantity surveyors in the Malaysian Construction Industry (MCI) and how effective are they?</p> <p>viii. How effective are motivation practices on quantity surveyors and to organisation?</p>	<p>Objective 6: To synthesise the impact and effectiveness of the motivational practices on individual quantity surveyors in the organisation.</p>	<p>Answering questionnaire survey no. 14 and no. 15 of part 6, impact of motivation and effectiveness of the motivational practices on individual quantity surveyors.</p> <p>Chapters 2, 5, 6, and 7 of the thesis.</p>
	<p>Objective 7: To develop and validate a conceptual framework that encapsulates motivation and its practices towards quantity surveyors in the Malaysian construction industry.</p>	

1.8 Research methodology

The research methodology adopted in this thesis is discussed comprehensively in chapter 4. This section however provides a brief overview of the methodology. The thesis is a mixed-methods research with pragmatism as the philosophical stance, and is value-laden in terms of the axiological stance. This study applied surveys and archival reviews as its strategies. Questionnaire surveys and face-to-face semi-structured interviews were used to collect the data other than document review. A total of seventy one out of two hundred distributed questionnaires were received and twenty two quantity surveyors were interviewed. The respondents were quantity surveyors from three groups, namely, quantity surveyors from: government agencies; private consultancy firms; and private contracting firms. Questionnaire surveys were analysed using descriptive analysis and statistical tests using SPSS version 19 software. Meanwhile, archival document review and semi-structured interview was analysed using content analysis method with the aid of the Nvivo software.

1.9 Contribution to knowledge

This research contributed to the job performance evaluation of the quantity surveying function as individuals in the Malaysian construction industry, both theoretically and practically. The practical contributions (i.e. findings from the research questions) were specific to the Malaysian construction industry, while the theoretical contributions might also be applicable to other industries and/or countries that wish to improve their job performance by implementing the motivation practices. This research also contributed to the body of literature on motivation by serving as an exploratory study investigating the appropriate motivation factors for quantity surveyors. This research developed a conceptual framework which encapsulates motivation and its practices towards quantity surveyors in the Malaysian construction industry to facilitate individual quantity surveyors in private firms, contracting firms, and government agencies for the benefit of individual quantity surveyors, construction organisations, and professional bodies such as the BQSM and RISM.

1.10 Exclusions, limitations, constraints, reservations

The exclusions, limitations, constraints and reservations presented, will define the boundaries, in which the research was conducted to address the research aim and achieve the research objectives. The study was no doubt subjected to the above four elements which reflects research being carried out in the real world within a practical environment.

The study only focuses on quantity surveyors who are registered with the Board of Quantity Surveyors Malaysia. Those who are not registered with the above mentioned professional board are excluded from this research.

The study is limited to: government agencies; private consultancy firms; and contracting firms that are based in Malaysia and only organisations related to the construction industry. However, this research may also be applied to the same types of organisations in other countries, or other organisations that wish make the study as reference.

Due to the very large population of registered quantity surveyors, only 10% from the total population of quantity surveyors are targeted as respondents, for the questionnaire survey, and only a maximum of twenty-two were interviewed (subject to data saturation). The justification is presented in the Research Methodology section.

1.11 Thesis outline

The thesis will be divided into eight chapters. A brief breakdown of the chapters and what the researcher addresses in each chapter is as follows:

Chapter one: Introduction

This chapter provides the: background of the research; problem statements; and justification of the study, which will be the foundation for all subsequent discussions in the following chapters. The research aim, objectives, and research questions are included in this chapter too. In addition, exclusions, limitations, constraints, and reservations of study are also highlighted in this chapter.

Chapter two: Literature review (motivation theories; motivation factors; and motivation practices)

As motivation theories became the basis of the motivation areas for this research, the literature review in this chapter focused on the factors that motivate the individual quantity surveyors who work in the organisations. The roles of employers in the motivation of the individual quantity surveyor were also explored. Furthermore, this chapter discusses the effectiveness of the identified motivational practices employed by organisations in motivating quantity surveyors including the challenges associated with these practices as well as the effectiveness of the practices. This chapter also discussed the impact of motivation on individual quantity surveyors, as well as effective motivational practices adopted for motivating quantity surveyors in Malaysia.

Chapter three: Literature review (roles of quantity surveyors and the changes of the roles over the past fifty five years)

The literature review focuses on the discussion of the role of quantity surveyors in general, as well as specifically in the Malaysian construction industry. This chapter also identifies and evaluates the changes in the roles for the past fifty five years since that was when the quantity surveying profession started in Malaysia. A detailed exploration of the roles from the past literature is included in this chapter. The role of the quantity surveyor and the evolution of the role in the Malaysian construction industry are explored within the three different groups, namely: government agencies; consulting firms; and contracting firms.

Chapter four: Research methodology

This particular chapter will discuss the methodological path and the research process carried out for the study. Hence, it elaborates on the adopted research methodology and the justifications for the selections made at each level. The philosophical standpoint of the research, methods and tools adopted in the research will be evaluated in this chapter.

Chapter five: Quantitative data analysis

After the research methodological path of the research has been established in the previous chapter, the next step is the data collection. This chapter includes the discussion of findings from quantitative data analysis. It also includes discussion on the sample from the questionnaire survey, tests conducted in the analysis, and findings from each section of the questionnaire.

Chapter six: Qualitative data analysis

This chapter concentrates on the qualitative data analysis, specifically the participants in interview sessions and a brief description on the themes, and a summary of the interviewees' background. The findings from the qualitative data analysis are discussed in detail in this chapter.

Chapter seven: Discussion of findings and development of conceptual framework

This chapter revisits the findings in accordance of the objectives set out at the initial stage of this research. It highlights the synthesis elements of the proposed framework for improved individual performance. Data from the questionnaire surveys and the semi-structured interviews are evaluated and synthesised to form the conceptual framework that encapsulates motivation and its practices towards individual quantity surveyors for improved performance of quantity surveyors in the Malaysian Construction Industry. The conceptual frameworks are then validated by two registered quantity surveyors who are registered with the quantity surveying professional bodies in Malaysia.

Chapter eight: Conclusions and recommendations

Finally, the last chapter presents the conclusions of this research, recommendations from the researcher and suggestions for future research. The conclusions show that: the aim and objectives have been achieved; the research process undertaken has been validated; the conclusions drawn from the study are consistent and coherent; and that the contribution to knowledge is recognised with recommendations for future research. Precise recommendations are made based on the conclusions achieved in association with the: exclusion; limitations; constraints; and restrictions previously mentioned in chapter 1.10.

1.12 Summary

This chapter gives an overview concerning the subject area under consideration in this thesis by introducing and justifying the research area, providing a summary of the research methodology and contribution to knowledge, as well as presenting the overall structure of the thesis. The following two chapters will critically review and discuss the literature related to this study.

2.0 REVIEW OF LITERATURE

Motivation and the relationship with performance

2.1 Introduction

This chapter will present the literature review undertaken for this research. It will provide details on motivation, starting from the most basic element, which are the definitions and the theories of motivations; the motivation factors and the motivational practices in the organisations. This chapter will provide an overview concerning the importance of motivation on individual quantity surveyors in Malaysia.

2.2 Background and definitions of motivation

Over the years, the concept of motivation has been defined in many different ways. Motivation can be defined as the internal factors that impel action and external factors that can act as inducements to action (Locke and Latham, 1990). In addition, Chruden and Sherman (1963) emphasised that fundamentally, motivation involves needs that exist within the individual and incentives or goals that are to be found outside of the individual. Needs may be thought of as something within individuals that prompts them to engage in behaviour which is directed toward the attainment of incentives or goals that they perceive to be capable of satisfying their needs. Hellrigel *et al.*, (1995) defined motivation as the forces acting on or within a person that causes the person to behave in a specific, goal-directed approach, while Manzoor (2011) described motivation as a power that strengthens behaviour, gives route to behaviour, and triggers the tendency to continue. Motivation as portrayed by Tyszka *et al.*, (2011) is a momentous cause in directing an individual into an entrepreneurial path. Yet, one must believe that it will allow the accomplishment of one's goals in order to choose such a path. Motivation is also described as the driving force by which we achieve our goals (Willson, 2012). Ankli and Palliam (2012) stated that the underlying assumptions of motivation include people having the ability for responsible actions, a natural desire to learn and understand things and the desire to do well at work and play. Motivation is also classified as an internal driver that activates and directs behaviour (Seiler *et al.*, 2012).

From the synthesis of the definitions discussed, motivation in general is concerned with factors or events that: moves; leads; and drives certain human action or inaction over a given period of time, towards a goal(s). This definition will be adopted within the research.

2.3 Theories

The long history of motivational research has given rise to a wide variety of different theories which have been surveyed in several reviews (Chruden and Sherman, 1963; Campion and Lord, 1982; Locke and Latham, 1990; Saeednia, 2011; Ankli and Palliam, 2012), where the initial discussion concerned human needs, which are known as the needs or better known as content theories and discussed further in chapter 2.3.1.

The general concepts of motivation theory consists of intrinsic and extrinsic elements, where intrinsic motivation refers to motivation that is determined by an interest or enjoyment in the task itself and exists within the individual rather than relying on any external force, while extrinsic motivation comes from outside of the individual and it is usually associated with rewards such as: money; appreciation; intimidation; and threat of punishment (Ankli and Palliam, 2012).

The concepts of motivation can also be seen in the motivation theories. According to Ellis and Dick (2003), there are two types of person theories, namely: content theories; and process theories.

2.3.1 Content theories

Content theories which include: Maslow's Hierarchy of Needs Theory (1943); Herzberg's Two-Factor Theory (1959); McClelland's Need for Achievement Theory (1961); and Alderfer's Existence-Relatedness-Growth (ERG) Theory (1972); are examples of those that describe the components necessary for human behaviour to occur. Content theories are concerned with what energises, directs and shapes behaviour (Hellrigel *et al.*, 1995) and also identifies: people's needs; their relative strengths; and goals; that they pursue in order to assure these needs (Timothy and Manley, 2011).

i. Maslow's Hierarchy's Theory

Maslow's theory (1943) is an influential theory which has affected the majority of psychology fields and the work underlies most humanistic educational movements and provides philosophical and psychological frameworks for new paradigms. Maslow's theory is the most holistic and dynamic theory which offers the best guidelines to explain motivation and Maslow's hierarchy is widely applied in the management sector (Saeednia, 2011). Maslow's theory outlines the needs that humans possess into five sets. As most of the needs at each level are satisfied, there is a move to seek satisfaction at the next higher level (Ellis and Dick, 2003; Maslow, 1943). The five needs from lower-order starts with: physiological; safety; social concern; esteem; and self-actualisation. Maslow's theory suggests that, one needs to satisfy one step of the pyramid before moving upward.

Although Maslow's hierarchy of needs theory is the most widely recognised theory of motivation (Oyedele, 2010), unfortunately, there are not many attempts to construct standard scales for measuring basic-needs-satisfaction, despite the contribution of Maslow's theory in psychology.

ii. Herzberg's Two-Factor Theory

Herzberg's Two-factor Theory (1959) proposed that there are two different sets of factors affecting motivation and work, namely: motivators; and hygiene factors (Oyedele, 2010). Motivators satisfy the worker's need for self-actualisation as they cause positive job attitudes and are also the individual's ultimate goal (Maslow, 1987). Meanwhile, hygiene factors are factors needed to ensure an employee is not dissatisfied (Schermerhorn *et al.*, 2005). Herzberg's theory disregards the differences of worker's characteristics and the model is claimed to be applicable regardless of: age; occupational level; and so on. The theory was found to be inappropriate regarding blue-collar workers but despite the substantial criticism of Herzberg's two-factor theory, it remains attractive to managers because it provides an appealing package for application in personnel management besides its theoretical and practical simplicity (Shipley and Kiely, 1988).

iii. McClelland's Need for Achievement Theory

Meanwhile, McClelland (1961) is most known for describing three types of motivational needs and focuses on the higher-order needs identified by Maslow. Many studies (Hollenbeck *et al.*, 1989; Slocum *et al.*, 2002) have found a strong positive correlation between the need for achievement and goal attainment and furthermore, the need for achievement is relatively stable and is subsequently part of an individual's personality (Loon and Casimir, 2007).

iv. Alderfer's Existence-Relatedness-Growth Theory

Alderfer's Existence-Relatedness-Growth or ERG Theory (1972) combines elements of both the Maslow and McClelland need theories (Pate, 1987) but Alderfer's theory is more flexible than Maslow's theory. One of the important strengths of the ERG theory is the job-specific nature of its focus (Song *et al.*, 2007).

The ERG theory is a further development of Maslow's theory. The difference between these two theories is that the ERG theory does not assume that a lower need must be satisfied before an individual develops the desire for a higher level need. ERG theory emphasises that the desire at each level can be satisfied simultaneously.

ERG theory is regarded as a more valid version of the need hierarchy and has elicited more support from contemporary researchers as far as motivation in the work environment is concerned (Stajkovic and Luthans, 1998).

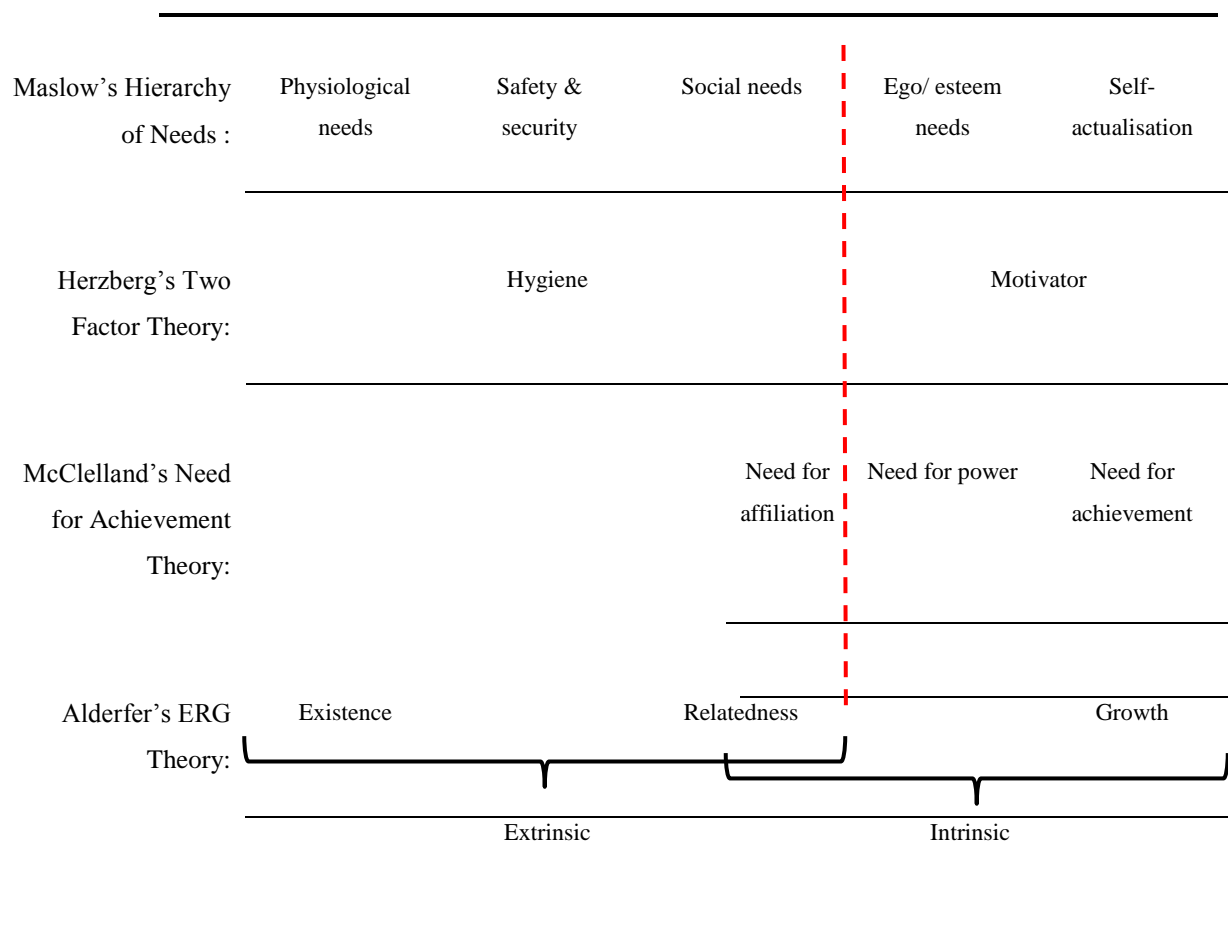


Figure 2.1: Comparison of Content Theories

From figure 2.1, it can be seen that all content theories have the elements of both extrinsic and intrinsic and have the similar basis of motivation elements in the Maslow's hierarchy of needs theories. Moreover, content theories do an adequate job of describing the factors that motivate behaviour, but they tell us very little about the actual process of motivation (Moorhead and Griffin, 1995).

2.3.2 Process theories

Process theories are theories that describe the processes whereby the components energise behaviour (Oyedele, 2010). Process theories are concerned with analysis and description of how personal factors such as cognitive processes determine people's motivation. Vroom's Expectancy Theory (1964); Adam's Equity Theory (1963); Porter and Lawler's Expectancy

Theory (1968); and Latham and Locke's Goal-Setting Theory (1979); are amongst some of the process theories (Bowen *et al.*, 2008). These theories place emphasis on the actual process of motivation.

i. Adam's Equity Theory

The Adam's Equity Theory (1963) concentrates on an individual's cognitive process (Yamaguchi, 2003; Oyedele, 2010), which states that one can be satisfied with a situation only when the ratio between personal input (contribution/effort) is equal to the outcomes (rewards) of others with whom they compare themselves with. Thus, the theory is based on the premise that people are driven by the concern for fairness and equity (Adams, 1963). The drawback of the equity theory is that, this theory is strongly supported by studies in a laboratory setting and may not be true in a real organisation (Yamaguchi, 2003). However, this theory has then been developed into the equity sensitive theory (Huseman *et al.*, 1987) to be adaptable in organisations as it has included the concept of individual differences as well as considering the concept of perceived importance of needs (Yamaguchi, 2003).

ii. Vroom's Expectancy Theory

Vroom's Expectancy Theory (1964) emphasised that the underlying basis for motivation is that people are influenced by the expected results of their actions. The theory has been proposed as a model and basis for prescribing and predicting a wide variety of work-related variables in diverse organisational settings (Ivancevich, 1976). The expectancy theory has probably been the more dominant conceptual framework for understanding human motivation in work organisations over the recent years, and furthermore, this theory has been used to explain how much effort is expected to complete a job, how individuals decide to enter (or leave) both occupations and organisations and how satisfied people are with their jobs (Wanous *et al.*, 1983).

iii. Porter and Lawler's Expectancy Theory

Porter and Lawler's Expectancy Theory (1968) looks at the employee's performance as a whole, and states that it is important to allow for the fact that extra levels of effort do not

always lead to improved performance (Tyagi, 1990). This extension of the expectancy theory is very comprehensive, incorporating important variables which Vroom's theory overlooked. Even if the individual notices that an increased effort will lead to improved performance, this does not necessarily guarantee an improvement because performance depends not only on effort but also on the skills and abilities an individual brings to any given task (Ellis and Dick, 2003).

iv. Latham and Locke's Goal-Setting Theory

Timothy and Manley (2011) cited Locke and Latham (1990), that assigned goals influences people to believe that they have the ability to complete a particular task (self-efficacy), which leads to acceptance and strive to attain the goals (goal commitment). Specific high goals; and goal commitment with the aid of variables such as competition, and monetary incentives can lead to achieving the specific high goal (Latham and Ernst, 2006).

On the other hand, until recently, Campion and Lord (1982) stated that researchers concerned with goal settings have not been emphasizing much on the role of feedback but only focusing on setting the goal. Thus, the effects of goals have not been well integrated with feedback systems.

More recent work on motivation theories such as: Social Learning Theory (SLT); and Self Determination Theory (SDT) (Deci and Ryan, 2000); have been focusing on more complex contexts and jobs, where attention has been given to how employees differ and to how one can implement procedures which draw upon and integrate existing theories. Also, the new modern research of motivation has shifted from general solution ideas to more focused areas, such as areas of: leadership; organisational culture; and participation in decision making (Brooks, 2009), but these modern researches on motivation still employ the long-established existing content and process theories as their basis.

2.4 Motivation in construction industry organisations

Maslow's theory is well-known in the construction field. Construction motivation studies based on this theory include: Wilson (1979) who identified ten variables that could be grouped under the five needs; Mackenzie and Harris (1984) who argued that money was the only motivator for construction workers; and Olomolaiye and Ogunlana (1988) who found that earnings related factors (physiological needs) were predominant for motivating Nigerian construction workers, and the latest is the work from Bowen *et al.* (2008) who studied the job satisfaction of quantity surveyors in South Africa. There is no study found on the Malaysian construction industry relating to Maslow's theory.

Herzberg's theory is also noted to be popular in the construction industry. Some of the research is by: Borcharding and Oglesby (1975) who investigated the relationship of job satisfaction and construction productivity; Olomolaiye and Ogunlana (1988) who explored the most influential variables of motivator and hygiene factors affecting bricklayers in the United Kingdom (UK); and the more recent study by Ruthankoon and Ogunlana (2003), who tested Herzberg's two-factor theory on professional engineers and foremen from Thailand's construction industry. There are no more recent studies on Herzberg's theory other than previously mentioned studies.

McClelland's theory has been used in research related to the software engineering industry: software engineering industrial practice (França *et al.*, 2014); career orientation of software engineers in Iran (Alavi *et al.*, 2012). With the constraint of search limited from the local university library and database, none were found that relate to the construction industry to date.

As for Alderfer's ERG theory, although it is an important content theory and used worldwide (Song *et al.*, 2007), like McClelland's need for achievement theory, ERG theory is not widely applicable to the construction industry since there are no sources found to date relating this theory to the construction industry.

A study (Arvey and Neel, 1974) on testing expectancy theory predictions using a sample of engineers has been done and this study used the behaviourally based rating scales. Another study (McFillen and Maloney, 1988) tested the expectancy theory in a survey asking to provide self-report measures of their efforts and performance. There is no literature that

shows later study on the expectancy theory (by Vroom as well as by Porter and Lawler) other than a study on managerial motivation (Kominis and Emmanuel, 2007). There are also few studies (Lingard and Rowlinson, 1997; Cameron and Duff, 2007; Leung *et al.*, 2012) found related to the goal-setting theory in the construction industry, but these studies all focus on safety and health on construction sites.

Meanwhile, similar to McClelland's and Alderfer's motivation theories, there is a lack of research based on Adam's equity theory, wholly, and regarding the construction industry. Table 2.1 summarises the motivation theories and the availability of studies of the construction industry related to the theories.

Table 2.1: Motivation theories

Motivation theories	Authors	Year	Study(ies) focused on construction industry
Content Theories	Maslow's Hierarchy of Needs Theory	1943	√
	Herzberg Two-Factor Theory	1959	√
	McClelland's Need for Achievement Theory	1961	X
	Alderfer's ERG Theory	1972	X
Process Theories	Adam's Equity Theory	1963	X
	Vroom's Expectancy Theory	1964	√
	Porter and Lawler's Expectancy Theory	1968	√
	Latham and Locke's Goal-Setting Theory	1979	√

From the review of motivation theories, it can be summarised that, there are many motivation theories that exist but there is no single universally applied theory of motivation that can be claimed to embrace the entire range of firm and personal circumstances that exist. For example, something that motivates a group of people may not be applicable to another group of people; and what motivates an individual today may not work tomorrow. As there is no accepted theory of how to motivate people as a whole (Ellemers *et al.*, 2004), it can be summarised that humans all over the world and in any industry are unique and complex.

It can be concluded that the content theories only describe the factors that motivate behaviour and lacks evidence on the actual process of motivation. Meanwhile, each of the process

theories introduces different themes on motivating the behaviour. Bong (1996) highlights that the problems in academic motivation research is that different theoretical orientations of investigators working in the field are unable to capture the full dynamics of motivated behaviours since the researchers tend to emphasise a particular dimension of motivational phenomena over the others.

Although there are many studies of motivation on construction industry workers found, there are limitations of the studies on professional workers. Smithers and Walker (2010); Oyedele, (2009); Bowen *et al.*, (2008); and Ruthankoon and Ogunlana, (2003); are among the researchers whose studies are focused on the motivation of construction professionals. No study was found relating to the motivation of professional quantity surveyors other than Bowen *et al.* (2008) and Bowen and Cattell (2008) on job satisfaction of quantity surveyors in South Africa.

Therefore, by combining the relevant available motivation theories, which contains several related motivation factor variables and dimensions; it may help produce a comprehensive single conceptual framework towards improved job performance amongst quantity surveyors.

2.4.1 Motivation factors

There are nineteen motivation factors that have been frequently cited in several studies. Each motivation factor is described as below:

a. Challenges in doing task (item 10-1)

It explains the extent to which the tasks entail different level of difficulties.

b. Job description (item 10-2)

It is the explanation or details of the assignments which makes the job to be desired or not by the employees.

c. Job promotion (item 10-3)

It means that the raise or advancement in the career to a better post.

d. Progression in career (item 10-4)

Progression in career means the development in the career or profession and this does not necessarily involve advancement to a better job post. It may also mean development of individual in term of improved skill and knowledge.

e. On-the-job training (item 10-5)

This category relates to the training given in-house or at the organisation's premise, whether by the experienced staff of the organisation itself, or the organisation hire trainer from outside.

f. Off-the-job training (item 10-6)

Off-the job training is the training given somewhere outside of the employee's work place, such as at the Professional's institution or government institution.

g. Working conditions (item 10-7)

This category relates to physical surroundings at work such as the work station layout and interior design of the office.

h. Financial incentives (item 10-8)

This category relates to amount of salary; bonus; profit –sharing; pension; and overtime claim.

i. Non-financial incentives (item 10-9)

Non-financial incentives are like: lunch voucher; transportation accommodation; holiday package; and health insurance or facility.

j. Relation with colleague; or supervisor's relation with employee (item 10-10)

These categories are limited to personal and working interactions between the respondent and other people he/she works with.

k. Direction and monitoring from supervisor; or supervisor has good leadership skill (item 10-11)

This relates to the supervisors' competence or incompetence.

l. Assignment that suits the capability (item 10-12)

This relates to the fitness of the job or task assigned especially according to the job position and working experience.

m. Fair time to finish assignment (item 10-13)

This category means the appropriateness of the period allowed to complete the job before the deadline.

n. Company honouring promises made (item 10-14)

This context refers more towards the policy of the organisation where the statement made by the organisation (which is usually considered as promise by the employee) have or have not been fulfilled.

o. Fair pay equivalent to job scope (item 10-15)

This category means the suitability of the pay according to the job description or pay to complete the job; and this include overtime work.

p. Good teamwork (item 10-16)

This context refers to the workability of the team; which include helpfulness of the teammates and the level of autonomies offered.

q. Support from family and friends; or support to employee (item 10-17)

These categories are limited to interactions between the respondent and other people that provide encouragement or discouragement to him/her in work.

r. Complement from superior or to employee (item 10-18)

This category explains the recognition and appreciation to employee verbally or through any other means.

s. Good facilities and resources at work place (item 10-19)

This category relates to good or bad facilities at work such as: photocopy machine; desktop; and related quantity surveying software.

Table 2.2 is the summary of the literature that contains and discussed on the motivation factor or factors. Aguinis *et al.* (2013) discussed on multiple monetary rewards as the motivation of employees and performance; meanwhile Kruse *et al.* (2004) explores financial incentives as the motivation on the company's performance. Boxall *et al.*'s (2015) study focuses on motivation that relates to skill utilisation and intrinsic motivation on a large organisation in New Zealand. Gkorezis and Petridou (2012), study on the effect of extrinsic rewards on public and private sector in Greece; meanwhile Buelens and Broeck (2007), investigate the difference in work motivation between public and private sector in Belgium's organisations. Tian and Pu's (2008) study focusing on employee's job satisfaction in China. Sahinidis and Bouris's (2008) study focuses on training programmes effectiveness on five large Greece organisations. Neckermann and Bruno (2013) discover the motivating power through employee awards. While Chen (2014), researches on the intrinsic-extrinsic motivation of managers of non-profit organisations; Hytti *et al.*, (2013) investigate the determinant of job satisfaction for salaried and self-employed professionals in Finland. Bent and Freathy (1997) conduct a study on the motivation of employee in Edinburgh, United Kingdom. Manzoor (2012) produce a conceptual framework and a model related to motivation of employees in organisations from literature reviews. Only one study found on the motivation factors through job satisfaction of employees which focuses on Malaysia (Teoh *et al.* 2011).

The literatures on motivation factors that relate to the construction professionals include: Leung *et al.* (2008) which focus on interrelationship among affective commitment, job performance, and job satisfaction of construction professionals in Hong Kong; Lim and Ling (2012) who research on human resource practice that leads to job satisfaction of professional staff in contracting companies in Singapore; Oyedele (2010) who investigate the motivation of designers of Irish construction firms; Ruthankoon and Ogunlana (2003) which test Herzberg's two-factor theory in the Thai construction industry; Smithers and Walker's study (2010) which analyse the motivation of construction professionals in Melbourne, Australia; and Holmes (2012) who highlights the motivation of the construction professionals in New Zealand.

Meanwhile: Mansfield and Odeh (1991) highlight on the issues that affect the motivation on construction projects which include the construction players; Zakeri *et al.* (1996) identify the factors affecting the motivation of construction operatives in Iran; and Abdullah *et al.* (2011) analyse the level of job satisfaction of employees in small and medium sized construction

firms in Nigeria; Only Bowen *et al.*'s (2008) and Bowen and Cattell's (2008) researches focus on job satisfaction of quantity surveyors but in South Africa. Both of the authors obtained the data via a web-based, national questionnaire survey of the registered quantity surveyors. The main categories of the variables used were: personal characteristic of employees; and characteristics of the jobs itself.

All the studies previously described contain at least one motivation factor and these motivation factors are then used as the basis for this study. Although there is much research on factors that impact on the motivation of employees in organisations available, there is insufficient literature to date dealing with the motivation of professional quantity surveyors (Bowen and Cattell, 2008).

Table 2.2: Summary of literature on motivation factors

	10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10	10-11	10-12	10-13	10-14	10-15	10-16	10-17	10-18	10-19
Aguinis <i>et al.</i> (2013)								√	√						√				
Boxall <i>et al.</i> (2015)				√	√							√				√			
Gkorezis and Petridou (2012)			√					√		√	√								
Leung <i>et al.</i> (2008)		√														√			
Teoh <i>et al.</i> (2011)							√	√		√	√								
Tian and Pu (2008)	√						√												
Sahinidis and Bouris (2008)					√	√													
Kruse <i>et al.</i> (2004)								√											
Neckermann and Frey (2013)								√	√										
Lim and Ling (2012)					√	√		√	√										
Oyedele (2010)	√		√		√	√	√	√	√	√	√	√	√		√	√		√	√
Chen (2014)				√	√	√		√		√									
Abdullah <i>et al.</i> (2011)								√	√										
Ruthankoon and Ogunlana (2003)		√	√	√			√	√		√	√			√				√	
Bent and Freathy (1997)		√					√	√		√			√					√	

Buelens and Broeck (2007)			√	√			√	√		√	√						√		
Hytti <i>et al.</i> (2013)		√																	
Smithers and Walker (2010)	√	√	√	√				√		√	√	√			√	√	√	√	
Manzoor (2012)			√					√			√								
Mansfield and Odeh (1991)	√		√	√				√		√						√		√	
Zakeri <i>et al.</i> (1996)								√							√				√
Bowen <i>et al.</i> (2008)	√		√					√	√	√	√					√		√	
Holmes (2012)	√			√	√	√		√		√	√		√			√		√	

2.4.2 Motivation themes

Motivation themes consist of the motivation factors that have similar nature or characteristics. Job characteristics; work nature; intrinsic rewards; and extrinsic rewards are among the example of the motivation themes. Table 2.3 shows the comparison of motivation themes by seven authors. Brian (2014); Lim and Ling (2012); Oyedele (2010); Leung *et al.* (2008); Bowen *et al.* (2008); Steers (1987); and Machungwa and Schmitt (1983); are among the researchers that conducted the studies related to the motivation factors of employees in various industries including the construction industry. Among the seven authors: three authors have various industries as research settings; three authors have done research on construction professionals; and one author has done a research on quantity surveyors. Among these authors, Machungwa and Schmitt (1983) themes has been used as reference for this research since it has the most themes and well explained. Therefore, for this research, the motivation factor themes proposed by Machungwa and Schmitt (1983) are discussed to extensively; but still motivation themes from other authors are also referred.

Table 2.3: Comparison of motivation themes or dimensions by eight authors

Researchers	Research settings	Comments
Machungwa and Schmitt (1983)	Various industries in Zambia	Proposed 5 themes
Steers (1987)	Various industries in the UK	Proposed 3 themes
Bowen <i>et al.</i> (2008)	Construction industry professionals in South Africa	Proposed 5 themes
Leung <i>et al.</i> (2008)	Construction industry professionals in Hong Kong	Proposed 3 themes
Oyedele (2010)	Construction industry professionals in Ireland	Proposed 4 themes
Lim and Ling (2012)	Construction industry professionals in China	Proposed 3 themes
Brian (2014)	Work Organisation	Proposed 4 themes

a. Growth and advancement opportunity

Themes grouped under the growth and advancement opportunities are very frequently mentioned as motivating conditions. These include the: possibility for promotion; opportunity to learn more about the job; receive further training; receive trust; confidence shown by superiors and co-workers; job conditions allowing responsibility; job conditions allowing autonomy; placement in a job with regards to one's skills; placement in a job

with regards to previous training; and the degree of corrective feedback received on the job. Some job characteristics contribute to certain psychological states and that the strength of the employees' needed for growth has an important moderating effect (Sahinidis and Bouris, 2008; Karasek *et al.*, 1998). All content theories and process theories (Except Adam's Equity Theory) contain one or more growth and advancement motivation factor variables.

In the context of this research, quantity surveyors are more inclined to be motivated to the type of work or assignment which has the characteristics of which they like or understand more. For example, the strength of the employees (in term of skills) has an important moderating effect (Lim and Ling 2012; Karasek *et al.*, 1998). Therefore, when quantity surveyors are sent to training, they have a tendency to become experts in their scope of job or new work scope since the confidence level of success is higher.

b. Work Nature

The second set of items relates to the: nature and characteristics of the works (Karasek *et al.*, 1998); amount and difficulty level of the work; and how such work is assigned (Hackman and Oldham, 1976). Themes in this group include the: amount or difficulty level of work assigned (a lot of work: sufficient or more but not too much); presence of urgently required work or tasks with a completion deadline; work described as interesting and challenging; work perceived as important and offering variety; and work that allows a sense of achievement and opportunity to prove oneself (Hytti *et al.*, 2013). When specific goals were assigned, more effort was exerted than when nonspecific goals were set. This is in line with Locke's (1968) position (Manchungwa and Schmitt, 1983) which concludes that more definite and detailed explanation of the goal will result in greater effort. However the difficult goals are bearable to be achieved by one. Achieve target or goal; interesting work; and work life balance; are among the motivation factors of construction professionals including quantity surveyors (Holmes, 2012). Meanwhile, Bowen *et al.* (2008) identifies: recognition of achievements; variety of works; non-repetitive work; and having social interaction as the factors that motivate quantity surveyors. This factor reflects that quantity surveyors will be more motivated to do their work if they enjoy the work rather than tailoring their lives to their work. Maslow's hierarchy of needs theory; Herzberg's two-factor theory; and Latham and Locke's

Expectancy theory; are the theories that contain one or more work nature motivation factor variables.

c. Material and physical provisions

The third group of items is related to the amount of material and physical provisions present in the job situation. The components of the motivation under this theme are: pay (reasonable pay; increments; bonuses; incentives; merit raises); job security; fringe benefits; and favourable physical work conditions. Quantity surveyors are also affected by the above mentioned motivation factors (Bowen *et al.*, 2008; Holmes, 2012) other than the quality of the work environment (Clark, 2000). For example, in doing work the traditional way, frequent reference to drawings is essential to the quantity surveyors in doing measurements. Therefore, an adequate work station, i.e. table with wide surface can help in making the drawing reading and referencing convenient to the quantity surveyors. Other than that, the facility of the office equipment like photocopy machine and personal computer with sufficient software can help in making the outcome more efficient especially in preparing the tender and contract documents. The motivation factor variables for material and physical provisions theme can be found in: Maslow's hierarchy of needs theory; Herzberg's two-factor theory; Alderfer's ERG theory; Steer (1987) individual characteristics dimension; and part of the reward system motivation factor dimension (Brian, 2014).

d. Relations with others

The fourth set of items is relations with others, which includes: recognition or praise from superiors; co-workers, or subordinates; consultative and participative supervision; degree to which superiors and co-workers are hardworking and competent; good interpersonal relations; supportive family and friends; and the degree of understanding and attention to employees problems shown by the company (Machungwa and Schmitt, 1983), as well as the construction operators on site (Zakeri *et al.*, 1997). Participation in a team and having a good relationship with co-workers are among the factors that motivate the quantity surveyors (Bowen *et al.*, 2008; Holme, 2012). The relations with others theme of motivation factor variables can be frequently found in all the content

theories; Steer's (1987) work environment characteristic dimension; and Brian's (2014) leadership style as well as organisational climate dimension.

e. Fairness in organisational practices

The fifth category of themes pertains to the degree of fairness perceived in organisational practices. Manchungwa and Schmitt (1983) identified two divisions for this cluster, namely: perceived fairness in promotion decisions; pay rises; work assignments; and other personnel practices and decisions; and keeping promises made to employees. This is in line with Adam's Equity Theory (1963). However, Bowen *et al.* (2008); and Holmes (2012) argues that quantity surveyors are not affected by fairness in organisational practices. All the process theories (except Latham and Locke's Goal-Setting Theory) contain the motivation factors of the said themes listed in table 2.4.

The description of motivation themes; and the relationship between motivation themes with the motivation theories and the themes are presented in table 2.4 and table 2.5 respectively.

Table 2.4: Summary of motivation themes and motivation factor variables

Motivation factor	Motivation theme				
	Growth and advancement opportunity	Work nature	Material and physical provisions	Relations with others	Fairness in organisational practices
10-1		√			
10-2		√			
10-3	√				
10-4	√				
10-5	√				
10-6	√				
10-7			√		
10-8			√		
10-9			√		
10-10				√	
10-11				√	
10-12		√			
10-13					√
10-14					√
10-15					√
10-16				√	
10-17				√	
10-18				√	
10-19			√		

Table 2.5: The summary of the relationship between motivation themes and the motivation theories/ dimensions

Motivation factor themes	Growth opportunity	Work nature	Material & physical provisions	Relation with others	Fairness in organisational practices
Maslow's Hierarchy of Needs Theory	√	√	√	√	X
Herzberg Two-factor Theory	√	√	√	√	X
McClelland's Need for Achievement Theory	√	X	X	√	X
Alderfer's ERG Theory	√	X	√	√	X
Adam's Equity Theory	X	X	X	X	√
Vroom's Expectancy Theory	√	X	X	X	√
Porter and Lawler's Expectancy Theory	√	X	X	X	√
Latham and Locke's Goal-Setting Theory	X	√	X	X	X
Machungwa and Schmitt's motivation factor themes (1983)	√	√	√	√	√
Steers' motivation factors themes (1987)	X	√	√	√	X
Bowen <i>et al.</i> 's motivation factor themes (2008)	X	√	X	√	X
Leung <i>et al.</i> 's motivation factor themes (2008)	X	√	X	√	X
Oyedele's motivation factor themes (2010)	√	√	√	√	√
Lim and Ling's motivation factor themes (2012)	√	X	√	X	X
Brian's motivation factor themes (2014)	√	√	√	√	X

Figure 2.2 is an illustration of how the motivation factor themes (MFT) were constructed. The process of constructing the motivation factor themes started from the derivation of motivation factors (MF) available in: the motivation theories; and/ or dimensions. In each theory, it consisted of at least one motivation factor. Subsequently, the motivation factors

which have similar characteristics among these theories and/ or dimension are categorised into the same themes.

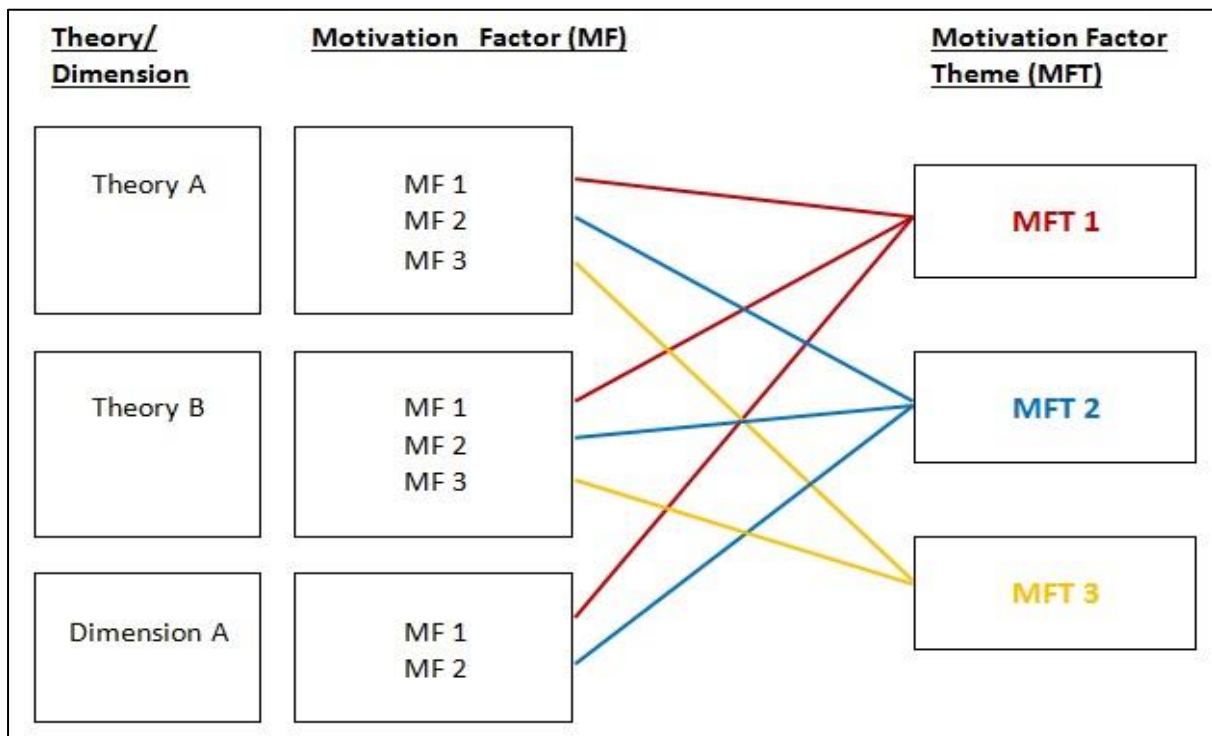


Figure 2.2: Concept of the construction of the motivation factor themes

2.4.3 Motivational practices in organisation

Motivation affects how and to what extent the employees of organisations utilise their skills and abilities. Organisation is defined as a social entity that is goal-oriented, is designed as deliberately structured and coordinated activity systems, and is linked to the external environment (Daft, 2007). An organisation is made up of people and their relationships with one another. There is, however, no one theory of motivation that can be claimed to embrace the entire range of organisational and personal circumstances that exist. The difference of knowledge amongst the motivational theories requires managers to think contingently and to understand the work attitudes of each employee. Only then, they can deal with the employees differently according to the strongest motivational drive that they identify in each employee. Consequently, employers will face challenge in implementing the suitable motivational practices in the organisation, in order to have effective motivational practices which have positive impact on the employees.

The element in the motivational practices is using the motivational themes from the previously discussed section (chapter 2.4.2) as the basis for this study.

2.5 Relationship of motivation and job performance

Performance is a product of motivation, other than ability and the environment (Mullins, 2013; Howard *et al.*, 1997). Performance is also viewed as the implementation of an action or one's ability. Meanwhile, employee performance is considered as the measure of the quality of an organisation (Salleh *et al.*, 2011). Motivation has been described as the key factor that influences people to perform better, resulting in higher productivity (Halepota, 2005).

Individual performance is a key variable in the work organisational psychology and it is something organisations wish to enhance and optimise, as it is mainly treated as a dependent variable, and only behaviour which is relevant for the organisational goal is subsumed under the performance concept. Performance is what the organisation hires one to do and do well and therefore, performance is not defined by the action itself but by the evaluation processes. In addition, only actions which can be scaled or measured are considered to constitute performance.

According to Churchill *et al.*, (1999), the determinant of performance, among other things is motivation. Saeed *et al.*, (2013), stated that motivation is directly linked to the performance of employees at work; meanwhile, Sonnentag and Frese (2002) interpret motivation as the only direct determinant of performance. Smithers and Walker (2010) conclude that the issue of employee's motivation is important as it is the key to high performance especially since the construction industry is predominantly related to human management. Abdullah *et al.* (2011) confirms the relationship between job satisfaction and performance in small and medium sized construction firms, which focusing on financial and non-financial incentives as the motivation factors on the employees.

However, there are very few studies relating to job performance in Malaysia (a study of the relationship of the skill level on job performance of various professions of public service employees (Salleh *et al.*, 2011); a brief assessment conducted among officers of quantity surveyors in the Public Works Department of Malaysia (PWD) on performance of

outsourcing quantity surveying services to private consultancy firms (Abdul-Aziz and Ali, 2004). However the first mentioned study does not represent construction professionals and the second study is a brief study focusing on the performance of quantity surveyors working in private consultancy firms, and from the perspective of quantity surveyors working for the Public Works Department.

In order to address the research gap, this research examines the relationship between motivation and job performance, i.e. the different motivation factors that will contribute to the job performance of quantity surveyors in the construction industry.

Figure 2.3 below is a proposed conceptual framework of the study based on the literature review. The motivation factors variables listed are gathered from the literature that are frequently being cited and from well-known authors in the area of motivation and related to the construction industry. Performance measurement such as job satisfaction is a result of the employee's perception of how well his job provides those things that are viewed as important (Almacik, 2012). When the employee has achieved job satisfaction after receiving one or more motivation factor variables, job performance will be improved, and consequently, performance of organisation is improved.

Although there are no studies related to the construction industry from: McClelland; Alderfer; and Adam's motivation theories (table 2.1) these theories have been the basis of the study of motivation factors related to organisational performances in many industries (Machunghwa and Schmitt, 1983).

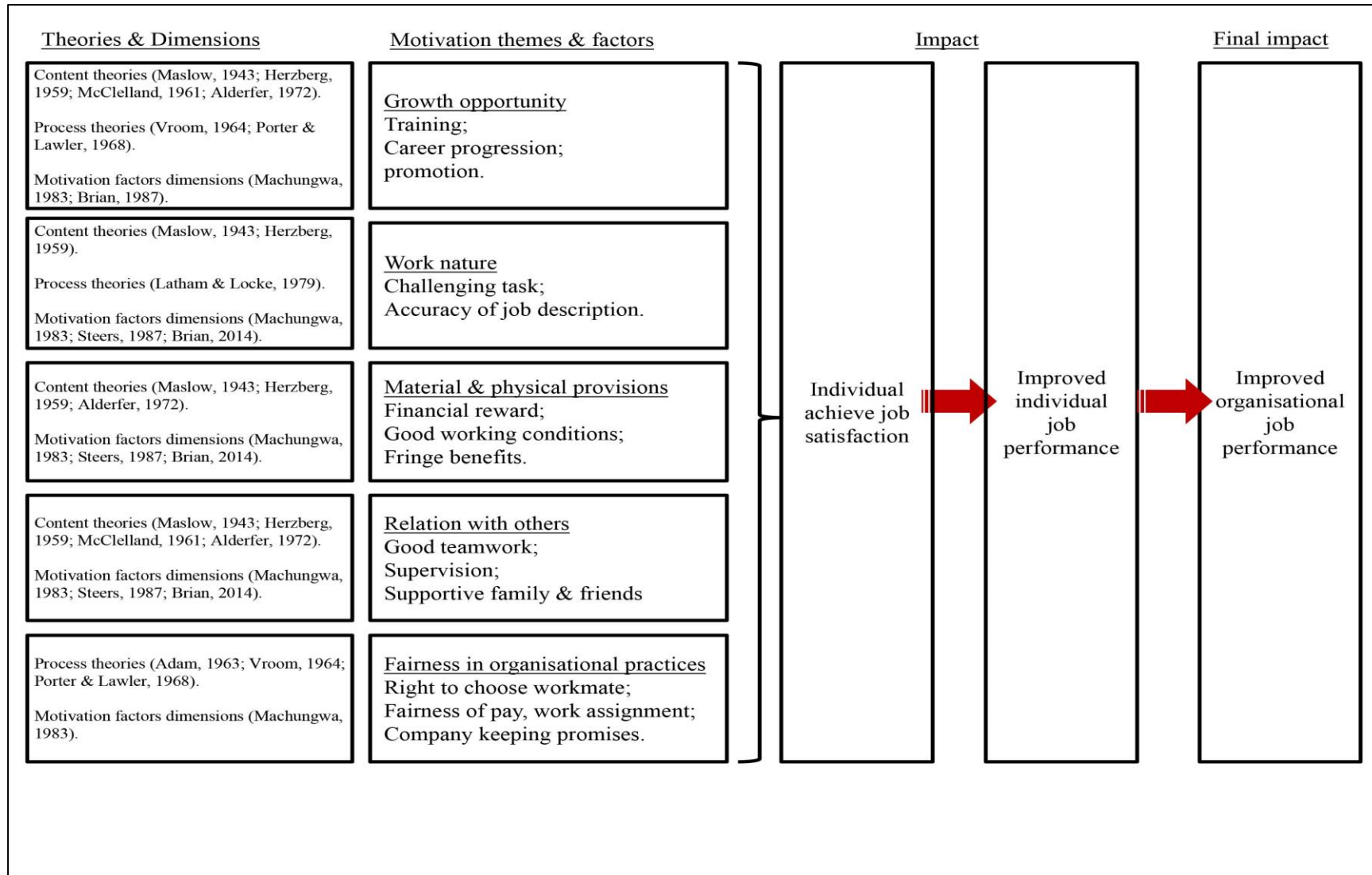


Figure 2.3: Proposed conceptual framework for the motivation of quantity surveyors for improved performance

2.6 Summary

This chapter has explored the theories of motivations in general, and later, theories which are applicable in the construction industry. The issues arising from the performance of the quantity surveyors in the organisation has required the need for a solution towards the improved performance among these professionals within the industry.

The chapter ends with an illustration of relationship between motivation for the quantity surveyors and job performance which is the underpinning concept of this research. As a summary, the research on the motivation factors of quantity surveyors and also a focus on the Malaysian construction industry need to be conducted in order to bridge this gap by producing the conceptual framework.

Developing a conceptual framework on the motivation of quantity surveyors in the Malaysian construction industry through the impact, challenges, and effectiveness of the current motivational practices for achieving improved job performance is the aim of this research, which will be fulfilled and described in chapter 7 of this thesis. Therefore, before progressing any further, it is first important to explore the roles of the quantity surveyors and the changes of the roles for the past fifty five years. The next chapter of this thesis is a literature review on the quantity surveying professions which include the history of the professions; and the quantity surveyors' roles as well as the development of the roles.

3.0 REVIEW OF LITERATURE

The role of quantity surveyors in the Malaysian construction industry and the development of the roles in the last fifty five years

3.1 Introduction

This chapter will present the literature review undertaken for this research. It will provide details on the quantity surveying profession which includes the history of the profession in Malaysia for the past fifty five years; the different types of quantity surveyors; and the roles of quantity surveyors. This chapter will also provide an overview concerning the roles of quantity surveyors and the development of these roles over the past fifty five years in the Malaysian construction industry.

3.2 Construction industry and stages

Construction industry plays a substantial role in many economies. The major feature of the construction industry is that it is complex and involves many stages of works. In today's business environment, the construction industry is subject to a multiplicity of forces that apply major impacts on performance objectives and targets and each varies at different stages of construction development.

Adapting the RIBA Plan of Works (RIBA, 2013) and the Test of Professional Competence Log Book (RISM, 2014), roles of quantity surveyors can be compressed and summarised into four stages: feasibility stage; pre-contract stage; post-contract stage; and construction management and resource procurement. A brief explanation of the four stages is as below:

a. Feasibility stage

This is the stage in which the client will determine the objectives for the project, including reconciling the client's needs against a background of financial, technological and legislative constraints, client's personal requirements, and also a number of design variables including structural form, aesthetics and environment.

The main objective at the feasibility stage is to examine all the: technical; functional; and financial; aspects of the project and to advise the client as to its feasibility. A majority of projects arise from long planning programmes, in which the clients or promoters are considering the scheme as a part of the overall objectives of their own organisation. The better-informed clients, who are often those involved in frequent capital development, usually have realistic expectations of what can and cannot be achieved in terms of time, cost, and quality.

b. Pre-contract stage

This stage includes: detail design; detail costing; contract documentation; and procurement. A quantity surveyor's role in this stage is mainly on the preparation of detail costing based on the detail design, as well as the contract documentation which includes the preparation of the bills of quantities, and form of contract.

c. Post-contract stage

Phases in the post-contract stage include: project planning; installation; and commissioning. This stage commences when the contractor commences the work on site. It is also referred to as the construction period, since it commences once the contract for the construction of the project has been signed and work has started on site.

Throughout this stage, formal instruction orders are given to the contractor for changes in the design, valuations are prepared and agreed for the interim payment certificates, and final accounts are agreed upon. Here, contractual disputes may arise: all too often they are due to misunderstandings or incorrect information.

d. Construction management and resource procurement stage

Construction management and resource procurement stage are also part of the post-contract period. However, for the purpose of this research, the construction management and resource procurement works will be separated to a different section due to the nature and focus of the work embedded under this stage.

The works during this stage are more focused on managerial and planning of the works on the site and focus more on managing the materials and other resources at the site.

3.3 The construction practitioners

There are many people involved in the construction industry, namely: client, contractor, and professional consultants. Abdul-Rahman *et al.* (2011) implies that the success of a construction project depends on, amongst other factors, the construction professionals. Professional consultants in the construction industry comprises of: architects; engineers; and quantity surveyors. The architects are the designers of the building projects. Engineers are also the designers of the building projects, but are responsible in ensuring the projects are structurally sound and environmentally effective. Quantity surveyors on the other hand, are experts in providing the required cost and contractual information of the building projects (Willis *et al.*, 1994). The quantity surveyors' involvement in the construction industry begins from the very early stage of a project until after the project has been completed (Nkado and Meyer, 2001).

In the construction industry, clients are individuals or organisations who fund the projects. There are different types of clients available in the Malaysian Construction Industry. The biggest client is the government of Malaysia, under the name of the Ministry of Works, Malaysia (MOW). The agencies under this Ministry are the: Public Works Department; Construction Industry Development Board; Lembaga Lebuhraya Malaysia (Malaysian Highway Authority); Board of Engineers Malaysia; Board of Architects Malaysia; Board of Quantity Surveyors Malaysia (MOW, 2015). This client and its agencies are responsible for national construction projects at the federal level, such as: public schools; public highways; and public hospitals. Within the states in Malaysia, the clients are the councils of each city in the states. These clients are responsible for the construction projects within their cities. Another type of client is the Government Link Companies (GLCs). GLCs are defined as companies that have a primary commercial objective and in which the Malaysian government has a direct controlling stake, such as to: appoint BOD members; senior management; make major decisions (e.g. contract awards; strategy; restructuring; financing; acquisitions; and investments). In the Malaysian construction industry,

private clients include: housing developers; private land owners; private building owners. Private clients usually fund the project either from: bank loans; company assets; corporate investments; or personal savings.

Meanwhile, contractors are one of the players in the construction industry who has contracts with the client, to undertake the function as a builder. In Malaysia, the total number of registered contracting firms is more than sixty five thousand (65,000) in 2012 and almost sixty seven thousand (67,000) in 2013 (CIDB, 2014). The firms range from sole proprietors to large multinational conglomerates employing several thousand people in their workforce. Construction firms can be categorised in many different ways, including the type of work that they undertake, the number of employees, turnover, and paid-up capital. In Malaysia, contractor firms need to be registered with the Construction Industry Development Board (CIDB). These registered contractors are categorised into seven groups. The companies (G1 – G7) are formed based on the paid up capitals, and with sub-groups according to the type of service the firms offer (i.e.: civil works; mechanical works; electrical works; building works; and general works). The total number of contractors and the groups are as tabulated in table 3.1.

Table 3.1: Total number of registered contractor firms in Malaysia in 2012 and 2013 according to the groups.

Group	G1	G2	G3	G4	G5	G6	G7	Total
Paid-up capital MYR)	5-25k	25-50k	50-150k	150-250k	250-500k	500-750k	> 750k	
Total in 2012	33,339	8,585	10,814	2,730	3,803	1,410	4,623	65,304
Total in 2013	34,407	9,510	8,863	3,075	4,147	1,580	5,343	66,925

Sources: CIDB (2014) and CIDB (2012)

The total number of registered contracting firms increased in 2013 from 2012. Although the number of registered contracting firms is large, registered quantity surveyors play a minimal, very minimal or no role at all in contracting firms, since verification and endorsement of work and payment certificate are the responsibility of the registered quantity surveyors from consultant firms and quantity surveyors who work with the clients.

3.4 Definitions of quantity surveyor

Quantity surveyor has been defined in many ways by various authors and professional bodies (table 3.2).

Table 3.2: Definitions of quantity surveyor

Author/Body	Definition
Hee and Ling (2011)	Quantity surveyor is the key player who is in charge of: procurement; cost; and contract management
Board of Quantity Surveyors Malaysia (BQSM) (2013)	Quantity surveyor is a professional, working within the construction industry and concerned with costs and contracts on construction projects.
The Chartered Institute of Building (CIOB) (2013)	Quantity surveyor is a: cost consultant; or commercial manager, who keeps a close eye on the various costs of a project including: materials; time taken; and workers' salaries.
Royal Institution of Chartered Surveyors (RICS) (2013)	Quantity surveyor is an expert in the art of costing a building at all its stages. Meanwhile, chartered quantity surveyors are highly trained professionals offering expert advice on construction costs.

Therefore, from the definitions given, a working definition of quantity surveyor for this research is “quantity surveyor is an expert in: contractual matters; and costing issues; in the construction project development.”

3.5 History of the quantity surveying profession

The quantity surveying profession started in the middle of the 17th century where the roles started with: preparing simple approximate estimates; preparing simple bills of quantities; and preparing measurements. Since the 1960s, quantity surveyors have become more important and the tasks have extended to: cost planning; preparation of bills of quantities; cost control during construction; progress valuations and payments; financial statements; and final accounts (Ashworth and Hogg, 2007). Contractual claims settlement; advice on cost estimates; organising tender invitations; evaluation of tenders; and preparation of tender reports; have become a further part of the quantity surveyor’s role since the 1970s. Procurement tendering and contractual selection consultation began since the 1980s (Pheng and Ming, 1997). In the 1990s, the roles of the quantity surveyor grew as construction become more competitive. Some of the typical quantity surveyor’s roles which evolved in the

1990s include: preparation of feasibility studies; subcontract administration; and contractual disputes consultation (RISM, 2011).

Moreover, the role of quantity surveyors has been expanded from building works to diverse areas such as: “the economic management of construction and heavy engineering projects, production and resource control, cost engineering, financial control of civil engineering projects, mechanical and electrical services, strategic planning, project management, value management and finally, the management of contracting organisations” (Male, 1990).

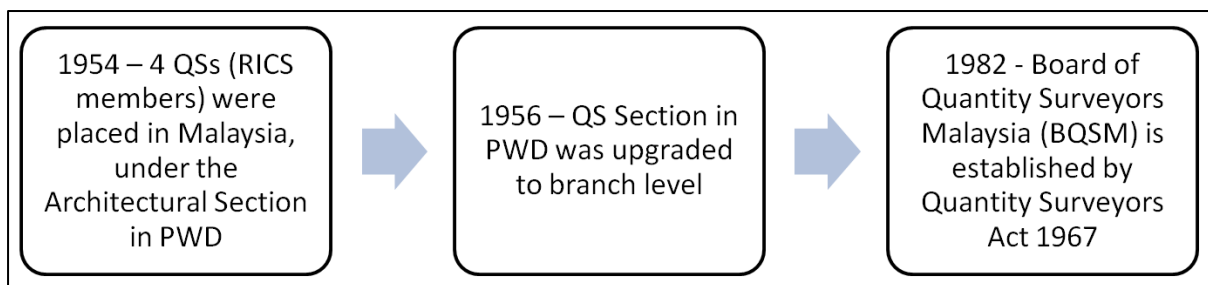


Figure 3.1: History of public sector quantity surveying profession in Malaysia (RISM, 2011)

Figure 3.1 shows a summary of the history of the quantity surveying profession in Malaysia. The quantity surveying profession in Malaysia started when there were four (4) quantity surveyors who were qualified RICS members. Since its existence in the early 1950s, the nation witnessed a profession emerge which has undergone growth and development via various stages in the Public Works Department (PWD). It started as an affiliate unit under the Building (Architectural) Section and later became a separate section independent of the Building Section and the head was designated “Senior QS” and “Contract Officer”. In 1956, the Quantity Surveying Section was upgraded to branch level. Following that, Quantity Surveying Sections were opened at State PWD offices.

Meanwhile, in the private sector, Waters and Watsons was the first quantity surveying consulting firm founded in 1934. Four more followed in the nation’s post-independence era, namely: Frank and Vargeson in 1958; and Chris & Cavanaugh, Bridge Water & Coulton, and Suckling & McDonald in 1963 (Figure 3.2).



Figure 3.2: History of private sector quantity surveying profession in Malaysia (RISM, 2011)

Table 3.3 demonstrates that the profession of quantity surveying in Malaysia has shown a positive growth from 1971 until 2014 (RISM, 2011). These numbers are the total of the quantity surveyors works in various industries in Malaysia. Meanwhile, table 3.4 shows the total number of registered quantity surveyors in accordance to the sector/work group in the year 2014.

Table 3.3: Growth of QS membership in Malaysia (RISM, 2011)

Year	1971	1981	1991	2001	2011	2014
Registered QS	37	169	547	568	917	997

Table 3.4: Registered QS in accordance to the sector/ work group as of year 2014 (BQSM, 2013)

Sector/ Work Group	No. of Registered QS
Public agencies	121
Private consultancy firms	815
Private contracting firms	11
Others	50
TOTAL	997

3.6 Quantity surveyor groups

Quantity surveyors in Malaysia can work in either the public or private sector. Quantity surveyors in the public service have different concerns and anxieties to those in the private sector (Ashworth and Hogg, 2007).

In the public sector, quantity surveyors do not need to worry on: securing the necessary capital; finding the work premises; ensuring the work flow; and avoiding financial losses; but they are subjected to the impulses of the government and its ministers, and ideas are sometimes implemented for political, rather than for practical or purposeful gain (Ashworth and Hogg, 2007). Quantity surveyors in the government sector work either in: federal government level (Ministry of Works, Malaysia); government agencies under the Ministry of Works, Malaysia; Government Link Companies; city councils; or public tertiary education institutions.

Meanwhile, quantity surveyors in the private sector can work in many divisions which include: private consultancy firms; private contracting firms; private tertiary education institutions; banking sectors; and oil & gas sectors; but the majority of the quantity surveyors work in private consultancy firms. The number of consultancy firms which are involved in the construction industry in Malaysia has shown a positive growth from 1991 until 2014 (table 3.5).

Table 3.5: Growth of quantity surveyor’s consultancy firms in Malaysia (RISM, 2011)

Year	1991-1995	1996-2001	2001-2005	2006-2010	2011-2014
Registered QS	137	146	295	383	347

Abdul-Aziz *et al.*, (2004) argue that quantity surveyors in the public sector are piled with responsibilities, and due to the heavy work load, private firms are engaged as a third party, to undertake some or all of the public sectors’ quantity surveyor functions on projects, in order to reduce the pressure of public servants and this, helps them to focus on management of the projects.

Quantity surveyors can also work in private contracting firms other than public agencies and private consultancy firms. The size and type of the contracting firms varies considerably from firm to firm and therefore creates a very important influence on the quantity surveyor’s work (Ashworth and Hogg, 2007). The work of quantity surveyors in private contracting firms usually focuses on measurement and/or pricing.

Today, the worldwide presence of quantity surveyors can be found in several economic sectors which include: the public sector; academia; manufacturing; supply chain sectors;

marketing; banking; finance; insurance; property; and management (RISM, 2011). In Malaysia however, the majority of quantity surveyors still work in the construction industry. Quantity surveyors in Malaysia work in: government agencies; consultancy firms; or contracting firms (BQSM, 2013) (figure 3.3).



Figure 3.3: Major organisations of involvement of the quantity surveying in the construction industry

3.7 Roles of the Quantity Surveyor

In a construction project, normally the quantity surveyor's role begins as early as the inception stage until the completion of the project. Then, the role continues during the 'in-use of the building' stage, which includes maintenance, repair and any modification phase. (Willis *et al.*, 1994; Pheng and Ming, 1997; Abdul-Aziz and Ali, 2004; RIBA, 2013; RICS, 2013).

Below are the common roles of quantity surveyors who work in the construction industry in Malaysia.

a. Preliminary cost advice

The quantity surveyor may be called upon to advise the client on matters of cost at early stage during the project inception. The advice will be necessary regardless of the method used for contractor selection or tendering purposes. The cost advice given must therefore be as reliable as possible, so that clients can proceed with the greatest amount of confidence (Willis *et al.*, 1994).

b. Cost planning

Cost planning is a part of the cost control process and it usually occurs at the early stage of the project development. Cost planning can offer the clients the comparative costs of the alternative materials to be used; and also can help the designer to consider alternative solutions to the various aspects of the design (Ashworth and Hogg, 2007). The contract documents may also be prepared on this basis to facilitate easier preparation of the cost analysis.

c. Procurement/ tendering procedures

Procurement is the process used by organisations to obtain construction projects, which involves the selection of a contractual framework with the aim of achieving project's objective (Seeley, 1997).

One of the highlights in the procurement part is the contractual options. The choice of contractual method made is often related to address client's objectives associated with time, cost, and quality of construction. Some of the options include: traditional; design and build; package deal; turnkey method; management contracting; project management and fast tracking (Willis *et al.*, 1994). With several options of contractual methods, the quantity surveyors need to have at least minimal knowledge of each option during the early stage of the project development; and an in depth understanding to at least the contractual methods for the project that he or she is in-charge of. Also, the standard forms of contract to be adapted will differ due to different contractual options. Quantity surveyors' role is to appraise the characteristics of the competing methods that might be

appropriate and match these with the particular needs and aspirations of the client (Willis *et al.*, 1994).

Procurement procedures are constantly evolving, in order to suit the changing needs of the environment, including the industry, society, authorities, and clients. Therefore, each project is required to be separately evaluated as an individual set. Hence, it is vital for quantity surveyors to be prepared with the current knowledge as well as to be prepared for future methods of the procurement procedure.

d. Contractual arrangement and documentation

Traditionally, contract documents comprise of: form of contract; specification and/ or bills of quantities; and drawings. There are varieties forms of contract available and once the choice of the form of contract has been made, the next step is to prepare the documents for the other parts of the contract that will accompany the form of contracts.

Bill of quantity is a document for which it is prepared in order to have a standardised document, which comprises of the same information for the contractors to price the works. Bills of quantities is useful for: the preparation of valuation for interim certificates; valuation of variations; ordering materials; planning and progressing by the contractor's site planner; final accounting; and cost information (Willis *et al.*, 1994).

The drawings are prepared by the designers' consultant such as architects and engineers and the drawings may be sent to the quantity surveyors with specification notes or a complete specification. The quantity surveyors will put in the drawings and attach the specifications into the contract document.

e. Cost control

Cost control generally aims at ensuring that resources are used to the best advantage. The quantity surveyor is concerned with many issues of building economics, some involving returns as well as costs. Some of them are: substitution between capital and running costs to secure the minimum total cost; investigating different ways of producing the same

building at lower cost; investigating methods of using the same resources to produce a different building which could give greater returns (Seeley, 1997).

Cost control is not only done during inception and tender stage, but continues throughout the execution of the contract. Valuation is one of the ways to control the project cost. Valuation helps in monitoring the performance schedule and cost of the projects (Aliverdi *et al.*, 2013).

In summary, the quantity surveyor aims to keep the total expenditure within the employer's budget, frequently based on an approximate estimate of cost prepared by the quantity surveyor in the early stages of the design process. There is also a need of strict cost discipline throughout all stages of design and execution to ensure that the initial estimate, tender figure and final account sum are all closely related (Al-Jibouri, 2003). This entails a satisfactory frame of cost reference (estimate and cost plan); ample cost checks; and the means of applying remedial action where necessary (cost reconciliation) (Seeley, 1997).

f. Variation/ final accounts

The quantity surveyor will almost certainly receive periodically throughout the contract revised drawings incorporating variations to the works. Also, variation may be due to the modification to the works and the work must be the subject of variation orders from the architect to the contractor if the latter is to receive payment for any additional involved.

The quantity surveyor prepares the final account in the manner that is best suited for the particular project, with the original contract sum as the starting point. The bulk of the final account will consist of measured work priced at the original billed rates. If the contractor has reason to doubt the accuracy of any of the original billed items, he can make a request to the quantity surveyor for the work concerned to be measured on site (Ashworth and Hogg, 2007).

g. Claims and insolvencies

The term 'claim' is a request by the contractor for recompense for some loss or expense that he has suffered, or an attempt to avoid the requirement to pay liquidated and ascertained damages. For a claim to be successful it must be well prepared, based on the appropriate contract clauses and founded on facts that are clearly recorded, presented, and provable.

When evaluating loss and expense, the quantity surveyors must always compare what has happened with what would have happened had not the delay or disruption occurred. Almost inevitably an element of conjecture is involved but the quantity surveyor has a professional duty to assess the matter in a fair and impartial manner and to exercise due professional skill and judgement.

In the event of insolvency of the original contractor, two final accounts are generally required on completion of the works. A normal final account determining the final cost of the contract and a notional final account setting out what would have been the final cost of the contract had the original contractor continued and finished. A quantity surveyor normally will be employed to settle the notional account with the employer's quantity surveyor.

h. Life cycle costing

Life cycle costing is typically adopted by owners as part of a strategic reassessment of their facilities. It is becoming much more important as long-term building owners start to demand evidence of their costs of ownership. This means that other than evaluating the costs of the buildings and engineering structures on the basis of their initial costs alone, quantity surveyors should consider the costs-in-use which will accrue throughout the building or structure's life. This is good to be done at the early stage of the construction so that the client can see the idea of the whole investment they have to make for the project (Ashworth and Hogg, 2007).

i. Project management

With the increasing number of projects in areas of industry, construction, service, and infrastructure, and the rising of the complexity of managing and executing projects, the knowledge on project management has become more and more important (Aliverdi *et al.*, 2013). Project management is the overall planning, control and coordination of a project from inception to completion, aimed at meeting a client's requirements and ensuring completion on time, within a cost limit and of the required quality (Ashworth and Hogg, 2007). A project manager may be appointed in-house where the client has sufficient expertise in his own organisation. The main priority of the project manager is to provide the client with the best possible service by working with the project team. Besides coordinating the project team, a quantity surveyor who is a project manager can contribute extensively on giving advice on all forms of building procurement and cost control but would benefit from concentrating more on value engineering, cost control information retrieval, and cost data processing (Seeley, 1997). Also, project management knowledge helps in monitoring the project and thus, mitigates any poor project performance (Crawford and Bryce, 2003).

j. Value management

Value management tends to be utilised in high cost and more complex projects due to costs and time associated with a formal value management study. When applying value management approach compared to the normal quantity surveying approach at tender stage, reduction in costs can be achieved. Value management can also be applied to other than the inceptions stage too (Ashworth and Hogg, 2007).

3.8 The development of quantity surveyors' roles

In the last decade, the roles of the quantity surveyor have undergone significant changes and the profession now faces challenges that threaten its existence (Frei, 2010). This can be seen from the statement of several major industrial researchers, reviewed by Cheung *et al.* (2010), who identified that the construction industry needs to improve its efficiency. This also affects the quantity surveyors' firms as Adros *et al.* (2011) stated that globalisation forces the

construction industry to increase the competition amongst firms to secure projects. The history of the quantity surveyor's roles and the development of the roles in the UK (Ashworth and Hogg, 2007; Willis *et al.*, 1994) has been summarised in figure 3.4 and figure 3.5.

As previously described in chapter 3.5, the quantity surveying profession started with core services since the seventeenth century and more services have continuously evolved throughout the nineteenth century until today.

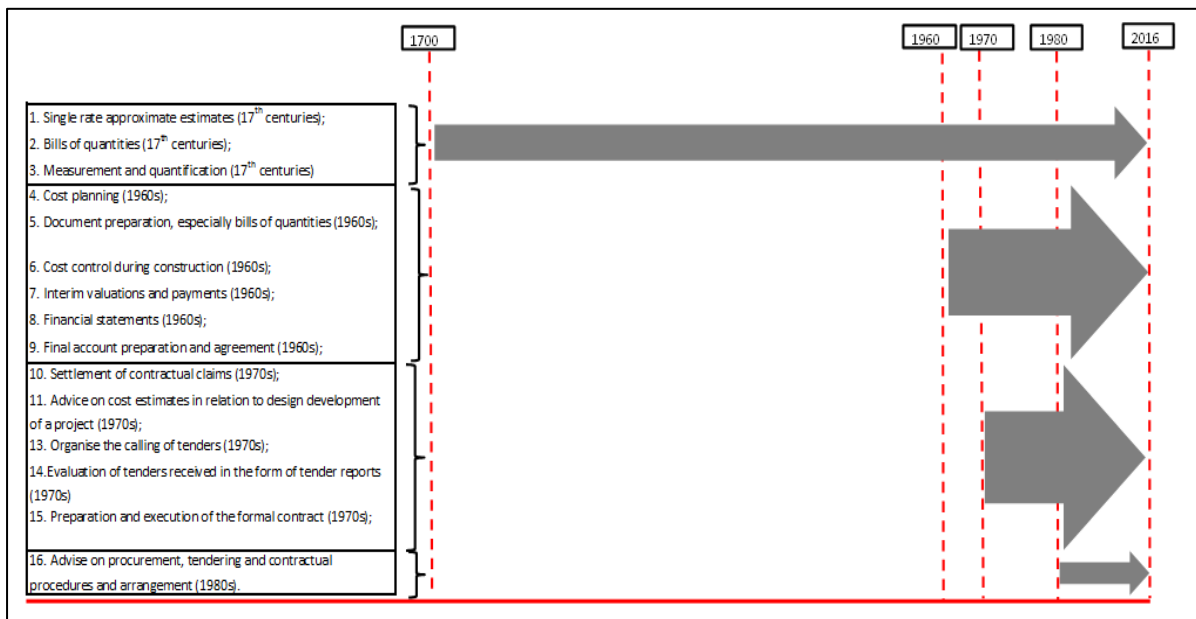


Figure 3.4: Traditional roles of quantity surveyor in the UK

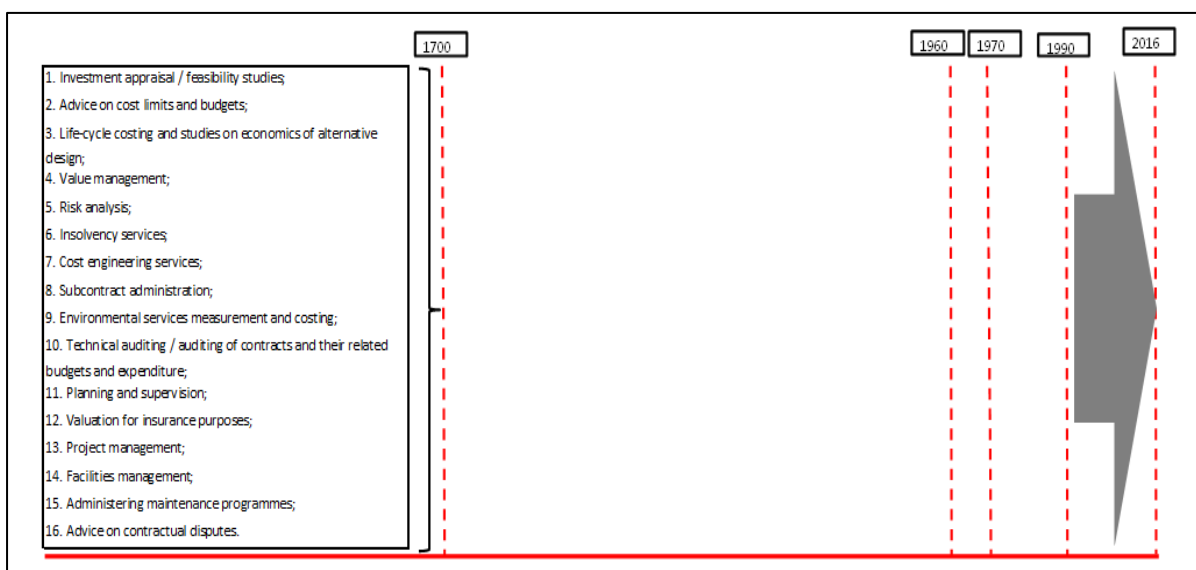


Figure 3.5: Developed roles of quantity surveyor in the UK

For the past fifty five years, the roles of quantity surveyors have changed quite dramatically from being a cost consultant to a project solution provider (RISM, 2011). The roles of the quantity surveying profession in Malaysia have also developed. The development of the roles in Malaysia and the UK quantity surveying profession is compared in table 3.6. The justification for comparing the progress of the profession between Malaysia and the UK is because the quantity surveying profession in Malaysia was initialised by the British, and most of the Malaysian guidelines and code of practices are inferred from that of the UK's.

Table 3.6: Comparison of traditional roles and developed roles of QS in the United Kingdom and Malaysia ((√) = available; N/A: not available)

Traditional QS roles	UK	Malaysia
Single rate approximate estimates	√	√
Bills of quantities	√	√
Measurement and quantification	√	√
Cost planning	√	√
Advise on procurement, tendering and contractual procedures and arrangement	√	√
Document preparation, especially bills of quantities	√	√
Cost control during construction	√	√
Interim valuations and payments	√	√
Financial statements	√	√
Final account preparation and agreement	√	√
Settlement of contractual claims	√	√
Advice on cost estimates in relation to design development of a project	√	√
Organise the calling of tenders	√	√
Evaluation of tenders received in the form of tender reports	√	√
Preparation and execution of the formal contract	√	√
Advise on procurement, tendering and contractual procedures and arrangement	√	√
Developed / Supplementary roles of QS (since 1990s)	UK	Malaysia
Investment appraisal / feasibility studies	√	√
Advice on cost limits and budgets	√	√
Life-cycle costing and studies on economics of alternative design;	√	√
Value management	√	√
Risk analysis	√	N/A
Insolvency services	√	√
Cost engineering services	√	√
Subcontract administration	√	√
Environmental services measurement and costing	√	N/A

Technical auditing / Auditing of contracts and their related budgets and expenditure	√	√
Planning and supervision	√	N/A
Valuation for insurance purposes	√	√
Project management	√	√
Facilities management	√	N/A
Administering maintenance programmes	√	N/A
Advice on contractual disputes	√	√
Projection of estimated project or development expenditure and anticipated income cash flows	√	√
Evaluation of contractors registered for prequalification	√	√
Comparative cost studies on the economics of the project during design stage	√	√
Valuation or auditing of contractual claims for arbitrations litigation cases	√	√
Pricing of Bills of Quantities or negotiating and agreeing Schedule of Rates	√	√
Application of the full scope of quantity surveying services in Turnkey or Privatisation Contracts	√	√

Sources: Adapted from Ashworth, A., and Hogg, K., 2007; and Test of Professional Competence Log Book by The Royal Institution of Surveyors Malaysia, 2014.

From table 3.6, it can be concluded that the traditional quantity surveyors' roles in Malaysia are identical to the UK. However, in relation to developed roles, the quantity surveying profession in Malaysia is slower than the UK quantity surveying profession. Quantity surveying in Malaysia has not yet provided services of: risk analysis; cost engineering; environmental services measurement and costing; planning of projects; supervision of projects; facilities management; and administering maintenance programmes. Most of the developed roles which are carried out by quantity surveying professionals in the UK but not in Malaysia are currently carried out by the project manager (risk analysis; planning; supervision; and administering maintenance programmes). Meanwhile, environmental services measurement and costing work is performed by environmental consultants who are usually engineers. Facility management and sometimes the maintenance programme roles are conducted by a building surveyor. Currently, cost engineering is only done in the oil and gas sector and is usually the responsibility of the engineer.

The role of the quantity surveyor has changed considerably since the past few decades (Willis *et al.*, 1994; Frei, 2010), and this has also occurred to the quantity surveying profession in Malaysia (RISM 2011). Some challenges that contribute to the changes of the quantity surveyors' role includes: the demand from client's requirement towards the service which has

started to look for speedier results and improved value for money; quantity surveyors having to cope with the impact of computer-aided design; and construction costs being evaluated and appraised in a completely different way due to availability of many costing software (Willis *et al.*, 1994).

In relation to this, a study by Jennings and Betts (1996) reported that, it has been identified that the quantity surveyor is required to have the skills in information technology (IT) usage, and this is expected to increase. Therefore, the quantity surveyor appears to see a greater competitive scope, using IT as an enabling tool, in this element of a differentiation-based strategy than any other element. The quantity surveyor may also perform the role of a construction manager if possessing the necessary skills including skills in IT (Love *et al.*, 2001).

The increase in the quantity surveyor's role has shown that the quantity surveying profession has been recognised and become more important in Malaysia. The development of the quantity surveyors' roles can be concluded, are due to: the competitiveness of the construction industry, such as: increase in competition both from other practices and from firms attempting to replace their role (Jenning and Betts, 1996); and clients becoming more complex and demanding (Abidin *et al.*, 2011). Due to the pressure arising from this competitiveness, in order to sustain the profession in today's competitive construction industry, it is necessary for the quantity surveyor to change the way of doing their task from the basic or traditional services offered by previous generations in order to enable them to be motivated to work efficiently (Frei, 2010), in line with the latest demands required by clients and the construction industry (Abidin *et al.*, 2011).

3.9 Summary

This chapter has explored the roles of the quantity surveyors in general, and in Malaysia, starting from the beginning of the quantity surveying profession in Malaysia and until fifty five years later. Four stages of the construction have been highlighted and discussed together with the roles that consist in these stages. Also there was a discussion on the three main organisations in the construction industry of which the quantity surveyors can work in.

There were traditional and developed roles of the quantity surveyors found. Although the roles of quantity surveyors have developed, there is limited literature or data available on when each of the single roles of the quantity surveyor started in Malaysia. Therefore, one of the objectives of this study is to explore the changing roles of quantity surveyors' in Malaysia specifically in the construction industry.

By understanding the roles of the quantity surveyor, only then, the employer can realise the current responsibility of the quantity surveyors and thus, appropriate motivational practices can be designed, or merely by enhancing the current motivational practices available in the organisations. Thus, when suitable motivational practices are conducted, job performance can be improved.

The next chapter discusses the research methodologies of this study which will discuss in depth and width the philosophy; research methodology; and research methods used in this study.

4.0 RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the research design and methodology adopted to explore the research aims; objectives; and questions set out in chapter 1. The investigation of the implementation of motivation factors for improved job performance is a complex task, which requires a systematic approach to data collection and analysis if meaningful results are to be achieved. Research refers to discovering something that is unknown (Philips and Pugh, 2005). Research methodology is a systematic approach a research adopts to accomplish the research aim (Creswell, 2009). Research methodology provides a researcher with the required tools to complete research successfully. Research methods refer to the techniques and procedures used to obtain and analyse data (Saunders *et al.*, 2009). Therefore, research methods are a part of research methodology.

This chapter sets out the research methodology adopted for the present research. One of the primary problems that the researcher faced at the outset was the lack of usable reference material pertaining to motivation matters of quantity surveyors in Malaysia. Therefore, in order to overcome this problem, a sound conceptual framework is required to be produced, and in order to achieve that, a suitable research methodology shall be outlined.

This research therefore, employed a review of literature; questionnaire survey (for pilot and main study); and semi-structured interview, in order to develop a conceptual framework that encapsulates motivation and its practices for improved job performance. The chapter justifies the methods adopted and describes methods of data collection and analysis used.

4.2 Ethical considerations in research

The research ethical for this research was approved before the pilot study was launched (refer appendix A). The research ethical raised in this research has been adequately addressed. These ethical concerns were identified as far as possible and certain guidelines, as stipulated by the University of Salford Ethical Committee were adhered to. Some of these concerns and how the researcher approached them are discussed below.

4.2.1 Informed consent

The participants were given the participant consent form. The participants were fully informed of the purpose of the research work and the directional path it intended to follow.

The principle of informed consent was employed and all participants in the study were given a clear picture of the subject purpose, as well as their role in the study before participating. The use of an audio tape recorder (during the semi-structured interviews) and the use of: website; email; and postal questionnaires; were only undertaken with the express consent of the participants. After the participants read the form, and agreed to become a participant in this research, they were requested to sign the form.

4.2.2 Right to privacy

During the data collection period, participants were under no obligation to continue their participation. They were free not to answer any of the question(s) or completely withdraw at any stage of the survey or interview without giving any reason. Participants were allowed to express any ideas or ask question(s) during the interview and survey. The researcher was open-minded concerning the views, ideas, or contributions of all the participants, and ensured the participants were not at risk at all by virtue of their contribution to the study. Most importantly, anonymity was granted to any participating individual, and the results and data collected were kept in the strictest confidence,

4.2.3 Data protection issue

To protect the individual's confidentiality, the following strategies were applied:

- Each participant was given a unique 'research code' known only by the researcher. This code is to ensure that the identity of the respondent remains anonymous and confidential;
- Participant details are stored in password-protected files in a password-protected computer that can only be accessed by the researcher;

- The data from the interviews and questionnaires were coded for the purpose of anonymity. The hard copy data is stored in a locked filing cabinet within a locked room and the cabinet can be accessed only by the researcher;

The soft copy data is stored in a password-protected computer, accessed only by the researcher. In case of data being stored in any mobile storage (USB memory stick, or USB hard drive), the identity of the respondents are in ‘research code’ to maintain anonymity. The soft copy data files are password protected;

- All publications of data will be presented in a way so as to disguise the research participants;
- Data will be stored and archived for a minimum of one year, after the graduate award has been made, to allow verification of data from external sources (if necessary) or a maximum of three years if used for further research.

4.2.4 Usage of language for interview

To enable non-English speaking participants, the interviews were conducted in the English and Bahasa Malaysia, at the interviewee’s preference since some of the interviewees were more comfortable to be interviewed in the local language. The interviews were later transcribed into English. The questionnaire (online; email; and postal), were provided in the English language since most of the participants understand English.

4.3 Research models

There are a large number of research models that have been developed, but there are two main research models which are very popular as these two models cover most of the aspects of the research methodologies. The models are: Research Onion Model introduced by Saunders *et al.* (2012) (figure 4.1); and the Nested Model of Kagioglou *et al.* (1998) (figure 4.2). The Onion Model consists of six parts which are: research philosophy; research approaches; research strategy; research choices; time scales; and data collection methods. Accordingly, the Nested model comprises of only three parts but it covers: research

philosophy; research approach; and research techniques. The following are two figures of these two research models. For this research, the Onion Model is used mainly for reference and because of its comprehensiveness.

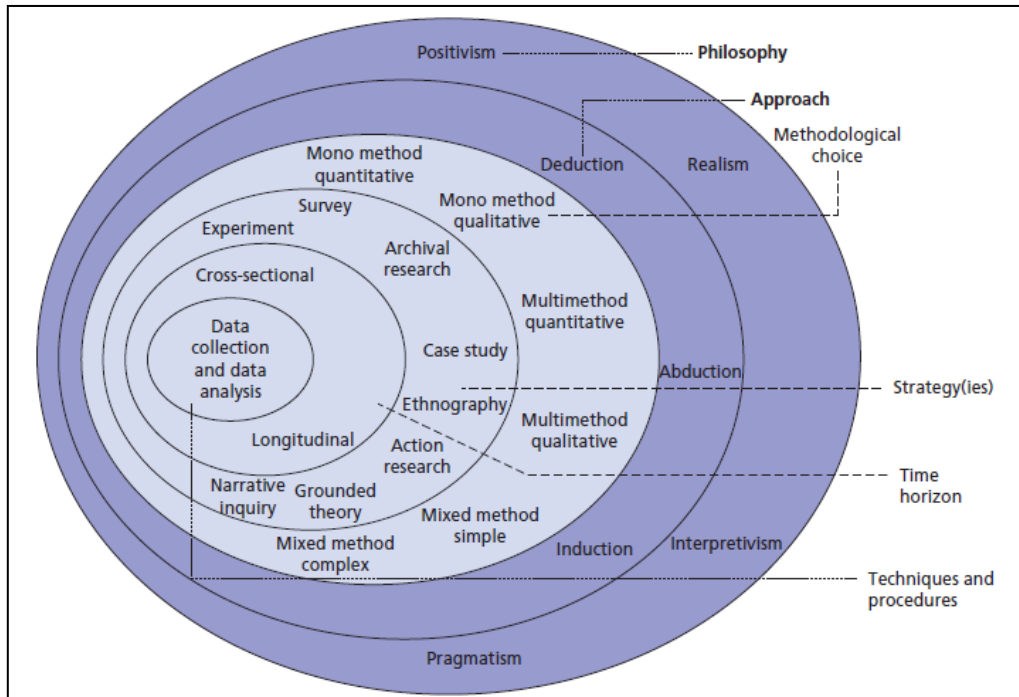


Figure 4.1: Onion Model (Saunders *et al.*, 2012)

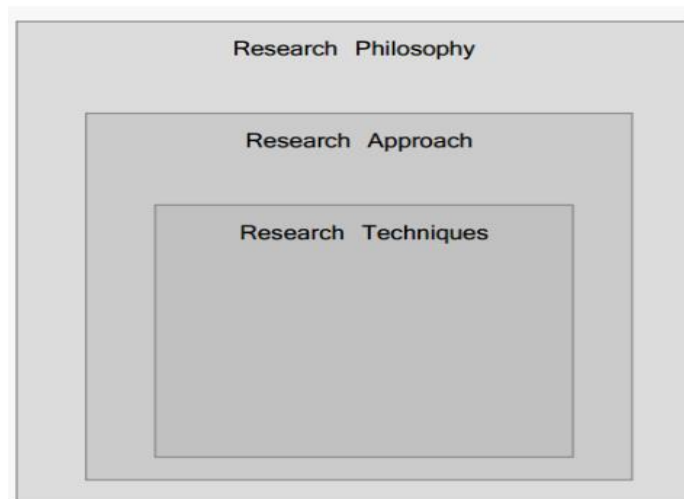


Figure 4.2: Nested Model (Kaglioglou *et al.*, 1998)

4.4 Research philosophy

Research philosophy is defined with the help of research paradigm; and it refers to a researcher's perspective on the way of thinking about and making sense of the complexity of the real world. The term 'research philosophy' concerns the nature and development of knowledge (Saunders *et al.*, 2012). According to Easterby-Smith *et al.* (2008), an understanding of paradigm and philosophical issues is essential to help researchers: identify; clarify; and create appropriate research designs.

The term philosophy has been widely used in contemporary literature; and has been confused with paradigm since these two terms are interrelated. One of the definitions of paradigm that is clear and easy to understand is the one from Collis and Hussey (2003) where paradigm is referred to as the progress of scientific practice based on researcher's philosophies and assumptions about the world and the nature of knowledge. In addition, Weaver and Olson's (2006) definition is also helpful in the understanding of paradigm, where paradigm reveals how research could be affected and guided by a certain paradigm. As research paradigm is a way of explaining basic belief that the researcher has and how this influences the way the researcher does the research, the specific methodologies utilised in this study will be discussed in order to understand more of the research paradigms for this specific research.

Creswell (2009) said that examining different philosophical perspectives and assumptions is vital and must be carried out in the initial stage of the study and the most known philosophical perspectives are: ontology (what knowledge is); epistemology (how we know it); and axiology (what values go into it).

4.4.1 Ontology

Ontology concerns the nature of a phenomenon or reality that a researcher wishes to study (Mason, 2002). There are two divergent perspectives with regards to this ontological issue which are: objectivism; and subjectivism. Objectivism, views social phenomena as external entities and therefore beyond our reach and influence (Bryman, 2008). Subjectivism on the other hand, views social phenomena as being continually influenced and socially constructed by social actors (Saunders *et al.*, 2012).

4.4.2 Epistemology

Epistemology is a branch of philosophy concerning what constitutes acceptable knowledge in a field of study (Saunders *et al.*, 2007). It is also described as a way of understanding and explaining how we know and what we know (Crotty, 1998). The idea that affirms these positions are frequently referred as: positivism; and interpretivism (Bryman and Bell, 2007; Saunders *et al.*, 2007).

Research in the construction industry can either have the positivist stance; or interpretivist views. The positivist perspective, views acceptable knowledge as a constituting phenomenon that has a direct observable variable, and can be quantifiable. In this view, the positivist perspective argues that the natural sciences approach needs to be adopted to gain knowledge of the social world. Thus, positivist studies are often designed as quantitative research that uses existing theories to develop hypotheses that are then tested with a large number of sample population to confirm the statistical generalisation of the theory (Saunders *et al.*, 2012; Bryman, 2008; Easterby-Smith *et al.*, 2008).

Alternatively, the interpretive perspective argues that the subject matters of the social sciences (i.e. People and organisations) are: complex; unique; and fundamentally differ from that of natural science. Interpretivism raises doubt about the usefulness of adopting a natural sciences approach to gain insight into the complex social world. It is argued that the study of the social world requires a different logic of research procedure (than the natural scientists) in an attempt to grasp the subjective meanings of social action (Bryman, 2008). Michel (2008) citing Cole (2006) that interpretive paradigm is associated with methodological approaches that provide opportunity for the voice; concerns; and practices of research participants to be heard.

Debates regarding which of the social science paradigms worldviews of these two (positivist and interpretivist) are better began more than three decades ago (Tashakkori and Teddlie, 1998) and the debates have been going on for far too long and to no avail.

4.4.3 Axiology

The last research philosophical assumption is Axiology. This philosophy studies judgement about value (Saunders *et al.*, 2007). Axiology concerns the impact of the values of a researcher in the whole research process (Saunders *et al.*, 2012). In this continuum, an assumption has to be made on whether the study is value-free and unbiased, or value-laden and biased (Collis and Hussey, 2003). The axiological stance of this research leans more towards value-laden although research should actually be free from any element of bias or sympathy. This study leans more towards the value-laden aspect as the research choices are determined by human interest and belief. There is recognition that it is not feasible to expect that researchers investigating social phenomena can act in a value-free manner (Bryman, 2008).

4.4.4 Research philosophy to be adopted in this study

Most researchers usually use ontology; epistemology; and axiology to develop their research methodology. However, due to the complex nature of the research study, there was no single paradigm that can satisfactorily deal with all of the required methodological aspects. Therefore, the researcher found it necessary to combine the quantitative/ positivist paradigm with qualitative/ interpretive paradigms. The blending of both paradigms provides the researcher with the ability to statistically analyse the scientific data whilst also recognising the complex psychosocial and emotional factors that influence the job performance issues.

Mixed methods is another important research paradigm that should be used as a method and philosophy that attempts to fit together the insights provided by qualitative and quantitative research (Johnson and Onwuegbuzie, 2004). Clark and Creswell (2008) define mixed methods as a research design with philosophical assumptions as well as methods of inquiry, which guide to the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process in order to provide a better understanding of research problems rather than approach alone.

The philosophical partner for mixed methods research is pragmatism (Johnson and Onwuegbuzie, 2004); and this is in line with Hoshmand's (2003) view that pragmatism allows facilitated research approaches to mix successfully and therefore, research approach

should be mixed in ways that offer the best opportunities for answering important research questions. According to Saunders *et al.* (2007), the research should be possibly pragmatism philosophy if the research question does not clearly suggest whether it is a positivist or interpretivist's view. Tashakkori and Teddlie (1998) suggest that it is more appropriate for a researcher in a particular study to think of the philosophy adopted as a continuum rather than the opposite position. Johnson *et al.* (2007) believe that one or more of the pragmatisms can provide a philosophy that supports paradigm integration and helps mixed research to peacefully coexist with the philosophies of quantitative and qualitative research.

As discussed in chapter 1, the aim of this research is to develop a conceptual framework that encapsulates motivation and its practices for improved job performance of quantity surveyors. There are several data collection methods for the researcher to choose from. It is important to choose an appropriate research methodology as it determines the research methods to be adopted in the research and there are two main factors to be considered before choosing the suitable research methodology, namely: the topic of the research; and the specific research questions (Remenyi *et al.*, 1998). Each method has their own strengths and limitations and the key selection for the best methodology for any research is recognising the available methodologies and understanding their strength and weaknesses; and therefore, it is normal to use a mixture of approaches in a research because the most important thing is how well the data makes sense when it is mixed together (Collis and Hussey, 2003) since the methods complement each other. Therefore, the researcher has chosen a “mixed method research” as the most appropriate research philosophy to be adopted in this research since this research seeks for the understanding of the roles of quantity surveyors in different stages of the construction process; and to explore the motivation aspects that can improve job performance of the quantity surveyors. The aim of this research is to develop a conceptual framework in the area of motivation for improved job performance of the quantity surveyors. Based on the research questions, the mixed method approach is deemed appropriate adoption for this research.

4.5 Approaches

Saunders *et al.* (2012) define the research approach as how theory is developed, which can be classified as either the deductive approach or the inductive approach. During the process of

the literature review, the researcher attempted to obtain some initial ideas on the related area of study which is motivation; quantity surveyors; construction industry; and job performance; in order to drive the research. This process helped in deducing the hypotheses from the existing theory, and these were then translated into operational terms to be tested (Bryman, 2008). Next, from thorough literature reviews, a theoretical framework was developed and tested through the questionnaire surveys and interviews. When the researcher obtained the feedback from the questionnaire surveys and completed the interviews, the data was analysed using appropriate methods and later the conceptual framework was developed based on the results. This was when inductive approach came in (Saunders *et al.*, 2007). Saunders *et al.* (2012) suggest that, in practice, research is more likely to combine the elements of both the inductive and deductive approach.

4.6 Methodological choice

In social research, a qualitative methodology employs qualitative methods aimed to interpret and understand social life and to discover people’s meaning. The quantitative methodology employs quantitative methods aimed to explain and predict social life and to discover social regularities (Sarantakos, 1997). The differences are shown in table 4.1.

Table 4.1: Elements of quantitative and qualitative research in the process of research (Creswell and Clark, 2007)

Process of research	Element of quantitative research	Element of qualitative research
Intent of the research	<ul style="list-style-type: none"> • Test a theory deductively to support or refute it. 	<ul style="list-style-type: none"> • Understand meaning individuals give to a phenomenon inductively.
How literature is used	<ul style="list-style-type: none"> • Major role. • Justifies problem. • Identifies questions and hypotheses. 	<ul style="list-style-type: none"> • Minor role. • Justifies problem.
How intent is focused	<ul style="list-style-type: none"> • Ask close-ended questions. • Test specific variables that form hypotheses or questions. 	<ul style="list-style-type: none"> • Ask open-ended questions. • Understand the complexity of a single idea (or phenomenon).

How data is collected	<ul style="list-style-type: none"> • Numbers. • From many participants at many research sites. • Sending or administering instruments to participants. 	<ul style="list-style-type: none"> • Words and images. • From a few participants at a few research sites. • Studying participants at their location.
How data is analysed	<ul style="list-style-type: none"> • Numerical statistical analysis. • Rejecting hypotheses or determining effect sizes. 	<ul style="list-style-type: none"> • Text or image analysis. • Themes. • Larger patterns or generalisations.
Role of researcher	<ul style="list-style-type: none"> • Remains in background. • Takes steps to remove biasness. 	<ul style="list-style-type: none"> • Identifies personal stance. • Report biasness.
How data is validated	<ul style="list-style-type: none"> • Using validity procedures based on external standards, such as: judges; past research; and statistics. 	<ul style="list-style-type: none"> • Using validity procedures that rely on: the participants; the researcher; or the reader.

The mixed methods methodology research is another alternative of methodological choice. Mixed-methods research may be defined as “*the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.*” (Johnson *et al.*, 2007, p.123)

Mixed-methods methodology has been a popular approach to research since more than forty years ago. Since then, it developed in several disciplines and fields of study, and has also expanded rapidly into many social and human sciences fields, arenas of research and in many countries (Creswell, 2003).

Some of the well-known authors of mixed methods research as described by Clark and Creswell (2008) are: Sieber (1973) who combined surveys and interviews in his research; Jick (1979) who discussed triangulation of qualitative and quantitative data; Greene *et al.* (1989) who identified a classification system of types of mixed methods designs; and Johnson and Onwuegbuzie (2004) who positioned mixed methods research as a natural complement to traditional qualitative and quantitative research.

Mixed-method methodology may help provide more evidence for studying research problems than either quantitative or qualitative research alone (Creswell and Clark, 2007). Although a researcher should be familiar with both quantitative and qualitative research in terms of data collection and analysis techniques, and to consider the sufficiency of time to collect and analyse two different types of data when choosing to do a mixed methods research, the weaknesses of both quantitative and qualitative research can be eliminated by the strengths provided by a mixed methods research (Creswell and Clark, 2007).

This study utilises a triangulation approach to explore and investigate the motivational aspects of quantity surveyors in order to achieve improved job performance. The use of both the quantitative and qualitative methodologies was necessary to encompass different aspects of motivation and quantity surveyors' roles at different stages in the construction industry. According to Dainty *et al.* (2007), the construction industry is a tough and complex industry; which involves several professionals who may prior to a project, not know each other and are required to work together at a certain period of time in order to achieve one goal. To address the diversity and complexity of such performance issues, a mixed methodology was necessary.

There are five reasons to adopt a mixed method approach in research according to Greene *et al.* (1989) and Hesse-Biber (2010):

i. Triangulation

Triangulation seems to be the most commonly cited reason that mixed methods are incorporated into research. The researcher is looking for a convergence of the data collected by all the methods used in a study to enhance the credibility of the research findings.

ii. Complimentary

Allows the researcher to gain a fuller understanding of the research problem and/or to clarify a given research result. This is accomplished by utilising both quantitative and qualitative data and not just the numerical or narrative explanation alone to understand the social story in its entirety.

iii. Development

Mixed methods often aid in the development of the research project by creating a synergic effect, where by the results from one method, help develop or inform the other method.

iv. Initiation

A study's findings may raise questions or contradictions that will require clarification, thus initiating a new study.

v. Expansion

Producing detailed findings enables future research endeavours and allows researchers to continuously employ different and mixed methods in their pursuit of new or modified research questions.

Stewart *et al.* (2008) provides a long list of benefits experienced in mixed method research. For instance, it provides a holistic picture and analysis of one method that guides the other. Since the mixed method combines both a quantitative and qualitative approach, thus the types of mixed method are based on the design and how it is weighted and the timing of the approach, or according to Creswell *et al.* (2004), the priority and implementation of the mixed-method. One approach can be dominant over the other, or in contrast, both approaches are in equal weighted in the research. In timing of implementation, both approaches (qualitative and quantitative) can be conducted at the same time (concurrent) or implemented sequentially. In the sequential approach the research can be conducted using quantitative data collection first then followed by a separate qualitative data collection, or vice versa. The possible configurations of mixed method approach are presented in following table (Creswell *et al.*, 2003; Johnson *et al.*, 2007; Kroll and Morris, 2009; Rudd and Johnson, 2010; Jogulu and Pansiri, 2011; Harrison, 2012).

Table 4.2: Types of mixed method approach

	Concurrent	Sequential
Equal Status	QUAL + QUAN	QUAL → QUAN QUAN → QUAL
Dominant Status	QUAL + quan QUAN + qual	QUAL → quan quan → QUAL QUAN → qual qual → QUAN

Since the mixed method combines both a quantitative and qualitative approach, therefore, the types of mixed method are based on the design and how it is weighted and the timing of the approach, or according to Creswell (2009) on the priority and implementation of the mixed-method. One approach can be dominant over the other, or in contrast, both approaches are in equal weightage in the research. In relation to the timing of implementation, both approaches (qualitative and quantitative) can be conducted at the same time (concurrent) or implemented sequentially.

This research aims to converge the data collected from the questionnaire surveys and semi-structured interviews. Also, the data collected from the semi-structured interviews are expected to help in providing a better explanation from the research problems in order to get better results. Therefore, this research is to gain triangulation. This research implemented a quantitative dominant mixed methods research where it is important to include qualitative data and approaches into the quantitative data.

“Quantitative dominant mixed methods research is the type of mixed method research in which one relies on a quantitative, post-positivist view of the research process, while concurrently recognising that the addition of qualitative data and approaches are likely to benefit most research projects.” (Johnson *et al.*, 2007, p.124)

To achieve triangulation, the data has been distributed and collected concurrently. In the concurrent approach the research can be conducted using quantitative data collection simultaneously with the qualitative data collection (table 4.3 and table 4.4).

Based on the reasons above, this study will adopt the mixed methods research approach, which will integrate thematic and statistical data, combining qualitative and quantitative paradigms, and allowing investigation from both inductive and deductive perspectives (Johnson *et al.*, 2007).

4.7 Strategies

Based on the philosophical stance of the researcher which is pragmatism, and the mixed-method methodology, table 4.3 shows suitable research strategy choices that the researcher can adopt.

Table 4.3: Research strategy in social research (Saunders *et al.*, 2012)

Strategy	Characteristic
Survey	<ul style="list-style-type: none"> • Most frequently used to answer ‘what’, ‘who’, ‘where’, ‘how much’ and ‘how many’ questions. • Used for exploratory and descriptive research. • An easy to explain and to understand research strategy.
Archival research	<ul style="list-style-type: none"> • This strategy makes use of administrative records and documents as the principal source of data. • Allows research questions which focus on the past and changes over time to be answered.
Ethnography	<ul style="list-style-type: none"> • It is used to study groups. • It requires a longer term of field work study.
Action research	<ul style="list-style-type: none"> • Provides in depth understanding to specific phenomenon’s, but the literature advises using it in the education context.
Grounded theory	<ul style="list-style-type: none"> • Has been used by many academic research studies in the building environment field, but has been criticised widely due to its confusing process and time required to be completed. • Collecting data processes might require visiting the field several times.
Case study	<ul style="list-style-type: none"> • It is suitable for research which wishes to gain a rich understanding of the research context and processes. • Not suitable for collection of data for generalisation.

Research strategies for this research will depend upon the questions to be asked to the respondents and how the data will be collected based on the research objectives (table 4.4). Therefore, this research will imply combinations of archival research and survey as the

strategies of the research based on the characteristics of the research strategies listed in table 4.3.

Table 4.4: Research objectives; questions for the research; and data collection for this research.

Research objectives	Questions	Data collection
i. To critically review the literature on motivation, and document the motivation factors and practices in general, and especially in the area of construction.	-	<ul style="list-style-type: none"> Literature
ii. To explore the role of quantity surveyors, generally, and specifically in the Malaysian construction industry for the last fifty five years.	<p>What are the roles of QS's in the Malaysian construction industry?</p> <p>How has the role of QS's changed in the past fifty five years?</p>	<ul style="list-style-type: none"> Literature Document review Questionnaire Semi-structured interview
iii. To investigate and identify the factors that impact on the motivation of quantity surveyors in the Malaysian construction industry.	<p>What motivates you in doing your job?</p> <p>How do these factors impact on your work performance?</p>	<ul style="list-style-type: none"> Questionnaire Semi-structured interview
iv. To ascertain the role of employers in the motivation of the quantity surveyors in the Malaysian construction industry.	<p>What is your role as an employer/what is the role of your employer in motivating the quantity surveyors of this firm/ organisation?</p> <p>To what extent does your role/ your employer, contribute to motivating your quantity surveying employee?</p> <p>How do you/ your employer implement your/his role at: feasibility stage; pre-contract stage; post-contract stage; construction management; and resource procurement process, in motivating the quantity surveyors?</p>	<ul style="list-style-type: none"> Questionnaire Semi-structured interview

<p>v. To synthesise the current motivational practices employed by organisations, including the challenges and effectiveness of the practices in motivating quantity surveyors.</p>	<p>What are the current motivational practices adopted by your organisation in motivating the quantity surveyors?</p> <p>What are the levels of challenges faced during the employment of these practices?</p> <p>How are these challenges overcome or minimised by the management team?</p> <p>Based on your experience and opinion, how effective are these current motivational practices to you?</p>	<ul style="list-style-type: none"> • Questionnaire • Semi-structured interview
<p>vi. To synthesise the impact and effectiveness of the motivational practices on individual quantity surveyors in the organisation.</p>	<p>What is the impact of motivation on you?</p> <p>What is the level of impact of the motivational practices on you?</p> <p>Based on your experience and opinion, how effective are these current motivational practices on you?</p>	<ul style="list-style-type: none"> • Questionnaire • Semi-structured interview
<p>vii. To develop and validate a conceptual framework that encapsulates motivation and its practices towards quantity surveyors in the Malaysian construction industry.</p>	<p>-</p>	<ul style="list-style-type: none"> • Semi-structured interview

4.8 Time horizons

There are two choices in the time horizon layer of Onion Model, namely: cross-sectional; and longitudinal. This research will apply the cross-sectional study of the time horizon because the research is a particular phenomenon at a particular time (Saunders *et al.*, 2012). Therefore, this research on motivation factors of quantity surveyors in the Malaysian construction industry will apply cross-sectional studies. Although longitudinal studies can

provide more highly rich data and result, as the researcher is taking an academic course, there is a restriction on the time to complete the research in a particular period.

4.9 Techniques and procedures

4.9.1 Data collection

The researcher intends to develop a conceptual framework in the area of motivational practices, since it is not yet available in Malaysia, and particularly in the construction industry. Therefore, a quantitative survey with a large sample of quantity surveyors was adopted so that the researcher could generalise results to a population. At the same time, semi-structured interviews were applied, in order to have a better understanding of the phenomena.

In this study, the researcher incorporates both quantitative and qualitative research by using both approaches in order to: obtain convergence and verification of findings; eliminate or minimise key reasonable alternative explanations for conclusions drawn from the research data; make clear the different aspects of the phenomenon; and get a clear explanation from the data collected. Therefore, when collecting the quantitative data, surveys will be employed. Meanwhile, this research will utilise document review including archival documents and semi-structured interviews for collecting qualitative data (Creswell, 2009).

a. Questionnaire survey as a technique of data collection

The questionnaire used in this research was formulated based on the same objectives as the interview questions. Due to the nature of the construction industry which is a diverse workforce, amounting to a large number of professionals at work, it is impossible and beyond the capacity of the researcher to interview all of the professional quantity surveyors in Malaysia. Therefore, a questionnaire survey is used to reach more respondents for this research.

In general, the questionnaire was divided into six parts; the first part is the general information part of the respondents; part 2 is to explore the level of involvement of

quantity surveyors in the construction industry; part 3 is to investigate the level of impact of motivation factors of quantity surveyors in the construction industry; the fourth part is to ascertain the extent of the role of employers in the motivation of quantity surveyors and to determine their level of involvement in the motivation of quantity surveyors in the construction industry; part 5 is to investigate the level of challenges and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors; and the last part is to investigate the level of impact and effectiveness of current motivational practices on individual quantity surveyors.

Questionnaire survey is deployed in this research in order to have overall opinions and to summarise the findings as a whole. A structured survey technique which provides close-ended questions is used in the questionnaire survey of this research. The survey of the design provides a quantitative description of opinions of a population of two hundred quantity surveyors by studying a sample of the population and the results from the sample will then be generalised (Creswell, 2003). In this research, the questionnaires were distributed in three methods: web based questionnaire; email based questionnaire; and postal questionnaire; to meet the needs for triangulation as well as to achieve high reliability.

b. Interview as a technique of data collection

Interviews are not a neutral form of data gathering, but are an active interaction between people leading to a negotiated, contextually based result (Silverman, 1993). This study applied semi-structured and face-to-face interviews. A semi-structured interview is where the questions are predetermined, but the order and the wordings can be modified, and where the questions can be omitted or added during the interview (Robson, 2002).

To have a good practice in research, the researcher tried to bring together the richest possible data, which could be achieved by intimate familiarity with the setting through face-to-face interaction with the subject matter (Lofland and Lofland, 1995). Therefore, the researcher tried to adopt the face-to-face interviews as complementary to the questionnaire surveys in the research. Also, the semi-structured interview method along with the questionnaire survey could be used as means for triangulation of data collection technique.

c. Document review as a technique of data collection

The researcher also adopted archival document reviews in this research in order to mainly understand the roles of quantity surveyors and the changes to the roles in the past fifty five years. This information helps in determining the level of the work performance of quantity surveyors working in the Malaysian construction industry and to relate that with the types and level of their motivation. Among the documents are: annual reports; test of professional competence log book; and minutes of meetings.

In summary, the primary focus of this research is to explore the phenomenon of motivation of quantity surveyors in the Malaysian construction industry. This research also explores the roles of quantity surveyors at different stages of the construction process in order to understand the difference of each role so that suitable motivation practice or practices can be implemented to improve job performance. Therefore, to achieve this purpose, survey study and semi-structured interview methods were adopted in this research so that the results from both quantitative findings and qualitative findings can be compared and contrasted, thus, validation can be done from these two results. The researcher also wishes to explore the role of quantity surveyors and the changes to the role over the past fifty five years. Therefore, to achieve this objective, archival research is adopted in this research besides survey study and semi-structured interviews.

4.9.2 Design and content of the questionnaires

The layout of the questionnaire form was designed to appeal to respondents. The questionnaires consist of seven parts with sixteen questions.

Part 1 – General information

This section requests general information from the respondents and consists of five questions which include: respondent's position in the organisation; working experience as a quantity surveyors in the construction industry; working period in the current organisation; gender; and the current types of organisation. This section aims to gain full description of the sample. This section includes a question of the type of organisation the respondents currently work in/

for. This information is needed to investigate if there is any difference in opinion among the quantity surveyors in different types of organisations.

Part 2 – Roles of quantity surveyors

This section explored the level of involvement of the quantity surveyors in the construction industry. Respondents were asked to indicate by ticking the extent to which the involvement of the quantity surveyors in their roles at four stages of the construction industry. The four stages are: feasibility stage; pre-contract stage; post-contract stage; and construction management and resource procurement stage.

Part 3 – Motivation factors of quantity surveyors

This section consisted questions regarding the level of impact of motivation factors of the quantity surveyors in the construction industry. Nineteen motivation factors were listed and respondents were asked to tick the level of impact using the Likert scale from 0 to 3 for each motivation factor. This question is to investigate the level of impact of motivation factors. The motivation factors variables were gathered from several frequently cited literatures from motivation theories, dimensions, and factors.

Part 4 – Role of employer in the motivation of quantity surveyors

This section is a section to ascertain the extent of the role of employers and the level of the employers' involvement in the motivation of the quantity surveyors.

Part 5 – The current motivational practices employed by organisations

This section consisted of two questions of which the purpose is to investigate the level of challenge and effectiveness of current motivational practices employed by organisations in motivating the quantity surveyors.

Part 6 – Impact of motivation and effective motivational practice on individual quantity surveyors

This part consists of questions 14 and 15 where the purpose of this section is to investigate the level of impact and effectiveness of current motivational practices on individual quantity surveyors.

Part 7 - Closing

This part is the closing part, asking whether the respondents would like to receive a summary of the final survey report by giving their contact details.

The semi-structured interviews consisted of the questions from the questionnaire survey as the basis. The set of the questionnaire survey can be found in Appendix B.

Likert scale scoring was used to ask respondents for their opinion and according to Brown (2011), attitudinal measures, in the form of the Likert scale, can generate more valid data than single measures. The four-point Likert scale used was: 0 - 3. Keeping the number of response options as small as possible allows the respondents to make a useful choice from among the listed informative answers.

4.9.3 Data analysing methods

The data collected, needed to be analysed. The data can be analysed using manual method (pencil and paper) or with the aid of computer software. There are several software packages available for both quantitative and qualitative data analysis.

There were a few considerations to make before computer software was chosen. The considerations included: the cost of the software package; and time taken to learn to use the software. Computer software packages were used to analyse quantitative and qualitative data of the research since the computer software has greatly reduced the time and energy of the researcher in the analysis process as compared to doing the analysis manually (Ozkan, 2004). For this research, the researcher used the SPSS software to analyse quantitative data and the NVivo software to analyse qualitative data since both software are widely used; and the training has been provided by the researcher's university.

Proposed data analysis approach will be explained further in chapter 4.10.

4.10 Proposed Data Analysis Approach

Data collected will be analysed as described below:

4.10.1 Analysis of questionnaire data

Statistical analysis using the SPSS window will implement a descriptive analysis to collect data from the questionnaire.

Descriptive analysis provides information concerning: the characteristics of the sample, and the distribution of the scores or continuous distribution. Descriptive statistics serve two purposes: to explore the data and to summarise or describe the observations (Naoum, 1998). For this reasons, descriptive analysis will be adopted in this research.

The data from the questionnaire survey responses were analysed using the Statistical Package for Social Science (SPSS) software. This provided ease of handling for the large data sets by organising the data efficiently and dealing with the data easily.

It is important to identify the type of the data before the data is entered. The scale of measurement can be divided into four types: nominal; ordinal; interval; and ratio. The data from the questionnaires of this research are only nominal and ordinal. Nominal is a value that can be assigned to a code in the form of a number where numbers are simply labels or category variables comprising of categories that cannot be ranked or ordered, e.g., job position, and types of organisation. Meanwhile, ordinal refers to a set of categories that are organised in an ordered sequence, i.e., ranking the degree of satisfaction.

Statistical test for this research is done using the Kruskal-Wallis test since most of the data in the research has more than two variables, to look at the significant differences. Kruskal-Wallis is a non-parametric test, to compare the scores on continuous variables for three or more groups (Pallant, 2010). Scores were converted to ranks and the mean rank for each group is identified before being compared. In this test, if output at a significant level is less than the alpha level 0.5, the result suggests that there is a difference in the variables across the groups.

4.10.2 Analysis of archival documents and semi-structured interview

For this research, the archival document review and semi-structured interviews were analysed through content analysis with a word-based and code-based approach, using the NVivo software.

Content analysis is a systematic technique for compressing sentences into patterns and themes based on explicit rules of coding (Leedy and Ormrod, 2001). The content may be produced in the context that is generated by data collection (transcripts of interviews, discussions, and archived documents) (Bryman, 2008). Content analysis is used frequently in social science researches (Krippendorff, 2004)

Traditionally, content analysis has most often been thought of in terms of conceptual analysis and is also known as thematic analysis. Under thematic analysis, the frequency of the occurrence of certain incidents, words, and phrases is denoted as a theme (Bryman and Bell, 2007). Attride-Striling (2001) lists three classes of themes:

- Basic themes – the lowest order theme that derives from the text.
- Organising theme – organising the basic themes into clusters or similar issues.
- Global theme – super ordinate themes that encompass the principle metaphors in the data as a whole.

The semi-structured interviews were mainly conducted face-to-face in the participants' organisations with the aid of a voice recorder. The researcher also wrote down, in short hand format, notes concerning the important replies from the participants. The recorded interviews were then transcribed verbatim and analysed manually.

Careful reading of the transcribed data made it easy to code the data, according to the sections of the questions and according to the issues raised by the participants. It is clear that the sections of the questions (refer appendix B) can be separated into key themes for analysis. The coded data under each and every section can then be categorised as sub themes/sections of the analysis.

4.11 Reliability

Reliability is the consistency of a measurement over time. A test is considered reliable if the same result can be obtained, as it means that the same answer should be obtained through measurement with the same method, assuming the situation has not changed (Jankowicz, 2005). The reliability of quantitative research is very important in providing an indication of the degree to which the measures to evaluate the same thing are homogeneous and consistent.

In a quantitative study, reliability is a concept to evaluate quality in the quantitative study with the purpose of explaining, while reliability in a qualitative study is a concept to evaluate quality in the qualitative study for the purpose of generating an understanding (Golafshani, 2003). In a qualitative research, reliability refers to the extent that different researchers, given exposure to the same situation, would reach the same conclusion (Anderson, 1998). Therefore, reliability in a qualitative research is the consequence of the validity in the study. The reliability test for quantitative data has been conducted and the results are shown in table 5.2 of chapter 5.

4.12 Validity

Validity is the extent to which the research findings accurately represent what is really happening in the situation (Collis and Hussey, 2003). Validity can also be described as the extent to which any instrument measures what it is intended to measure. Golafshani (2003) describes that the validity in quantitative research as “construct validity”, of which the construct is the initial concept, question or hypothesis that determines which data is to be gathered and how it is to be gathered. Quantitative data can be validated, usually by the application of a test, and the involvement of researchers in the research process would greatly reduce the validity of a test (Golafshani, 2003).

The concept of validity is described by a wide range of terms in qualitative studies. Many researchers (Stenbacka, 2001; Creswell and Miller, 2000; and Lincoln and Guba, 1985) have argued that the term validity is not applicable to qualitative research, which resulting the researchers to develop new concepts of validity to adapt to their research. Delanty and Strydom (2003) suggest that, in most cases, validity does not seem to be a major problem in

qualitative research using content analysis, since most of the time, definition of categories and alternative selection of indicators are done carefully.

Validity of study can be achieved by triangulation methods, which is from the quantitative data finding and qualitative data finding. Triangulation strengthens a study by combining methods and control bias (Patton, 2001). Internal validity (from quantitative data) and external validity (from qualitative data) may contribute to the robust validity of the findings.

4.13 Pilot study

A pilot study was carried out to help refine and assess the research instrument, which was prepared for the main data collection. A pilot study can be referred to as a feasibility study of a main study and a pilot study often refers to a mini version of a full-sized study (Teijlingen and Hundley, 2001). However, in this particular research, the pilot study functioned as a pre-testing of the questionnaire survey (Baker, 1994), in order to test whether the questions in the survey are understandable in terms of the: appropriate issues to be addressed; suitability of the wordings used; suitability of the order of the questions; and suitability of the ranking of answers provided (Likert scale rated 0 to 3). The pilot study is important since the researcher might have overlooked many aspects of the research instrument, which could affect the outcome of the research (Awang, 2014). However, it does not guarantee the success of the main study (Teijlingen and Hundley, 2001).

4.13.1 Pilot study for this research

Jankowicz (2005) recommended that pre-testing of a questionnaire should be carried out and it should include different groups, such as colleagues and potential users of the data. The pilot study of this research required eight respondents to answer the pilot questionnaire. The respondents were sought from quantity surveyors who are: researchers with a quantity surveying background in the Malaysian construction industry; and quantity surveyors who are not registered as professional quantity surveyors with the Board of Quantity Surveyors Malaysia, but are currently working in the Malaysian construction industry (two from research colleagues; two from public agencies; two from consultant firms; and two from contracting firms). The potential participants were approached through email to take part in

the pilot study. Once the participants agreed to take part in the pilot survey, the link to the web questionnaire was sent by email.

The outcome from this pilot questionnaire included: removing an unnecessary question; and suggestions on more understandable terms to be used for local quantity surveyors. These suggestions were taken into consideration in the final draft of the questions in the main study. Table 4.5 summarises the results from the pilot study and proposed the main study to be done with regards to data collection methods and analysis.

Table 4.5: Summary of pilot study and proposed main study

Data collection	Pilot study	Main study	
Survey type	Cross sectional		
Period of study	October 2014	5 Nov 2014 – 31 Jan 2015	15 Dec 2014 – 15 Feb 2015
Respondents	2 researchers; 2 public agencies; 2 contractor firms; 2 consultant firms. All with QS background and working experience in the Malaysian construction industry	Entire population of QS in the Malaysian construction industry	22 interviews (8 government agencies; 11 consultancy firms; 3 contracting firms) until saturation is achieved or the limit of each group is reached.
Population location	Individual Qs who work in the Malaysian construction industry in: government agencies; consultancy firms; and contracting firms		
Research sampling			Purposive sampling
Research methods	Web questionnaire	Web questionnaire; email questionnaire; and postal questionnaire (if requested by respondent)	Semi-structured interview
Data base(s)		Board of Quantity Surveyors Malaysia (BQSM) \approx 947 (reference based on Jun – Oct 2014)	Board of Quantity Surveyors Malaysia (BQSM) \approx 947 (reference based on Jun – Oct 2014)

Interview time			20 – 40 minutes
Recording Instrument			Digital voice recorder (if approved by interviewee)
Analysis	SurveyMonkey web questionnaire analysis & responses received through email.	Statistical analysis	Content Analysis
Analysis method	Microsoft Excel	SPSS	Nvivo

4.14 Main study

4.14.1 Population

The identified population of quantity surveyors in Malaysia from the annual report (RISM, 2011) and the Board of Quantity Surveyors Malaysia (BQSM, 2013) database have resulted in a sampling frame of nine hundred ninety seven (997) (121 government personnel, 815 private consultancy firms' personnel, 11 personnel from private contracting firms; and 50 from other industries).

4.14.2 Quantity surveyor groups

This research only focuses on the quantity surveyors in: public agencies; private consultancy firms; and private contracting firms. Besides the previously mentioned firms, there are other private sectors that quantity surveyors can work in. The private sectors include: private consultancy firms; private contracting firms; private tertiary education institutions; banking sector; and oil & gas sector; but the majority of the quantity surveyors work in private consultancy firms (RISM, 2011).

However, for purposes of this research, the respondents were the quantity surveyors who works in the: Ministry of Works; agencies of Ministry of Works; city councils for public sector; contract and procurement department of higher education institution. Meanwhile, in the private sector, the respondents were quantity surveyors from consultancy firms; and contracting firms.

4.14.3 Sampling

This study adopted both interview and questionnaire survey for data collection. Sampling is a reduced amount of data needed to be collected from the population (Bryman, 2008). The identification of samples from reports and databases resulted in a total population of nine hundred forty seven (947) (121 government personnel, 815 private consultancy firms' personnel, and 11 personnel from private contracting firms) (BQSM, 2013).

For the questionnaire surveys of this research, the sample size should be sufficiently large to achieve a reasonable response rate in order to allow data to be analysed sufficiently (Baruch and Holtom, 2008). For this research, questionnaires have been distributed to two hundred (200) out of nine hundred forty seven (947) registered quantity surveyors in the Malaysian construction industry. The reason why only 21% of questionnaire was distributed is because it is impracticable to survey the entire population. Budget and time constraints are also the contribution factors for why there are only 21% of questionnaire surveys distributed; however, due to these reasons the sampling can still be consider as a valid approach as an alternative to a full population survey (Saunders *et al.*, 2012). In addition, by applying the sampling technique in collecting the data, it makes possible a higher overall accuracy than a census, and that more time can be spent designing the means of collecting the data (Barnett, 1991).

4.14.4 Data collected through questionnaire survey

To increase the questionnaire response rate, two methods have been implemented in this research, namely: an online questionnaire; and a postal questionnaire. Online questionnaires are cheaper as compared to postal questionnaires (Bryman, 2008). This method also enables faster responses and they are easy to respond to since they can be answered through smart phones and other information software or technology. However, the drawback is that it is restricted to the online population. For this research, an invitation to participate in the research was emailed to the respondents. The link to answer the questionnaire through website was attached in the email. A copy of the questionnaire in the Microsoft Words format was also attached in the email. Postal questionnaire was also offered in the email to supplement the online questionnaire if indicated by the participants.

For the interviews required, there is no ideal number of interviews (Baker and Edwards, 2008) and it depends on what one wants to obtain. Moreover, the importance of the various kinds of sampling used in a qualitative research lie primarily in the quality of information obtained per sampling unit, not the quantity (Sandelowski, 1995). Therefore, approximately twenty interviews were proposed to be conducted using the snowball technique, which covered all group categories (eight interviews from government personnel; ten interviews from private consultancy personnel; two interviews from private contracting personnel). The process of interviewing ended with twenty two interview sessions. The survey respondents were asked whether they were prepared to participate in the subsequent phase of personal face to face interviews. This assisted with defining the interview groups.

Table 4.6: Distribution of questionnaires

QS Group	Population	10% Response Rate Number	Proposed Sampling Size (20%)	Stage 1 (a)			Stage 1 (b)			Stage 1 (c)	
				Means of Distributing the Questionnaire	Date of Distribution	Feedback	Means of Distributing the Questionnaire	Date of Follow Up	Feedback	Means of Distributing the Questionnaire	Feedback
Government agencies	121	13	26	Online questionnaire	06/11/14 – 10/11/14	1	Email questionnaire (as attachment)	02/12/14 – 06/12/14	6	By hand; and by post (when requested) (15/12/14 - 06/02/15)	13
Private consultancy firms	815	86	172			3			4		41
Private contracting firms	11	1	2			1			1		5
Total	947	100	200			5			11		59

Table 4.7 Respondent of face to face semi-structured interview

QS group	Proposed sampling size	QS interviewed	Period of interview
Government agencies	8	8	15/12/2014 – 06/02/2015
Private consultancy firms	10	11	
Private contracting firms	2	3	
Total	20	22	

4.14.5 Data collected through semi-structured interview

Face-to-face semi-structured interviews were done concurrent with stage 1 (c) of the questionnaire distribution (table 4.6). The interview questions are based on the quantitative questionnaires to the registered quantity surveyors. Initially, the maximum number of interviews proposed were twenty interviews (eight government; ten consultant firm; two contracting firm) until saturation is achieved or the limit of each group is reached. The survey respondents were asked whether they were prepared to participate in the subsequent phase of data collection, which were the personal face to face semi-structured interviews. The researcher was able to conduct a total of twenty two face-to-face semi-structured interviews (table 4.7).

For semi-structured interviews, there is no ideal number of interviews (Baker and Edwards, 2008). The importance of the various kinds of sampling used in a qualitative research lies primarily in the quality of information obtained per sampling unit, not the quantity (Sandelowski, 1995). Thus, it is intended to interview as many respondents as available from the phase 1 questionnaire.

The purpose of the interview was to provide the researcher with a relatively flexible format for the gathering of data, and due to the popularity of the method in social sciences. Interviews can be structured, semi-structured, or non-structured (Fellows and Liu, 2008; Saunders *et al.*, 2007; Creswell, 2003).

Structured interviews usually have a fixed number of questions and restricted responses. It is argued that structured interviews are more efficient in terms of the time taken to collect the data and the degree of reliability and validity is generally greater than in the semi-structured and unstructured interview formats (Creswell, 2003). Meanwhile, unstructured interview is the opposite of the structured interview. Both methods of interviews were not suitable for this research.

The researcher applied the semi-structured interview method when collecting the data face-to-face with the interviewees since it is thought to be more appropriate and suited the nature of this research. It is an interview where the researcher has a series of questions that are in the general form of an interview schedule but is able to vary the sequence of questions (Bryman, 2004). During the interviews, the researcher gained more understanding on the researched phenomena which is the quantity surveyor's professions and what they do in detail during the different stages of the construction process. From there, the researcher obtained ideas on how the quantity surveyors' roles relate to the performance of their jobs and also the motivation aspects.

Before the interview sessions were conducted, the list of the potential participants was gathered from the list of questionnaire surveys. The respondents were contacted in order to ask their permission to be interviewed at their offices. Before the interview, the researcher informed the potential interviewees, the aims and purpose of the research through email. Individual quantity surveyors who agreed to be interviewed were then contacted by telephone to set up the date of the interview.

Questions were asked during the interviews with the participant providing responses in their own words. Some questions were asked to experts to give their view. The result of this approach was a richness of data, which was unbiased by any interpretation that the interviewer might have placed on it. The semi-structured interviews for this study were conducted face-to-face. The researcher felt more comfortable to conduct face-to-face interviews so that ambiguities in questions or answers are immediately clarified by the researcher. During the interview sessions, local language which is Bahasa Malaysia was mainly used. Some of the interviewees used full English language and some of them used a mixture of both Bahasa Malaysia and English. The interviewer adopted the language that the

interviewee chose in order to ensure that they were comfortable to answer during the interview session, and to encourage spontaneity.

4.15 Summary

This chapter attempted to describe in detail the methodological approach adopted in this study. In order to determine the most appropriate philosophical positions, careful considerations must be made based on the nature of the problem and the research questions established. The research comprises of seventy one numbers of feedbacks from the questionnaires, using: postal; email; and web questionnaires. This was further reinforced with twenty two semi structured interviews to triangulate the results.

In order to achieve the aim ‘to develop a conceptual framework on the motivation of quantity surveyors in the Malaysian construction industry through the impact, challenges, and effectiveness of the current motivational practices for achieving improved job performance’, a diverse range of methods to collect both generally applicable data and in-depth data were employed. This use of a range of methods concurs with the views of: Weston *et al.* (2001); Perry (1998); and Gable (1994); that research of this nature should attempt to mix methods to some extent, because it provides a greater perspective on the phenomena being studied. The data collection methods employed for this research were questionnaires (web; email; and postal) and semi-structured interviews.

5.0 QUANTITATIVE DATA ANALYSIS

5.1 Introduction

This section will extensively discuss the quantitative data analysis conducted for this research. It begins with discussing the questionnaire, as the method of the quantitative data collection. This section also explains the design of the questionnaire as well as the investigation plan employed. The results of the reliability test conducted will also be included in this section. This is followed by a detailed elaboration of the surveyed sample. The discussion also highlights the findings gained from the quantitative data analysis, which was conducted with the aid of the SPSS 19.0 software. This section ends with a summary of key findings from the quantitative data analysis.

5.2 Reliability test

For this research, the internal reliability method is applied in measuring the reliability; the reliability test for the questionnaire in this research is conducted with the aid of the SPSS version 19.0 software. The internal consistency reliability method typically measures using a statistic called Cronbach's alpha coefficient. Cronbach's alpha is one of the most popular ways of measuring reliability, and is a measure of internal consistency, which indicates how closely related a set of items are as a group (Cortina, 1993; Fellows and Liu, 2008). In this regard, it is considered to be a measure of scale reliability. Alpha coefficient ranges in value from 0 to 1 where higher value is desirable. The commonly accepted rule for describing internal consistency using Cronbach's alpha, is as follows:

Table 5.1: Degree of consistency of Cronbach's alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Consequently, Cronbach’s alpha is not a statistical test but it is a coefficient of reliability or consistency, hence, a test is considered reliable if the same result can be obtained, as it means that the same answer should be obtained through measurement with the same method, assuming that the situation has not changed (Jankowicz, 2005).

The data gathered from the questionnaires were tested using Cronbach’s alpha method using SPSS software and the summary of the result is as shown in table 5.2.

Table 5.2: Summary of reliability of the variables

Ref	Variables	Frequency	Cronbach’s Alpha	Internal consistency
1	Roles of QS during feasibility studies stage	10	.829	Good
2	Role of QS during pre-contract stage	9	.876	Good
3	Roles of QS during post-contract stage	11	.930	Excellent
4	Roles of QS during construction management and resource procurement stage	7	.930	Excellent
5	Motivation factors of QS	19	.936	Excellent
6	Role of employer in the motivation of QS	19	.954	Excellent
7	Challenges associated with the current motivational practices employed by organisation	5	.887	Good
8	Effectiveness of the motivational practices employed by organisation	5	.807	Good
9	Impact associated with the motivational practices on individual QS	5	.878	Good
10	Effectiveness of the motivational practices on individual QS	5	.837	Good

Inherently, the reliability of a quantitative research is very important as it provides an indication of the degree of the homogeneity and consistency of the measures to evaluate the same thing. Thus, the value of alpha coefficient ranges from 0 to 1 where a higher value is desirable. The results in table 5.1 show that the internal consistencies are good and excellent, since the alpha value range from .807 to .954.

In addition, in order to determine the normality of quantitative data obtained in this research, normality tests were conducted using SPSS 19.0 software to seek the normality of the data. The results indicate that the data distribution is non-normal, and therefore, non-parametric statistical tests were required to further analyse the results.

The next sub-section will elaborate on the findings from the questionnaires, which are organised according to the sections in the questionnaire itself, as attached in Appendix B of this thesis.

5.3 Findings from questionnaire

5.3.1 General information

In order to provide the background information of the respondents in the survey questionnaires, this report presents the demography of the respondents based on the frequency tables as generated based on the analysis done through the SPSS version 19.0 software.

5.3.2 Job position in the current organisation

Table 5.3 and illustrates the respondents current job position in the organisation involved in this research. From seventy one usable questionnaires, twenty nine of the respondents (40.8%) are either the principal, director, or partner QS of the organisation; 23.9% are senior QS; and 35.2% are quantity surveyor at the time of the survey. It is apparent that the highest percentage of respondents holds the highest position in their organisation. This could be because most of registered quantity surveyors in Malaysia come from private consultancy firms, hence, the respondents comprise of those who own their own private consultancy firms.

Table 5.3: Job position in the current organisation

	Frequency	Percent
Principal/ Director/ Partner QS	29	40.8
Senior QS	17	23.9
Quantity Surveyor	25	35.2
Total	71	100.0

5.3.3 Working experience in quantity surveying profession

Meanwhile, table 5.4 presents the survey respondents' work experience in the profession of quantity surveying. Table 5.4 shows that at the time of the survey, 12.7% of the respondents have 1 to 5 years working experience in quantity surveying. Meanwhile 21.1% of the respondents have 6 to 10 years working experiences, while 14.1%, have 11 to 15 years, 11.3% (16 to 20 years) and 40.8% (more than 20 years working experience in quantity

surveying profession). The largest majority of the respondents have worked for more than 20 years, and this may be due to the fact that the process to be registered quantity surveyors is time consuming and costly, hence, newly graduated quantity surveyors often cannot afford to sit for the certification examination so that they can obtain licences to be quantity surveyors.

Table 5.4: Working experience in quantity surveying profession

	Frequency	Percent
1 to 5 years	9	12.7
6 to 10 years	15	21.1
11 to 15 years	10	14.1
16 to 20 years	8	11.3
More than 20 years	29	40.8
Total	71	100.0

5.3.4 Working experience in current organisation

The working experience in current organisation of the questionnaire survey respondents were also asked and shown in table 5.5. At the time of the survey, only 1.4% of the respondents have less than 1 year working experience. 29.6% of the respondents have 1 to 5 years working experience in current organization. 23.9%, 14.1%, 8.5% and 22.5% of the respondents have: 6 to 10 years; 11 to 15 years; 16 to 20 years; and more than 20 years; working experience in their current organisations respectively.

Table 5.5: Working experience in current organisation of the respondents

	Frequency	Percent
Less than 1 year	1	1.4
1 to 5 years	21	29.6
6 to 10 years	17	23.9
11 to 15 years	10	14.1
16 to 20 years	6	8.5
More than 20 years	16	22.5
Total	71	100.0

5.3.5 Gender of respondents

The survey questionnaire also asked about the gender of the respondents. In this regard, forty three males participated in this research; this represents 60.6% of the respondents of the respondents of the usable questionnaire. Meanwhile, female respondents account for 39.4%

of the respondents (see table 5.6). Due to the rough nature of the construction industry, it is not surprising to see the higher percentage of male quantity surveyors.

Table 5.6: Gender of questionnaire survey respondents

	Frequency	Percentage
Male	43	60.6
Female	28	39.4
Total	71	100.0

5.3.6 Type of organisations

The types of organisation that respondents work in were also probed in the questionnaire survey and are tabulated in table 5.7. At the time of the survey, 28.2% of the respondents are working in the government sector, 63.4% of the respondents work in private consultancy firms, and 8.5% of them are private contractors.

Table 5.7: Type of organisation of respondents

	Frequency	Percent
Government sector	20	28.2
Private consultancy firm	45	63.4
Private contractor firm	6	8.5
Total	71	100.0

5.4 The roles of quantity surveyors (part 2 of the questionnaire)

This section describes the findings from part 2 of the survey questionnaire which was designed to explore the level of involvement of quantity surveyors in the construction industry, by investigating their roles at their current organisation.

The discussion for this section will be according to the following order, the aim and objective for the theme, the allocated questions under the theme, the frequency distribution for the responses, the level of responses interdependence (which will be identified through Kruskal-Wallis, a non-parametric test) and cross tabulations tests.

Table 5.8 displays the four main questions with thirty seven sub-questions which consist of the roles of the quantity surveyors. These questions are based on four stages as found in the

current QS roles literatures (RISM, 2014). The respondents were given the instruction to select the options based on their experience in their current organisation where the level of the involvement is measured based on a 4-point Likert scale.

Table 5.8: Detail for the objective of part 2 of questionnaire items

Part	Objective	Stages	Item ID	Item
2	To analyse and evaluate the role of QS in Malaysian construction industry	Feasibility stage	6-1	Preparation or use of cost analysis.
			6-2	Preparation of estimates from sketch plan to detailed design.
			6-3	Preparation and use of detailed budgets.
			6-4	Preparation and use of cost plans.
			6-5	Financial feasibility studies
			6-6	Value management/engineering
			6-7	“Cost-in-use” studies/Life-cycle costing
			6-8	Profit/loss forecasts and cash flow projections.
			6-9	Cost checking
			6-10	Contractual and tendering arrangements
		Pre-contract	7-1	Preparation and documentation of BQ and other tender
			7-2	Measurement, estimating and pricing for tenders.
			7-3	Value management/engineering
			7-4	Preparation of specification and/or schedule of rates.
			7-5	Data processing associated with the preparation of documentation.
			7-6	Detailed compilation and analysis of unit rates/preliminaries.
			7-7	Selection and evaluation of tenders and reporting on tenders.
			7-8	Project liaison meeting with employers and consultants.
		Post-contract	7-9	Pre-qualification, evaluation and registration of contractors.
			8-1	Preparation of contract documents
			8-2	Application of cost control
			8-3	Monitoring of proposed construction methods and sequences and those actually required and reporting thereon.
			8-4	Value management/engineering
			8-5	Analysis of contract pricing relative to cost recording methods.
			8-6	Preparation of interim valuations.
			8-7	Preparation of variation order and final accounts.
			8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.
			8-9	Preparation of reconciliation statements for management purposes.
			8-10	Project liaison meeting with employers and consultants.
		8-11	Site surveys and measurement and attendance at site meetings.	
		Construction management and resource procurement	9-1	Planning and programming of construction activities.
			9-2	Site planning.
			9-3	Management of resources and supervision of works.
9-4	Liaison with employer, consultants, statutory and			

				service authorities.
			9-5	Resource determination, scheduling and purchasing.
			9-6	Procurement of labour, plant and materials.
			9-7	Negotiation with and management of sub-contractors and suppliers.

5.4.1 Frequency distribution of responses for part 2

For questions 6 to 9, the respondents were given statements which describe their roles as quantity surveyors in 4 stages of construction development process. They were instructed to rate their involvement in each role, based on a 4-point Likert scale where 0 is the lowest and 3 is the highest.

Table 5.9: Frequency distribution of responses for questions in part 2 of the questionnaire

Stages	Item ID	Item	Percentage (%) of level of involvement			
			None	Low	High	Very high
Feasibility stage	6-1	Preparation or use of cost analysis.	5.6	14.1	46.5	33.8
	6-2	Preparation of estimates from sketch plan to detailed design.	2.8	9.9	39.4	47.9
	6-3	Preparation and use of detailed budgets.	5.6	14.1	40.8	39.4
	6-4	Preparation and use of cost plans.	8.5	18.3	32.4	40.8
	6-5	Financial feasibility studies	12.7	29.6	33.8	23.9
	6-6	Value management/engineering	8.5	35.2	33.8	22.5
	6-7	“Cost-in-use” studies/Life-cycle costing	22.5	47.9	18.3	11.3
	6-8	Profit/loss forecasts and cash flow projections.	11.3	42.3	28.2	18.3
	6-9	Cost checking	1.4	26.8	35.5	36.6
	6-10	Contractual and tendering arrangements	1.4	14.1	33.8	50.7
Pre-contract	7-1	Preparation and documentation of BQ and other tender	12.7	22.5	63.4	1.4
	7-2	Measurement, estimating and pricing for tenders.	-	18.3	18.3	63.4
	7-3	Value management/engineering	7.0	32.4	35.2	25.4
	7-4	Preparation of specification and/or schedule of rates.	5.6	26.8	33.8	33.8
	7-5	Data processing associated with the preparation of documentation.	2.8	23.9	39.4	33.8
	7-6	Detailed compilation and analysis of unit rates/preliminaries.	4.2	25.4	29.6	40.8
	7-7	Selection and evaluation of tenders and reporting on tenders.	1.4	18.3	19.7	60.6
	7-8	Project liaison meeting with employers and consultants.	1.4	7.0	31.0	60.6
	7-9	Pre-qualification, evaluation and registration of contractors.	5.6	26.8	36.6	31.0
Pre-contract	8-1	Preparation of contract documents	4.2	19.7	26.8	49.3
	8-2	Application of cost control	4.2	19.7	39.4	36.6
	8-3	Monitoring of proposed construction methods and sequences	12.7	42.3	28.2	16.9

	8-4	Value management/engineering	15.5	28.2	39.4	16.9
	8-5	Analysis of contract pricing relative to cost recording methods.	5.6	40.8	33.8	19.7
	8-6	Preparation of interim valuations.	4.2	16.9	16.9	62.0
	8-7	Preparation of variation order and final accounts.	4.2	15.5	18.3	62.0
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	5.6	11.3	32.4	50.7
	8-9	Preparation of reconciliation statements for management purposes.	7.0	23.9	45.1	23.9
	8-10	Project liaison meeting with employers and consultants.	4.2	12.7	26.8	56.3
	8-11	Site surveys and measurement and attendance at site meetings.	7.0	22.5	29.6	40.8
Construction management and resource procurement	9-1	Planning and programming of construction activities.	29.6	56.3	9.9	4.2
	9-2	Site planning.	38.0	53.5	5.6	2.8
	9-3	Management of resources and supervision of works.	38.0	43.7	12.7	5.6
	9-4	Liaison with employer, consultants, statutory and service authorities.	25.4	46.5	18.3	9.9
	9-5	Resource determination, scheduling and purchasing.	42.3	43.7	8.5	5.6
	9-6	Procurement of labour, plant and materials.	45.1	40.8	8.5	5.6
	9-7	Negotiation with and management of sub-contractors and suppliers.	39.4	38.0	14.1	8.5

Table 5.9 illustrates the distribution of responses, according to the stages of the construction development process as revealed by the archived documents. General observation indicates that in certain aspects, some of the roles are already present. While some are still not developed or rarely played by the quantity surveyors. The detailed explanation of the results in part 2 is tabulated in table 5.10.

a. Feasibility stage (item 6-1 to 6-10)

The respondents were asked to indicate whether they are involved in ten quantity surveyors' roles during the feasibility stage in their current organisation. It is apparent that almost all the respondents actively were involved in all quantity surveying roles during the feasibility stage, with their involvement ranging from low to very highly involve. Consequently, the statement with the lowest percentage is on the 'none involvement' response, except item 6-7, where its lowest percentage is on very highly involved which is 11.3% on 'cost-in-use studies/ life-cycle costing' role. Most of the roles have both high involvement and very high involvement. Item 6-10 'Contractual and tendering arrangements' is the role with the highest involvement among all with the mean

of 2.34, meanwhile the role of quantity surveyors with the lowest involvement was item 6-7 with the mean of 1.18.

From the results, it is very clear that all the quantity surveyors' roles during the feasibility stage were the standard roles of the quantity surveying practice in the construction industry since in all ten roles; the respondents have indicated positively that the individual quantity surveyors have involvement in the roles whether directly or indirectly.

Table 5.10: Detailed results for items corresponding to the role of the quantity surveyors during feasibility stage

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
6-1	Frequency	4	10	33	24	71	2.08	.841
	Percentage	5.6	14.1	46.5	33.8	100		
6-2	Frequency	2	7	28	34	71	2.32	.770
	Percentage	2.8	9.9	39.4	47.9	100		
6-3	Frequency	4	10	29	28	71	2.14	.867
	Percentage	5.6	14.1	40.8	39.4	100		
6-4	Frequency	6	13	23	29	71	2.06	.969
	Percentage	8.5	18.3	32.4	40.8	100		
6-5	Frequency	9	21	24	17	71	1.69	.980
	Percentage	12.7	29.6	33.8	23.9	100		
6-6	Frequency	6	25	24	16	71	1.70	.916
	Percentage	8.5	35.2	33.8	22.5	100		
6-7	Frequency	16	34	13	8	71	1.18	.915
	Percentage	22.5	47.9	18.3	11.3	100		
6-8	Frequency	8	30	20	13	71	1.54	.923
	Percentage	11.3	42.3	28.2	18.3	100		
6-9	Frequency	1	19	25	26	71	2.07	.834
	Percentage	1.4	26.8	35.5	36.6	100		
6-10	Frequency	1	10	24	36	71	2.34	.774
	Percentage	1.4	14.1	33.8	50.7	100		

b. Pre-contract stage (item 7-1 to 7-9)

The second stage of the construction process is pre-contract stage. The result is stated in table 5.11. Similar to the previous stage, all roles had low percentage for the none involvement response, except item 7-1 where the lowest percentage was on 'very highly involvement', which is 'cost-in-use studies/ life-cycle costing', and item 7-2 where no respondent chose 'no involvement' .

The respondents were asked to indicate their agreement on their involvement in nine quantity surveyors' roles during the pre-contract stage while they are in their current organisation. Item 7-1 'preparation and documentation of BQ and other tender' was the role with the highest involvement, with the mean of 2.54, meanwhile, the role of with the lowest involvement was item 7-3, 'value management/engineering', with the mean of 1.79.

It can be seen that more than half of the roles have above the average scores. The results indicate that the roles during post-contract stage are normal roles of the quantity surveying practice to all types of the quantity surveyors. By looking at the lowest mean score (1.79), the score was very near the average score, which is 2. Therefore, it can be concluded that these roles are important and are still relevant for quantity surveyors' today.

Table 5.11: Detailed results for items corresponding to the role of the quantity surveyors during pre-contract stage

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
7-1	Frequency	9	16	45	1	71	2.54	.734
	Percentage	12.7	22.5	63.4	1.4	100		
7-2	Frequency	-	13	13	45	71	2.45	.789
	Percentage	-	18.3	18.3	63.4	100		
7-3	Frequency	5	23	25	18	71	1.79	.909
	Percentage	7.0	32.4	35.2	25.4	100		
7-4	Frequency	4	19	24	24	71	1.96	.917
	Percentage	5.6	26.8	33.8	33.8	100		
7-5	Frequency	2	17	28	24	71	2.04	.836
	Percentage	2.8	23.9	39.4	33.8	100		
7-6	Frequency	3	18	21	29	71	2.07	.915
	Percentage	4.2	25.4	29.6	40.8	100		
7-7	Frequency	1	13	14	43	71	2.39	.836
	Percentage	1.4	18.3	19.7	60.6	100		
7-8	Frequency	1	5	22	43	71	2.51	.694
	Percentage	1.4	7.0	31.0	60.6	100		
7-9	Frequency	4	19	26	22	71	1.93	.900
	Percentage	5.6	26.8	36.6	31.0	100		

c. Post-contract stage (item 8-1 to 8-11)

The third construction stage is the post-contract stage and it consists of eleven roles. Almost all of the roles have high and very high involvement responses. It can be

concluded that the quantity surveyors' roles during this stage are among the main roles of the quantity surveying practices with high involvement of the quantity surveyors. The highest mean score is 2.38 for item 8-7, meanwhile, the role with the lowest involvement was item 8-3, 'monitoring of proposed construction methods and sequences' with a mean score of 1.49.

From the results of the quantity surveyors' roles during the post-contract stage, it can be seen that more than half of the roles have above average scores. This reflects that the quantity surveyors' roles during the post-contract stage are the norm, and these roles are still actively being practiced and are relevant in the Malaysian construction industry.

Table 5.12: Detailed results for items corresponding to the role of the QS during post-contract stage

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
8-1	Frequency	3	14	19	35	71	2.21	.909
	Percentage	4.2	19.7	26.8	49.3			
8-2	Frequency	3	14	28	26	71	2.08	.858
	Percentage	4.2	19.7	39.4	36.6			
8-3	Frequency	9	30	20	12	71	1.49	.924
	Percentage	12.7	42.3	28.2	16.9			
8-4	Frequency	11	20	28	12	71	1.58	.951
	Percentage	15.5	28.2	39.4	16.9			
8-5	Frequency	4	29	24	14	71	1.68	.858
	Percentage	5.6	40.8	33.8	19.7			
8-6	Frequency	3	12	12	44	71	2.37	.914
	Percentage	4.2	16.9	16.9	62.0			
8-7	Frequency	3	11	13	44	71	2.38	.900
	Percentage	4.2	15.5	18.3	62.0			
8-8	Frequency	4	8	23	36	71	2.28	.881
	Percentage	5.6	11.3	32.4	50.7			
8-9	Frequency	5	17	32	17	71	1.86	.867
	Percentage	7.0	23.9	45.1	23.9			
8-10	Frequency	3	9	19	40	71	2.35	.864
	Percentage	4.2	12.7	26.8	56.3			
8-11	Frequency	5	16	21	29	71	2.04	.963
	Percentage	7.0	22.5	29.6	40.8			

d. Construction management and resource procurement stage (item 9-1 to 9-7)

There are eleven roles listed in this stage. The respondents were asked to indicate their agreement on their involvement in their roles during the construction management and resource procurement stage while they were in their current organisation.

Almost all of the roles have either low involvement or no involvement at all during this stage. There were very low responses for the option ‘very high involvement’. Consequently, the average mean score for all items were below average; item 9-4 ‘liaison with employer, consultants, statutory and service authorities’ had the highest mean score of 1.13, meanwhile, item 9-2 or role of ‘site planning’ had the lowest involvement with the mean of .73.

The respondents provided results which imply that in terms of the roles of quantity surveyors in the construction industry, the involvement of the quantity surveyors during the stage of construction management and resource procurement is not vital and it is not compulsorily undertaken by all quantity surveyors. It may be because these roles are essential to certain types of quantity surveying organisations only and not all.

Table 5.13: Detailed results for items corresponding to the role of the quantity surveyors during construction management and resource procurement stage

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
9-1	Frequency	21	40	7	3	71	.89	.747
	Percentage	29.6	56.3	9.9	4.2	100		
9-2	Frequency	27	38	4	2	71	.73	.696
	Percentage	38.0	53.5	5.6	2.8	100		
9-3	Frequency	27	31	9	4	71	.86	.850
	Percentage	38.0	43.7	12.7	5.6	100		
9-4	Frequency	18	33	13	7	71	1.13	.909
	Percentage	25.4	46.5	18.3	9.9	100		
9-5	Frequency	30	31	6	4	71	.77	.831
	Percentage	42.3	43.7	8.5	5.6	100		
9-6	Frequency	32	29	6	4	71	.75	.840
	Percentage	45.1	40.8	8.5	5.6	100		
9-7	Frequency	28	27	10	6	71	.92	.937
	Percentage	39.4	38.0	14.1	8.5	100		

5.4.2 Chi-square test for part 2 of the questionnaire

This section examines whether the responses given by the respondents in the questionnaire were the product of respondent's choice or the product of chance. In order to determine this, a non-parametric chi-square was conducted. The reason for using this test for analysis was because the data was non-parametric data since the data was not normally distributed. Also, the test was to confirm that the sampling method was a simple random sampling.

The null hypothesis stated that the responses were given at random and the confidence level was set at 95%. For the significance levels $\rho < 0.05$, the null hypothesis was rejected and confidence was gained in the hypothesis that the results are valid, and in some ways, are related (Field, 2009). Table 5.14 shows the significance levels for all items in part 2 of the questionnaire.

For $\rho < 0.05$, the null hypothesis stated that it was true that all scores were given at random for all of the tested items, except for item 'financial feasibility studies' which implied that this score were given at random. Consequently, this item was excluded before conducting the Kruskal-Wallis test with the respondent's profile.

Table 5.14: Significance level (ρ) of response to item 6 to 9 of the questionnaire

Stages	Item ID	Item	Chi-square	Significance
Feasibility stage	6-1	Preparation or use of cost analysis.	29.338	.000**
	6-2	Preparation of estimates from sketch plan to detailed design.	41.282	.000**
	6-3	Preparation and use of detailed budgets.	27.085	.000**
	6-4	Preparation and use of cost plans.	17.732	.000**
	6-5	Financial feasibility studies	7.141	.068
	6-6	Value management/engineering	13.113	.004**
	6-7	"Cost-in-use" studies/Life-cycle costing	21.676	.000**
	6-8	Profit/loss forecasts and cash flow projections.	15.366	.002**
	6-9	Cost checking	22.690	.000**
	6-10	Contractual and tendering arrangements	40.155	.000**
Pre-contract	7-1	Preparation and documentation of BQ and other tender	62.127	.000**
	7-2	Measurement, estimating and pricing for tenders.	28.845	.000**
	7-3	Value management/engineering	13.676	.003**
	7-4	Preparation of specification and/or schedule of rates.	15.141	.002**

	7-5	Data processing associated with the preparation of documentation.	22.127	.000**
	7-6	Detailed compilation and analysis of unit rates/preliminaries.	19.986	.000**
	7-7	Selection and evaluation of tenders and reporting on tenders.	53.789	.000**
	7-8	Project liaison meeting with employers and consultants.	61.901	.000**
	7-9	Pre-qualification, evaluation and registration of contractors.	15.592	.001**
Pre-contract	8-1	Preparation of contract documents	29.901	.000**
	8-2	Application of cost control	22.803	.000**
	8-3	Monitoring of proposed construction methods	14.915	.002**
	8-4	Value management/engineering	10.634	.014*
	8-5	Analysis of contract pricing relative to cost recording methods.	20.775	.000**
	8-6	Preparation of interim valuations.	54.803	.000**
	8-7	Preparation of variation order and final accounts.	54.915	.000**
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	36.324	.000**
	8-9	Preparation of reconciliation statements for management purposes.	20.662	.000**
	8-10	Project liaison meeting with employers and consultants.	44.549	.000**
	8-11	Site surveys and measurement and attendance at site meetings.	17.056	.007**
Construction management and resource procurement	9-1	Planning and programming of construction activities.	47.254	.000**
	9-2	Site planning.	52.549	.000**
	9-3	Management of resources and supervision of works.	29.676	.000**
	9-4	Liaison with employer, consultants, statutory and service authorities.	20.887	.000**
	9-5	Resource determination, scheduling and purchasing.	36.775	.000**
	9-6	Procurement of labour, plant and materials.	37.000	.000**
	9-7	Negotiation with and management of sub-contractors and suppliers.	21.901	.000**

5.4.3 Kruskal-Wallis test for part 2 of the questionnaire

This section investigates the contributory factors which facilitate the responses given in questionnaire survey, by conducting a non-parametric test called the 'Kruskal-Wallis'. In this analysis, the respondents' profile was used as the independent variables and the responses analysed were used as the dependent variables.

The independent variables selected for this analysis are: respondents' position in the organisation, which was labelled as 'job title'; respondents' length of working period in the quantity surveying profession in the Malaysian construction industry (QS exp); respondents' length of working period in the current organisation (exp in current organisation); respondents' gender (gender); and type of organisation (type of orgstn).

Table 5.15 shows that in some cases, the respondents' answers were independent of their profile and were not influenced by their background. However, there was also some dependence observed in some of the tested items. The results showed that the respondent's profile 'total period of working experience as quantity surveyor' did not impact the entire roles of quantity surveyors in all of the four stages. 'Total period of working experience in the construction industry' has also contributed to the same result as the respondent's profile, except for item 'Liaison with employer, consultants, statutory and service authorities' (9-4).

Results also showed that the responses for items: 6-2; 6-3; 6-7; 6-10; 7-1; 7-2; 7-3; 7-4; 7-7; 7-8; 8-4; 8-10; 8-11; 9-1; and 9-2 were not affected by any of the parameters from respondents' profile. Apart from that, the results indicated that types of organisation of the respondents highly influenced the responses for most of the items, except: detailed compilation and analysis of unit rates/preliminaries (item 7-6); analysis of contract pricing relative to cost recording methods (item 8-5); management of resources and supervision of works (item 9-3); and resource determination, scheduling and purchasing (item 9-5).

Table 5.15: Kruskal-Wallis analysis for part 2 of the questionnaire

Stages	Item ID	Tested items	Respondent's profile				
			Job title	QS exp	Exp in current orgstn	Gender	Types of orgstn
Feasibility stage	6-1	Preparation or use of cost analysis.	.019*	.095	.521	.670	.008**
	6-2	Preparation of estimates from sketch plan to detailed design.	.248	.229	.768	.614	.074
	6-3	Preparation and use of detailed budgets.	.080	.066	.149	.663	.210
	6-4	Preparation and use of cost plans.	.053	.152	.584	.832	.003**
	6-6	Value management/engineering	.012*	.276	.198	.140	.002**
	6-7	"Cost-in-use" studies/Life-cycle costing	.517	.481	.062	.144	.112
	6-8	Profit/loss forecasts and cash flow projections.	.122	.462	.526	.305	.004**
	6-9	Cost checking	.792	.453	.388	.851	.026*

	6-10	Contractual and tendering arrangements	.509	.726	.831	.383	.117
Pre-contract	7-1	Preparation and documentation of BQ and other tender	.667	.099	.345	.564	.081
	7-2	Measurement, estimating and pricing for tenders.	.584	.224	.650	.379	.165
	7-3	Value management/engineering	.521	.848	.820	.824	.096
	7-4	Preparation of specification and/or schedule of rates.	.856	.167	.418	.027	.165
	7-5	Data processing associated with the preparation of documentation.	.491	.114	.290	.052	.016*
	7-6	Detailed compilation and analysis of unit rates/preliminaries.	.145	.152	.377	.045*	.078
	7-7	Selection and evaluation of tenders and reporting on tenders.	.462	.117	.477	.062	.068
	7-8	Project liaison meeting with employers and consultants.	.430	.220	.710	.760	.091
	7-9	Pre-qualification, evaluation and registration of contractors.	.165	.743	.147	.343	.004**
Post-contract	8-1	Preparation of contract documents	.412	.155	.853	.069	.042*
	8-2	Application of cost control	.619	.171	.808	.035*	.005**
	8-3	Monitoring of proposed construction methods	.767	.350	.229	.003**	.047*
	8-4	Value management/engineering	.361	.554	.246	.076	.056
	8-5	Analysis of contract pricing relative to cost recording methods.	.646	.289	.534	.042*	.438
	8-6	Preparation of interim valuations.	.716	.063	.212	.0164	.031*
	8-7	Preparation of variation order and final accounts.	.990	.167	.454	.177	.028*
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	.220	.772	.866	.151	.008**
	8-9	Preparation of reconciliation statements for management purposes.	.146	.536	.784	.875	.033*
	8-10	Project liaison meeting with employers and consultants.	.752	.367	.512	.532	.160
	8-11	Site surveys and measurement and attendance at site meetings.	.669	.007	.148	.194	.297
Construction management and resource procurement	9-1	Planning and programming of construction activities.	.576	.310	.263	.047	.516
	9-2	Site planning.	.097	.762	.313	.101	.184
	9-3	Management of resources and supervision of works.	.302	.182	.200	.008**	.208
	9-4	Liaison with employer, consultants, statutory and service authorities.	.454	.106	.018*	.171	.026*
	9-5	Resource determination, scheduling and purchasing.	.561	.452	.071	.047*	.082
	9-6	Procurement of labour, plant and materials.	.364	.463	.109	.008**	.025*
	9-7	Negotiation with and management of sub-contractors and suppliers.	.763	.389	.141	.111	.009**

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

5.5.4 Cross-tabulation for part 2 of the questionnaire

a. During feasibility stage (item 6)

In general, during this stage, quantity surveyors' roles (item 6 in table 5.16), mostly have indications of high involvement in rank, in all types of organisations. However, there are also some quantity surveyors' roles that do not have the same results, such as 'profit/loss forecasts and cash flow projections' (item 6-8) where respondents from the government sectors weighted more towards low or none involvement. This might be due to the fact that this particular quantity surveyors' role is not a normal in the government sectors.

b. During pre-contract stage (item 7)

Similar to the previous stage, in general, quantity surveyors' roles (item 7-5 and 7-9 in table 5.16) mostly showed at least high involvement in all types of organisations during this stage. Furthermore, pre-contract is one of most involved stage in the project development in all types of organisations. However, there are also a very small number of quantity surveyors that have no quantity surveying experience during this stage. This may be due to the difference in the quantity surveyors' job specialisation in different organisation or maybe because they are new to the organisation and the different stages of construction development in particular projects in the organisations are handled by different people.

c. During post-contract stage (item 8)

During the post-contract stage, it can be concluded that in general, quantity surveyors in all types of organisations are heavily involved in most of the quantity surveying roles. Most of the quantity surveyors in private consultancy and contracting firms have at least a little involvement in the quantity surveying roles during post-contract stage. However, there were a few quantity surveyors from the government agencies who do not have post-contract stage experience at all and this may be due to the system in some of the

government agencies where the quantity surveyors are put into specialised sections and each section in accordance to the type of construction work as well as the different stages of the construction development.

d. During construction management and resource procurement (item 9)

In this stage, it can be seen that the quantity surveyors who work in private contracting firms participates actively in all three roles during this stage compared to the quantity surveyors working in other types of organisations. In the meantime, the majority of quantity surveyors who works in the government agencies and private consultancy firms either have very little involvement or no involvement at all in quantity surveying roles during this stage. This may be due to the nature of the roles during this stage which is more site-based and dealing with management of activities at the project sites. Furthermore, usually, the person who is in charge with these roles are the project manager or the team leader, which often comprise of the designer, such as an architect (usually for building work) or an engineer (usually for infrastructure work). In this regards, quantity surveyors usually play small part during this stage.

Table 5.16: Cross-tabulation of quantity surveyors’ roles and respondents’ types of organisation

Item ID	QS roles	Job position	Responses			
			None	Low	High	Very high
6-1	Preparation or use of cost analysis.	Government sector	2	4	11	3
		Private consultant	1	5	18	21
		Private contractor	1	1	4	0
6-4	Preparation and use of cost plans.	Government sector	3	7	7	3
		Private consultant	2	6	12	25
		Private contractor	1	0	4	1
6-6	Value management/ engineering	Government sector	3	13	2	2
		Private consultant	2	11	18	14
		Private contractor	1	1	4	0
6-8	Profit/loss forecasts and cash flow projections.	Government sector	5	11	4	0
		Private consultant	3	16	15	11
		Private contractor	0	3	1	2
6-9	Cost checking	Government sector	1	7	9	3
		Private consultant	0	12	14	19
		Private contractor	0	0	2	4
7-5	Data processing associated with the preparation of documentation.	Government sector	1	7	8	4
		Private consultant	1	10	19	15
		Private contractor	0	0	1	5
7-9	Pre-qualification, evaluation and registration of contractors.	Government sector	4	9	3	4
		Private consultant	0	9	22	14

		Private contractor	0	1	1	4
8-1	Preparation of contract documents	Government sector	3	5	5	7
		Private consultant	0	9	13	23
		Private contractor	0	0	1	5
8-2	Application of cost control	Government sector	2	6	7	5
		Private consultant	1	8	21	15
		Private contractor	0	0	0	6
8-3	Monitoring of proposed construction methods	Government sector	5	9	4	2
		Private consultant	3	21	14	7
		Private contractor	1	0	2	3
8-6	Preparation of interim valuations.	Government sector	3	4	4	9
		Private consultant	0	8	8	29
		Private contractor	0	0	0	6
8-7	Preparation of variation order and final accounts.	Government sector	3	4	4	9
		Private consultant	0	7	9	29
		Private contractor	0	0	0	6
8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	Government sector	3	6	5	6
		Private consultant	1	2	16	26
		Private contractor	0	0	2	4
8-9	Preparation of reconciliation statements for management purposes.	Government sector	4	8	4	4
		Private consultant	1	8	25	11
		Private contractor	0	1	3	2
9-4	Liaison with employer, consultants, statutory and service authorities.	Government sector	7	10	3	0
		Private consultant	11	21	8	5
		Private contractor	0	2	2	2
9-6	Procurement of labour, plant and materials.	Government sector	9	10	1	0
		Private consultant	22	18	4	1
		Private contractor	1	1	1	3
9-7	Negotiation with and management of sub-contractors and suppliers.	Government sector	9	9	1	1
		Private consultant	19	17	5	4
		Private contractor	0	1	4	1

5.5 The motivation factors of quantity surveyors (part 3 of the questionnaire)

This section describes the findings from part 3 of the questionnaire survey for this research. Part 3 of the questionnaire survey was designed to explore the motivation factor of quantity surveyors in the construction industry by investigating the level of impact of the factors at their current organisation.

Similar to the previous theme, the discussion for this section will be based on the following order, the aims and objectives for the theme, the allocation questions under the theme; the frequency distribution for the responses, responses interdependence which will be identified with non-parametric chi-square, Kruskal-Wallis and finally, the results of the cross tabulations tests.

Table 5.17: Detail for the objective of part 3 of questionnaire items

Part	Objective	Item ID	Item
3	To investigate the level of impact of motivation factors of quantity surveyors in the construction industry.	10-1	Appreciate challenges in doing task
		10-2	Required by job description
		10-3	Achieving job promotion
		10-4	Achieving progression in career
		10-5	Achieving on-the-job training
		10-6	Off-the-job training
		10-7	Working conditions
		10-8	Receiving financial incentives
		10-9	Receiving non-financial incentives
		10-10	Have good relation with colleagues
		10-11	Receiving good direction and monitoring from superior
		10-12	Receiving an assignment that is suitable to capability
		10-13	Receiving a fair time to finish assignment
		10-14	Company honouring any promises made
		10-15	Receiving fair pay equivalent to job scope
		10-16	Have good teamwork
		10-17	Receiving support from family and friends
		10-18	Receiving compliments from superior
		10-19	Having good facilities and resources at work place

Table 5.17 above displays a question with nineteen sub-questions which consist of the motivation factors of the quantity surveyors in their current organisations. The motivations factors were gathered from thorough review of the works of several authors. The respondents were given instruction to select the options based on their experiences in their current organisation where the level of the impact on the motivation factors is based on a 4-point Likert scale.

5.5.1 Frequency distribution of responses for part 3 of the questionnaire

For questions 10, the respondents were given statements which describe the motivation factors that impact them in their current organisation and were instructed to rank each impact based on a 4-point Likert scale, where 0 is the lowest and 3 is the highest.

Table 5.18 shows the distribution of responses on their motivation factor. A general observation indicated that, all the respondents were impacted by the motivation factors in their performance and in many aspects, the level of impact of the motivation factors were above the average percentage. The detailed explanation of the results in part 3 is presented in Table 5.19.

Table 5.18: Frequency distribution of responses for questions in part 3 of the questionnaire

Item ID	Item	Percentage (%) of level of impact			
		None	Low	High	Very high
10-1	Appreciate challenges in doing task	1.4	7.0	46.5	45.1
10-2	Required by job description	1.4	11.3	53.5	33.8
10-3	Achieving job promotion	2.8	12.7	38.0	46.5
10-4	Achieving progression in career	2.8	8.5	38.0	50.7
10-5	Achieving on-the-job training	2.8	11.3	49.3	36.6
10-6	Off-the-job training	8.5	19.7	43.7	28.2
10-7	Working conditions	1.4	1.4	31.0	66.2
10-8	Financial incentives	2.8	14.1	29.6	53.5
10-9	Non-financial incentives	8.5	31.0	23.9	36.6
10-10	Have good relation with colleagues	1.4	8.5	38.0	52.1
10-11	Receiving good direction and monitoring from superior	4.2	7.0	33.8	54.9
10-12	Receiving an assignment that is suitable to capability	4.2	5.6	46.5	43.7
10-13	Receiving a fair time to finish assignment	2.8	11.3	43.7	42.3
10-14	Company honouring any promises made	8.5	11.3	31.0	49.3
10-15	Receiving fair pay equivalent to job scope	7.0	11.3	29.6	52.1
10-16	Have good teamwork	1.4	1.4	35.2	62.0
10-17	Receiving support from family and friends	1.4	8.5	40.8	49.3
10-18	Receiving compliments from superior	5.6	9.9	38.0	46.5
10-19	Having good facilities and resources at work place	1.4	8.5	35.2	54.9

Nineteen motivation factors were identified from the literature reviews and listed in the questionnaire. The respondents were then asked to indicate their agreement on their involvement in the motivation factor in their current organisation. Almost all respondents are highly impacted by the motivation factors. Only two motivation factors had below average score, Off-the-job training (item 10-6); and non-financial incentives (item 10-9). Meanwhile, working conditions (item 10-7); have good teamwork (item 10-16); and having good facilities and resources at work place (item 10-19) were the top motivation factors as indicated by the respondents.

It can be concluded that all quantity surveyors are highly impacted by various motivation factors and determining the right and suitable motivation for them could boost their performance level.

Table 5.19: Detailed results for items corresponding to the motivation factor of the QS

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
10-1	Frequency	1	5	33	32	71	2.35	.678
	Percentage	1.4	7.0	46.5	45.1	100		
10-2	Frequency	1	8	38	24	71	2.20	6.89
	Percentage	1.4	11.3	53.5	33.8	100		
10-3	Frequency	2	9	27	33	71	2.28	.796
	Percentage	2.8	12.7	38.0	46.5	100		
10-4	Frequency	2	6	27	36	71	2.37	.760
	Percentage	2.8	8.5	38.0	50.7	100		
10-5	Frequency	2	8	35	26	71	2.20	.749
	Percentage	2.8	11.3	49.3	36.6	100		
10-6	Frequency	6	14	31	20	71	1.92	.906
	Percentage	8.5	19.7	43.7	28.2	100		
10-7	Frequency	1	1	22	47	71	2.62	.594
	Percentage	1.4	1.4	31.0	66.2	100		
10-8	Frequency	2	10	21	38	71	2.34	.827
	Percentage	2.8	14.1	29.6	53.5	100		
10-9	Frequency	6	22	17	26	71	1.89	1.008
	Percentage	8.5	31.0	23.9	36.6	100		
10-10	Frequency	1	6	27	37	71	2.41	.709
	Percentage	1.4	8.5	38.0	52.1	100		
10-11	Frequency	3	5	24	39	71	2.39	.801
	Percentage	4.2	7.0	33.8	54.9	100		
10-12	Frequency	3	4	33	31	71	2.30	.763
	Percentage	4.2	5.6	46.5	43.7	100		
10-13	Frequency	2	8	31	30	71	2.25	.769
	Percentage	2.8	11.3	43.7	42.3	100		
10-14	Frequency	6	8	22	35	71	2.21	.955
	Percentage	8.5	11.3	31.0	49.3	100		
10-15	Frequency	5	8	21	37	71	2.27	.925
	Percentage	7.0	11.3	29.6	52.1	100		
10-16	Frequency	1	1	25	44	71	2.58	.601
	Percentage	1.4	1.4	35.2	62.0	100		
10-17	Frequency	1	6	29	35	71	2.38	.704
	Percentage	1.4	8.5	40.8	49.3	100		
10-18	Frequency	4	7	27	33	71	2.25	.857
	Percentage	5.6	9.9	38.0	46.5	100		
10-19	Frequency	1	6	25	39	71	2.44	.712
	Percentage	1.4	8.5	35.2	54.9	100		

5.5.2 Chi-square test for part 3

The purpose of this section is similar to chapter 5.4.2. This section examines whether the responses given by the respondents in the questionnaire are the product of respondent's choice or are product of chance (similar to chapter 5.4.2).

Since the null hypothesis was true that all scores were given at random for all tested items, no item in this theme was excluded before conducting the Kruskal-Wallis test with the respondent's profile (table 5.20).

Table 5.20: Significance level (ρ) of response to item 10 of the questionnaire

Item ID	Motivation factors	Chi-square	Significance
10-1	Appreciate challenges in doing task	49.507	.000**
10-2	Required by job description	46.465	.000**
10-3	Achieving job promotion	36.211	.000**
10-4	Achieving progression in career	45.338	.000**
10-5	Achieving on-the-job training	39.930	.000**
10-6	Off-the-job training	18.746	.000**
10-7	Working conditions	80.831	.000**
10-8	Financial incentives	41.056	.000**
10-9	Non-financial incentives	12.662	.005**
10-10	Have good relation with colleagues	49.282	.000**
10-11	Receiving good direction and monitoring from superior	49.056	.000**
10-12	Receiving an assignment that is suitable to capability	45.901	.000**
10-13	Receiving a fair time to finish assignment	37.676	.000**
10-14	Company honouring any promises made	30.915	.000**
10-15	Receiving fair pay equivalent to job scope	35.986	.000**
10-16	Have good teamwork	73.394	.000**
10-17	Receiving support from family and friends	47.479	.000**
10-18	Receiving compliments from superior	35.085	.000**
10-19	Having good facilities and resources at work place	51.986	.000**

5.5.3 Kruskal-Wallis test for part 3 of the questionnaire

Once again, Kruskal-Wallis test was conducted in this section in order to investigate the motivation factors which facilitate the responses given in questionnaire survey. Like previous the theme, the respondents' profiles were used as the independent variable and the responses analysed were used as the dependent variable in this analysis.

The independent variables selected for this analysis are similar to the previous theme, which are, respondents' position in the organisation (job title); respondents' length of working period in the quantity surveying profession in the Malaysian construction industry (QS exp); respondents' length of working period in the current organisation (exp in current orgstn);

respondents' gender (gender); and type of organisation (type of orgstn). In this regard, table 5.21 shows that in some cases, respondent's answers are independent of their profile and the responses are not influenced by their background. It can be seen that gender was the demographic factor which influenced most of the variables. The results also showed that the respondent's profile 'total period of working experience in the organisation' and 'types of organisation' did not impact the entire motivation factors of quantity surveyors.

The results also showed that the responses for items: 10-1; 10-2; 10-7; 10-15 and 10-16 were not affected by any of the parameters from respondent's profile. Apart from that, the results also showed that gender of the respondents highly influenced the responses for most of the items, except (item 10-8): financial incentives; and company honouring any promises made (item 10-14).

Table 5.21: Kruskal-Wallis analysis for part 3 of the questionnaire

Item ID	Motivation factors	Respondent's profile				
		Job title	QS exp	Exp in current orgstn	Gender	Types of orgstn
10-1	Appreciate challenges in doing task	.874	.095	.615	.656	.143
10-2	Required by job description	.869	.938	.570	.054	.754
10-3	Achieving job promotion	.022*	.169	.743	.015*	.085
10-4	Achieving progression in career	.505	.713	.811	.039*	.615
10-5	Achieving on-the-job training	.123	.642	.783	.039*	.823
10-6	Off-the-job training	.182	.121	.633	.044*	.822
10-7	Working conditions	.166	.546	.645	.178	.547
10-8	Financial incentives	.157	.019*	.478	.122	.077
10-9	Non-financial incentives	.068	.006**	.450	.005**	.117
10-10	Have good relation with colleagues	.673	.554	.687	.014*	.256
10-11	Receiving good direction and monitoring from superior	.111	.364	.503	.001**	.209
10-12	Receiving an assignment that is suitable to capability	.137	.729	.675	.014*	.773
10-13	Receiving a fair time to finish assignment	.052	.241	.196	.030*	.091
10-14	Company honouring any promises made	.050*	.508	.914	.064	.091
10-15	Receiving fair pay equivalent to job scope	.482	.889	.778	.462	.128
10-16	Have good teamwork	.095	.636	.249	.349	.526
10-17	Receiving support from family and friends	.341	.015*	.070	.003**	.136
10-18	Receiving compliments from superior	.477	.731	.328	.006**	.774
10-19	Having good facilities and resources at work place	.347	.202	.794	.019*	.457

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

5.5.4 Cross-tabulation for part 3 of the questionnaire

Cross-tabulation analysis was conducted in order to investigate the pattern of responses given by the sample. This is because, one of the objectives of this research is to explore the motivation factors of the quantity surveyors at different types of organisation, therefore, cross-tabulation analysis of the data, according to respondents' types of organisations was conducted. However, based on the Kruskal-Wallis test conducted in previous section, there were no items that had statistically significant values in accordance to the types of respondents' organisations.

5.6 The employer's roles (part 4 of the questionnaire)

This section describes the findings from part 4 of the survey questionnaire for this research. Part 4 of the questionnaire survey was designed to explore the level the extent of the role of employers in the motivation of quantity surveyors and to determine their level of involvement in the motivation of quantity surveyors in the construction industry.

Like in the previous section, the discussion for this section will be based on the following order: the aims and objectives for the theme; the allocation questions under the theme; the frequency distribution for the responses; responses interdependence which will be identified with non-parametric chi-square, Kruskal-Wallis, as well as the results of the cross tabulations tests.

Table 5.22: Details for the objective of part 4 of the questionnaire items

Part	Objective	Item ID	Item
4	To ascertain the extent of the role of employers in the motivation of quantity surveyors and to determine their level of involvement in the motivation of quantity surveyors in	11-1	Providing appropriate tasks to employees according to their ability
		11-2	Providing accurate job description to employees
		11-3	Granting job promotion to performing employees
		11-4	Awarding employees who progresses in career
		11-5	Providing on-the-job training
		11-6	Providing off-the-job training
		11-7	Providing conducive working conditions
		11-8	Offering annual bonuses or other financial incentives
		11-9	Offering company vacation trips or other non-financial incentives
		11-10	Achieving good relations with other workers
		11-11	Superior has good leadership skills
		11-12	Assigning tasks that are suitable to the capability of

the construction industry.		the worker
	11-13	Allocating a reasonable time frame to complete assignment
	11-14	Company honouring promises made
	11-15	Giving fair pay equivalent to job scope
	11-16	Assigned to a good team and having good teamwork
	11-17	Superior provides support to workers
	11-18	Receiving complements and appreciation from superiors
	11-19	Providing good facilities and resources at work place

Table 5.22 displays nineteen questions on the roles of employers in the motivation of the quantity surveyors in the current organisation. The respondents were given instruction to select the options based on their experience in their current organisation, where the level of the extent of the roles is based on a 4-point Likert scale.

5.6.1 Frequency distribution of responses for part 4 of the questionnaire

In this section, the respondents were given statements which describe the extent of roles of employer in the motivation of the quantity surveyor them in the current organisation in questions 11. The respondents were instructed to indicate each extent on a 4-point Likert scale, where 0 is the lowest and 3 is the highest.

Table 5.23 shows the distribution of the extent of the employers' roles in the motivation of the quantity surveyors in their current organisation. The overall observation specified that almost the whole entire respondents agreed that the employers provided beyond average roles in motivating the quantity surveyors. The employers provided appropriate tasks to employees according to their ability (item 11-1), although to only a small extent. The Detailed explanation of the results in part 4 are presented in table 5.24.

Table 5.23: Frequency distribution of responses for questions in part 4 of the questionnaire

Item ID	Item	Percentage (%) of level of extent			
		None	Low	High	Very high
11-1	Providing appropriate tasks to employees according to their ability	-	9.9	40.8	49.3
11-2	Providing accurate job description to employees	1.4	8.5	36.6	53.5
11-3	Granting job promotion to performing employees	2.8	7.0	42.3	47.9
11-4	Awarding employees who progresses in career	1.4	8.5	42.3	47.9

11-5	Providing on-the-job training	1.4	14.1	47.9	36.6
11-6	Providing off-the-job training	2.8	28.2	43.7	25.4
11-7	Providing conducive working conditions	1.4	7.0	46.5	45.1
11-8	Financial incentives	4.2	9.9	38.0	47.9
11-9	Non-financial incentives	7.0	25.4	38.0	29.6
11-10	Achieving good relations with other workers	1.4	5.6	39.4	53.5
11-11	Superior has good leadership skills	1.4	9.9	29.6	59.2
11-12	Assigning tasks that are suitable to the capability of the worker	1.4	5.6	38.0	54.9
11-13	Allocating a reasonable time frame to complete assignment	1.5	5.6	46.5	46.5
11-14	Company honouring promises made	1.4	15.5	32.4	50.7
11-15	Giving fair pay equivalent to job scope	5.6	4.2	39.4	50.7
11-16	Assigned to a good team and having good teamwork	1.4	1.4	42.3	54.9
11-17	Superior provides support to workers	1.4	5.6	36.6	56.3
11-18	Receiving complements and appreciation from superiors	2.8	8.5	45.1	43.7
11-19	Providing good facilities and resources at work place	1.4	7.0	38.0	53.5

The respondents were asked to indicate their agreement on the extent of their or their current employers' roles in motivating the quantity surveyors.

All items had above average mean score, which showed high or very high extents of employers' roles in motivating quantity surveyors except items: Off-the-job training (item 11-6); and non-financial incentives (item 11-9). This is in line with the two items from previous section (part 3, table 5.18), where the least two motivation factor impacted on individual quantity surveyors, off-the-job training (10-6); and non-financial incentives (item 10-9). Superior has good leadership skills (item 11-11); assigning tasks that are suitable to the capability of the worker (item 11-12); assigned to a good team and having good teamwork (item 11-16); and superior provides support to workers (item 11-17); were among the highest employers' roles in the motivation of quantity surveyors that were indicated by the respondents.

The result showed that employers play great roles in the motivation of quantity surveyors in their current organisation. However, the contribution of the employers in providing their roles in motivating the employers does not ensure the increase in the job performance. On the other hand, it is hoped that the efforts can help the quantity surveyors to be motivated to improve, or at least sustain their performance levels.

Table 5.24: Detailed results for items corresponding to the role of employers in the motivation of the quantity surveyors in current organisation

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
11-1	Frequency	-	7	29	35	71	2.39	.665
	Percentage	-	9.9	40.8	49.3	100		
11-2	Frequency	1	6	26	38	71	2.42	.710
	Percentage	1.4	8.5	36.6	53.5	100		
11-3	Frequency	2	5	30	34	71	2.35	.739
	Percentage	2.8	7.0	42.3	47.9	100		
11-4	Frequency	1	6	30	34	71	2.37	.702
	Percentage	1.4	8.5	42.3	47.9	100		
11-5	Frequency	1	10	34	26	71	2.20	.729
	Percentage	1.4	14.1	47.9	36.6	100		
11-6	Frequency	2	20	31	18	71	1.92	.806
	Percentage	2.8	28.2	43.7	25.4	100		
11-7	Frequency	1	5	33	32	71	2.35	.678
	Percentage	1.4	7.0	46.5	45.1	100		
11-8	Frequency	3	7	27	34	71	2.30	.818
	Percentage	4.2	9.9	38.0	47.9	100		
11-9	Frequency	5	18	27	21	71	1.90	.913
	Percentage	7.0	25.4	38.0	29.6	100		
11-10	Frequency	1	4	28	38	71	2.45	.672
	Percentage	1.4	5.6	39.4	53.5	100		
11-11	Frequency	1	7	21	42	71	2.46	.734
	Percentage	1.4	9.9	29.6	59.2	100		
11-12	Frequency	1	4	27	39	71	2.46	.673
	Percentage	1.4	5.6	38.0	54.9	100		
11-13	Frequency	1	4	33	33	71	2.38	.663
	Percentage	1.5	5.6	46.5	46.5	100		
11-14	Frequency	1	11	23	36	71	2.32	.789
	Percentage	1.4	15.5	32.4	50.7	100		
11-15	Frequency	4	3	28	36	71	2.35	.812
	Percentage	5.6	4.2	39.4	50.7	100		
11-16	Frequency	1	1	30	39	71	2.51	.606
	Percentage	1.4	1.4	42.3	54.9	100		
11-17	Frequency	1	4	26	40	71	2.48	.673
	Percentage	1.4	5.6	36.6	56.3	100		
11-18	Frequency	2	6	32	31	71	2.30	.744
	Percentage	2.8	8.5	45.1	43.7	100		
11-19	Frequency	1	5	27	38	71	2.44	.691
	Percentage	1.4	7.0	38.0	53.5	100		

5.6.2 Chi-square test for part 4 of the questionnaire

The purpose of this section is similar to chapters: 5.4.2; and 5.5.2. This section examines whether the responses given by the respondents in the questionnaire are the product of respondent's choice or are product of chance.

Table 5.25 shows the significance levels for all items in part 4 of the questionnaire. For $p < 0.05$, the null hypothesis was true that all scores were given at random for all tested items. All items were then tested with Kruskal-Wallis with the respondent's profile.

Table 5.25: Significance level (p) of response to item 11 of the questionnaire

Item ID	Employers' roles	Chi-square	Significance
11-1	Providing appropriate tasks to employees according to their ability	18.366	.000**
11-2	Providing accurate job description to employees	50.521	.000**
11-3	Granting job promotion to performing employees	46.465	.000**
11-4	Awarding employees who progresses in career	46.915	.000**
11-5	Providing on-the-job training	37.901	.000**
11-6	Providing off-the-job training	24.155	.000**
11-7	Providing conducive working conditions	49.507	.000**
11-8	Offering annual bonuses or other financial incentives	38.465	.000**
11-9	Offering company vacation trips or other non-financial incentives	14.577	.002**
11-10	Achieving good relations with other workers	55.479	.000**
11-11	Superior has good leadership skills	56.042	.000**
11-12	Assigning tasks that are suitable to the capability of the worker	56.718	.000**
11-13	Allocating a reasonable time frame to complete assignment	52.662	.000**
11-14	Company honouring promises made	38.690	.000**
11-15	Giving fair pay equivalent to job scope	47.592	.000**
11-16	Assigned to a good team and having good teamwork	65.507	.000**
11-17	Superior provides support to workers	58.183	.000**
11-18	Receiving complements and appreciation from superiors	43.085	.000**
11-19	Providing good facilities and resources at work place	52.887	.000**

5.6.3 Kruskal-Wallis test for part 4 of the questionnaire

Using the Kruskal-Wallis test, this section investigates the employers' roles in the motivation of the quantity surveyors, which facilitated the responses given in questionnaire survey. Similar to previous theme, the respondents' profiles were used as the independent variables and the responses analysed were used as the dependent variable in this analysis.

The independent variables selected for this analysis were similar to the previous theme, which are, respondents' position in the organisation (job title); respondents' length of working period in the quantity surveying profession in the Malaysian construction industry (QS exp); respondents' length of working period in the current organisation (exp in current orgstn); respondents' gender (gender); and type of organisation (type of orgstn). Table 5.26 shows that in some cases respondent's answers are independent of their profile and the responses were not influenced by their background.

The results showed that the respondents' length of working period in the current organisation (exp in current orgstn) has no significant on the entire motivation factors of quantity surveyors. Results also show that the responses for items 'providing accurate job description to employees' (item 11-2) was not affected by any of the parameters from respondent's profile.

Apart from that, the results also showed that the respondents' types of organisation highly influence the responses for most of the items, except: providing appropriate tasks to employees according to their ability (item 11-1); providing accurate job description to employees (item 11-2); providing on-the-job training (item 11-5); and providing off-the-job training (item 11-6).

The respondents' length of working period in the quantity surveying profession in the Malaysian construction industry and gender only significantly impacted items, Company honouring promises made (item 11-14), and providing off-the-job training (item 11-6), respectively.

Table 5.26: Kruskal-Wallis analysis for part 4 of the questionnaire

Item ID	Employers' roles	Job title	QS exp	Exp in current orgstn	Gender	Types of orgstn
11-1	Providing appropriate tasks to employees according to their ability	.029*	.064	.682	.273	.137
11-2	Providing accurate job description to employees	.070	.511	.659	.160	.070
11-3	Granting job promotion to performing employees	.070	.066	.840	.309	.001**
11-4	Awarding employees who progresses in career	.045*	.072	.699	.730	.006**
11-5	Providing on-the-job training	.009**	.273	.220	.163	.056

11-6	Providing off-the-job training	.237	.290	.269	.008**	.091
11-7	Providing conducive working conditions	.099	.840	.137	.132	.001**
11-8	Financial incentives	.072	.564	.051	.908	.000**
11-9	Non-financial incentives	.092	.515	.251	.216	.001**
11-10	Achieving good relations with other workers	.269	.921	.449	.196	.000**
11-11	Superior has good leadership skills	.046*	.251	.671	.206	.004**
11-12	Assigning tasks that are suitable to the capability of the worker	.008**	.460	.948	.117	.009**
11-13	Allocating a reasonable time frame to complete assignment	.118	.073	.166	.204	.038*
11-14	Company honouring promises made	.062	.024*	.722	.857	.000**
11-15	Giving fair pay equivalent to job scope	.112	.412	.384	.289	.000**
11-16	Assigned to a good team and having good teamwork	.560	.362	.342	.338	.017*
11-17	Superior provides support to workers	.740	.404	.661	.753	.002**
11-18	Receiving complements and appreciation from superiors	.015**	.606	.556	.613	.001**
11-19	Providing good facilities and resources at work place	.450	.766	.425	.561	.000**

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

5.6.4 Cross-tabulation for part 4 of the questionnaire

In this section, cross-tabulation analysis was conducted in order to investigate the pattern of responses given by the sample. Cross-tabulation analysis in this section was done on the employers' roles in the motivation of the quantity surveyors according to respondents' types of organisations, and was based on only the items that are statistically significance from Kruskal-Wallis test conducted in the previous section.

From table 5.27, it can be observed that both private consultancy and contracting firms have employers that play a role on motivating quantity surveyors, even though the extents of the roles is really minor. Unlike respondents from the government sector, small numbers of them indicated that the employers' do not contribute to the motivation of the individual quantity surveyors at all.

In term of most employers' roles, the individual quantity surveyors work in private contracting firms have indicated that their employers have contributed to a high or extremely high level of extend of motivating them (items: 11-3; 11-7; 11-8; 11-10; 11-12; 11-13; 11-14;

11-15; 11-16; 11-17; 11-18; and 11-19). This can mean that employers in the private contracting firms really play a successful role in motivating quantity surveyors.

Respondents from government sectors mostly indicated that the employers highly play their roles in motivating the quantity surveyor. However, there are also many responses that indicated that the employers play either very little or no role in motivating the quantity surveyors. It can be concluded that, some part of the government agencies were successfully play their roles as employers. However, there were some agencies whose roles are ineffective (table 5.27).

Table 5.27: Cross-tabulation of employers’ roles in the motivation of the quantity surveyors and respondents’ types of organisation

Item ID	Employers’ roles	Job position	Responses			
			None	Low	High	Very high
11-3	Granting job promotion to performing employees	Government sector	2	4	10	4
		Private consultant	0	1	19	25
		Private contractor	0	0	1	5
11-4	Awarding employees who progresses in career	Government sector	1	3	12	4
		Private consultant	0	2	18	25
		Private contractor	0	1	0	5
11-7	Providing conducive working conditions	Government sector	1	4	12	3
		Private consultant	0	1	19	25
		Private contractor	0	0	2	4
11-8	Financial incentives	Government sector	3	4	10	3
		Private consultant	0	3	16	26
		Private contractor	0	0	1	5
11-9	Non-financial incentives	Government sector	3	10	5	2
		Private consultant	2	7	21	15
		Private contractor	0	1	1	4
11-10	Achieving good relations with other workers	Government sector	1	2	14	3
		Private consultant	0	2	13	30
		Private contractor	0	0	1	5
11-11	Superior has good leadership skills	Government sector	1	4	9	6
		Private consultant	0	2	12	31
		Private contractor	0	1	0	5
11-12	Assigning tasks that are suitable to the capability of the worker	Government sector	1	3	10	6
		Private consultant	0	1	14	30
		Private contractor	0	0	3	3
11-13	Allocating a reasonable time frame to complete assignment	Government sector	1	2	12	5
		Private consultant	0	2	19	24
		Private contractor	0	0	2	4
11-14	Company honouring promises made	Government sector	1	7	10	2
		Private consultant	0	4	12	29
		Private contractor	0	0	1	5
11-15	Giving fair pay equivalent to job scope	Government sector	4	0	13	3
		Private consultant	0	3	14	28
		Private contractor	0	0	1	5
11-16	Assigned to a good team and	Government sector	1	1	12	6

	having good teamwork	Private consultant	0	0	16	29
		Private contractor	0	0	2	4
11-17	Superior provides support to workers	Government sector	1	3	11	5
		Private consultant	0	1	13	31
		Private contractor	0	0	2	4
11-18	Receiving complements and appreciation from superiors	Government sector	2	5	10	3
		Private consultant	0	1	19	25
		Private contractor	0	0	3	3
11-19	Providing good facilities and resources at work place	Government sector	1	2	15	2
		Private consultant	0	3	10	32
		Private contractor	0	0	2	4

5.7 The motivational practices by organisation (part 5 of the questionnaire)

This section describes the findings from part 5 of the questionnaire survey for this research. Part 5 of the questionnaire survey was designed to explore the level of challenge and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors faced by the employers or organisation management at current organisation.

The discussion for this section will be according to the following sequence, the aim and objective for the theme; the allocation questions under the theme; the frequency distribution for the responses; responses interdependence which will be identified with non-parametric chi-square, Kruskal-Wallis and lastly, the cross tabulations tests.

Table 5.28: Detail for the objective of part 4 of the questionnaire items

Part	Objective	Item ID	Item
5	To explore level of challenge of current motivational practices employed by organisations in motivating quantity surveyors	12-1	Provide growth and advancement opportunities
		12-2	Prepare appropriate nature of work
		12-3	Provide material and physical provisions
		12-4	Provide good relations amongst staff and management team
		12-5	Provide fairness in organisational practices
	To explore level of effectiveness of current motivational practices employed by organisations in motivating quantity surveyors	13-1	Provide growth and advancement opportunities
		13-2	Prepare appropriate nature of work
		13-3	Provide material and physical provisions
		13-4	Provide good relations amongst staff and management team
		13-5	Provide fairness in organisational practices

Table 5.28 displays the two main questions on the current motivational practices employed by organisations in motivating quantity surveyors. Each of the main question consisted of

five questions. The questions explored, level of challenge (item 12-1 to 12-5); and effectiveness (item 13-1 to 13-5); of current motivational practices employed by organisations in motivating quantity surveyors. The respondents were given instructions on how to select the options based on their experience in their current organisation where the level of the extents of the challenge and effectiveness were based on a 4-point Likert scale.

5.7.1 Frequency distribution of responses for part 5 of the questionnaire

In this section, the respondents were given statements which describe the level of: challenge (question 12), and the effectiveness (question 13); of current motivational practices employed by organisations in motivating quantity surveyors in the current organisation. The respondents were instructed to indicate each extent based on the 4-point Likert scale, where 0 is the lowest and 3 is the highest.

Table 5.29 shows the distribution of the level of challenge and effectiveness of current motivational practices employed by organisations in motivating the quantity surveyors. General observation showed that almost all motivational practices are highly challenging to be implemented but, at the same time, the implementations of the current motivational practices are extremely high effective. More detailed explanations of the results in part 4 are presented in table 5.30.

Table 5.29: Frequency distribution of responses for questions in part 5 of the questionnaire

Item ID	Item	Percentage (%) of level of challenge and effectiveness			
		None	Low	High	Very high
12-1	Provide growth and advancement opportunities	8.5	18.3	47.9	25.4
12-2	Prepare appropriate nature of work	11.3	14.1	36.6	38.0
12-3	Provide material and physical provisions	9.9	11.3	43.7	35.2
12-4	Provide good relations amongst staff and management team	7.0	14.1	43.7	35.2
12-5	Provide fairness in organisational practices	1.4	25.4	40.8	32.4
13-1	Provide growth and advancement opportunities	2.8	11.3	42.3	43.7
13-2	Prepare appropriate nature of work	1.4	14.1	47.9	36.6
13-3	Provide material and physical provisions	4.2	8.5	39.4	47.9
13-4	Provide good relations amongst staff and management team	-	7.0	43.7	49.3

13-5	Provide fairness in organisational practices	4.2	22.5	33.8	39.4
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The respondents were asked to indicate their agreement on level of challenge and effectiveness of the employment of the current motivational practices in the organisations. For question 12, all items had above average mean score, except for ‘provide growth and advancement opportunities’ (item 12-1) which scored slightly below the average score. The highest score was slightly above the average score, which was item 12-4, ‘provide good relations amongst staff and management team’. Meanwhile, all items in question 13 had above average mean scores, with the highest was item ‘provide good relations amongst staff and management team (item 13-4)’, and the lowest was ‘provide fairness in organisational practices (item 13-5).

The results indicated that although it is challenging to employ the current motivational practices in the organisation, it is worthy as the motivational practices are extremely effective. Consequently, having effective motivational practices in the organisation might contribute to improve the performance level of the individual quantity surveyors and the organisation itself.

Table 5.30: Detailed results for items corresponding to the challenge and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
12-1	Frequency	6	13	34	18	71	1.90	.881
	Percentage	8.5	18.3	47.9	25.4	100		
12-2	Frequency	8	10	26	27	71	2.01	.993
	Percentage	11.3	14.1	36.6	38.0	100		
12-3	Frequency	7	8	31	25	71	2.04	.933
	Percentage	9.9	11.3	43.7	35.2	100		
12-4	Frequency	5	10	31	25	71	2.07	.884
	Percentage	7.0	14.1	43.7	35.2	100		
12-5	Frequency	1	18	29	23	71	2.04	.801
	Percentage	1.4	25.4	40.8	32.4	100		
13-1	Frequency	2	8	30	31	71	2.27	.774
	Percentage	2.8	11.3	42.3	43.7	100		
13-2	Frequency	1	10	34	26	71	2.20	.729
	Percentage	1.4	14.1	47.9	36.6	100		
13-3	Frequency	3	6	28	34	71	2.31	.803
	Percentage	4.2	8.5	39.4	47.9	100		
13-4	Frequency	-	5	31	35	71	2.42	.625
	Percentage	-	7.0	43.7	49.3	100		

13-5	Frequency	3	16	24	28	71	2.08	.890
	Percentage	4.2	22.5	33.8	39.4	100		

5.7.2 Chi-square test for part 5 of the questionnaire

The purpose of this section is similar to chapters: 5.4.2; 5.5.2; and 5.6.2. Table 5.33 shows the significance levels for all items in part 5 of the questionnaire. For $p < 0.05$, the null hypothesis was true that all scores were given at random for all tested items. All items were then conducted with Kruskal-Wallis test based on the respondent's profile (table 5.31).

Table 5.31: Significance level (p) of response to item 12 and 13 of the questionnaire

Question	Item ID	Item	Chi-square	Significance
To explore level of challenge of current motivational practices employed.	12-1	Provide growth and advancement opportunities	23.930	.000**
	12-2	Prepare appropriate nature of work	17.394	.001**
	12-3	Provide material and physical provisions	24.718	.000**
	12-4	Provide good relations amongst staff and management team	25.394	.000**
	12-5	Provide fairness in organisational practices	24.493	.000**
To explore level of effectiveness of current motivational practices employed.	13-1	Provide growth and advancement opportunities	37.676	.000**
	13-2	Prepare appropriate nature of work	37.901	.000**
	13-3	Provide material and physical provisions	40.831	.000**
	13-4	Provide good relations amongst staff and management team	22.423	.000**
	13-5	Provide fairness in organisational practices	20.549	.000**

5.7.3 Kruskal-Wallis test for part 5 of the questionnaire

This section investigates the the challenges and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors, which facilitated the responses given in questionnaire survey by using the Kruskal-Wallis test. Like the previous theme, the respondents' demography was used as the independent variables and the responses analysed are used as the dependent variable in this analysis.

The independent variables selected for this analysis are similar to the previous theme, which were, respondents' position in the organisation (job title); respondents' length of working

period in the quantity surveying profession in the Malaysian construction industry (QS exp); respondents' length of working period in the current organisation (exp in current orgstn); respondents' gender (gender); and type of organisation (type of orgstn). Table 5.32 shows that in some cases respondent's answers were independent of their profile and the responses were not influenced by their background.

Table 5.32: Kruskal-Wallis analysis for part 5 of the questionnaire

Question	Item ID	Item	Job title	QS exp	Exp in current orgstn	Gender	Types of orgstn
To explore level of challenge of current motivational practices employed.	12-1	Provide growth and advancement opportunities	.000**	.189	.471	.426	.001**
	12-2	Prepare appropriate nature of work	.009**	.078	.382	.357	.025*
	12-3	Provide material and physical provisions	.102	.102	.104	.820	.000**
	12-4	Provide good relations amongst staff and management team	.006**	.310	.118	.371	.009**
	12-5	Provide fairness in organisational practices	.307	.072	.560	.048*	.040*
To explore level of effectiveness of current motivational practices employed.	13-1	Provide growth and advancement opportunities	.138	.123	.482	.248	.315
	13-2	Prepare appropriate nature of work	.090	.521	.368	.016**	.434
	13-3	Provide material and physical provisions	.907	.034*	.366	.196	.273
	13-4	Provide good relations amongst staff and management team	.123	.857	.859	.022*	.284
	13-5	Provide fairness in organisational practices	.257	.178	.712	.033*	.038*

*Result is statistically significant at $p < 0.05$.

**Result is statistically significant at $p < 0.01$.

Results show that the respondent's profile 'length of working period in the current organisation' does not impact both the level of challenge and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors in the entire items of motivational practices. Respondents' position in the organisation does not affect the level of challenge of current motivational practices employed by organisations in motivating quantity surveyors. Respondents' length of working period in the quantity surveying profession in the Malaysian construction industry also has no impact on motivational practices of the effectiveness of current motivational practices employed by organisations in motivating quantity surveyors.

In terms of the challenges of current motivational practice employed, the results showed that all motivational practices are statistically significant with types of organisation. The respondents' position in the organisation generated three significant motivational practices to the challenge of current motivational practices employed, namely: Provide growth and advancement opportunities (item 12-1); prepare appropriate nature of work (item 12-2); and provide good relations amongst staff and management team (item 12-4). There were also three out of five motivational practices' effectiveness that had statistical significance to gender of the respondents for items namely: Prepare appropriate nature of work (item 13-2); provide good relations amongst staff and management team (item 13-4); and provide fairness in organisational practices (item 13-5).

In summary, the difference in types of the organisations of the respondents had contributed to different challenges on establishing the current motivational practices in the organisation by the employer or the management team.

5.7.4 Cross-tabulation for part 5 of the questionnaire

Cross-tabulation analysis was conducted in order to investigate the pattern of responses given by the samples. In this section, cross-tabulation was done on motivational practices by organisations and respondents' types of organisation according to respondents' types of organisations, and was based on the items that are statistically significant only from Kruskal-Wallis test which is conducted in previous section.

As shown in table 5.33, in most cases, the respondents from the government sector indicated that their motivational practices have no challenge or lesser challenge when implementing them. This could be due to the system of the government where the quantity surveying professionals are controlled by one central government agency and the human resource department is the one that takes care of the staffs' wellbeing and it is not deemed under the quantity surveying department. Meanwhile, the respondents working in private contracting firms indicated that all motivational practices had at least a small level of challenge in implementing them in the organisation. Consequently, private consultancy firms had more balanced results where some of the motivational practices, which ranged from challenging and do not have challenge at all. In most cases of both private firms, the respondents agreed

that firm face high to very high challenges in implementing motivational practices. This may be due to the financial situation of the private firms where they need to self-fund in order to implement the motivational practices. As for the government respondents, the response shows that the challenges are quite well distributed from no challenge to very high challenge, especially on the item: prepare appropriate nature of work (item 12-2); and provide good relations amongst staff and management team (item 12-4).

Item 13-5 was on the effectiveness of the motivational practices employed by the organisation. It can be seen that in both private consultancy and contracting firms had the most positive responses on the effectiveness of the motivational practice ‘provide fairness in organisational practices (item 13-5)’. This shows that the implementation of motivational practice item 13-5 was really effective and the implementation shows positive impact on the motivation of the quantity surveyors in the organisation. Meanwhile, respondents from the private contracting firms responded that the motivational practices have the equal level of effectiveness, ranging from low to very high level. Responses from the government sectors showed many respondents agreed that item 13-5 motivational practice, did not really has an effective motivational practice in the government sectors. This could be due to the nature of the government sector that has too many staff and it is difficult to provide fairness to all.

Table 5.33: Cross-tabulation of motivational practices by organisations and respondents’ types of organisation

Item ID	Motivational practices	Job position	Responses			
			None	Low	High	Very high
12-1	Provide growth and advancement opportunities	Government sector	5	6	8	1
		Private consultant	1	4	26	14
		Private contractor	0	3	0	3
12-2	Prepare appropriate nature of work	Government sector	7	3	5	5
		Private consultant	1	5	20	19
		Private contractor	0	2	1	3
12-3	Provide material and physical provisions	Government sector	7	5	6	2
		Private consultant	0	3	23	19
		Private contractor	0	0	2	4
12-4	Provide good relations amongst staff and management team	Government sector	4	6	6	4
		Private consultant	1	4	21	19
		Private contractor	0	0	4	2
12-5	Provide fairness in organisational practices	Government sector	1	9	6	4
		Private consultant	0	7	21	17
		Private contractor	0	2	2	2
13-5	Provide fairness in organisational practices	Government sector	2	8	5	5
		Private consultant	1	6	17	21
		Private contractor	0	2	2	2

5.8 The motivational practices on individuals (part 6 of the questionnaire)

This section describes the findings from part 6 of the survey questionnaire for this research. Part 6 of the questionnaire survey was designed to explore the level of impact and effectiveness of current motivational practices on individual quantity surveyors.

The discussion for this section will be in this sequence: the aim and objective for the theme; the allocation questions under the theme; the frequency distribution for the responses; responses interdependence which will be identified with non-parametric chi-square, Kruskal-Wallis and cross tabulations tests; and finally, the correlation between items, tested with Pearson's correlation test.

Table 5.34: Detail for the objective of part 6 of the questionnaire items

Part	Objective	Item ID	Item
6	To investigate the level of impact and effectiveness of current motivational practices on individual quantity surveyors.	14-1	Receive growth and advancement opportunity
		14-2	Prepare appropriate nature of work
		14-3	Receive material and physical provisions
		14-4	Have good relation amongst staff and management team
		14-5	Receive fairness in organisational practices
		15-1	Receive growth and advancement opportunity
		15-2	Prepare appropriate nature of work
		15-3	Receive material and physical provisions
		15-4	Have good relation amongst staff and management team
		15-5	Receive fairness in organisational practices

Similar to table 5.28, table 5.34 displays the two main questions on the current motivational practices employed by organisations in motivating quantity surveyors and each of the main questions consisted of five questions. The questions explored: level of impact (item 14-1 to 14-5); and effectiveness (item 15-1 to 15-5); of current motivational practices on individual quantity surveyors. The respondents were given instructions on how to select the options based on their experience in their current organisation where the level of the extents of the challenge and effectiveness were based on a 4-point Likert scale.

5.8.1 Frequency distribution of responses for part 6 of the questionnaire

In this section, the respondents were given statements which describe the level of: impact (question 14); and the effectiveness (question 15); of current motivational practices on individual quantity surveyors in current organisation. The respondents were instructed to indicate each extent on a 4-point Likert scale, where 0 is the lowest and 3 is the highest.

Table 5.35 shows the distribution of the level of impact and effectiveness of current motivational practices on individual quantity surveyors in current organisation. Based on general observation of table 5.35, almost all motivational practices had tremendous impact and effectiveness on individual quantity surveyors. Thorough explanations of the results in part 4 are presented in table 5.36.

Table 5.35: Frequency distribution of responses for questions in part 6 of the questionnaire

Item ID	Item	Percentage (%) of level of impact and effectiveness			
		None	Low	High	Very high
14-1	Receive growth and advancement opportunity	2.8	15.5	36.6	45.1
14-2	Prepare appropriate nature of work	4.2	8.5	46.5	40.8
14-3	Receive material and physical provisions	4.2	9.9	28.2	57.7
14-4	Have good relation amongst staff and management team	1.4	7.0	42.3	49.3
14-5	Receive fairness in organisational practices	1.4	12.7	45.1	40.8
15-1	Receive growth and advancement opportunity	2.8	9.9	42.3	45.1
15-2	Prepare appropriate nature of work	-	7.0	49.3	43.7
15-3	Receive material and physical provisions	4.2	11.3	32.4	52.1
15-4	Have good relation amongst staff and management team	-	1.4	46.5	52.1
15-5	Receive fairness in organisational practices	1.4	11.3	42.3	45.1

In this section, the respondents were asked to indicate their agreement on the level of impact and effectiveness of the current quantity surveyors motivational practices in their current organisation. All motivational practices in both questions 14 and 15 had a mean score that was above average. For question 14, which determined the impact of current motivational practices on individual, the highest score are items: receive material and physical provisions (item 14-3); and have good relation amongst staff and management team (item 14-4).

Meanwhile, the lowest score were items: receive growth and advancement opportunity (item 14-1); and prepare appropriate nature of work (item 14-2).

As for question 15, which was to identify the effectiveness of the motivational practices on individual, the highest score item had above average mean score with the highest item ‘Have good relation amongst staff and management team (item 15-4)’. Meanwhile, the item with the lowest mean score was item ‘Receive growth and advancement opportunity (item 15-1)’.

The results indicated that most of the current motivational practices in the organisation had beyond average level of impact and effectiveness on individual quantity surveyors. Therefore, it is important to have a high impact and effective motivational practices in organisations, in order to enhance the motivation of the quantity surveyors to do their job and hence, contribute to the individual’s positive work performance and improve the performance of the organisation.

Table 5.36: Detailed results for items corresponding to the motivational practices on individual quantity surveyors

Item ID		Responses				Total	Mean	Standard deviation
		None	Low	High	Very high			
14-1	Frequency	2	11	26	32	71	2.24	.819
	Percentage	2.8	15.5	36.6	45.1	100		
14-2	Frequency	3	6	33	29	71	2.24	.783
	Percentage	4.2	8.5	46.5	40.8	100		
14-3	Frequency	3	7	20	41	71	2.39	.836
	Percentage	4.2	9.9	28.2	57.7	100		
14-4	Frequency	1	5	30	35	71	2.39	.686
	Percentage	1.4	7.0	42.3	49.3	100		
14-5	Frequency	1	9	32	29	71	2.25	.731
	Percentage	1.4	12.7	45.1	40.8	100		
15-1	Frequency	2	7	30	32	71	2.30	.763
	Percentage	2.8	9.9	42.3	45.1	100		
15-2	Frequency	-	5	35	31	71	2.37	.615
	Percentage	-	7.0	49.3	43.7	100		
15-3	Frequency	3	8	23	37	71	2.32	.841
	Percentage	4.2	11.3	32.4	52.1	100		
15-4	Frequency	-	1	33	37	71	2.51	.531
	Percentage	-	1.4	46.5	52.1	100		
15-5	Frequency	1	8	30	32	71	2.31	.729
	Percentage	1.4	11.3	42.3	45.1	100		

5.8.2 Chi-square test for part 6 of the questionnaire

Similar to chapters: 5.4.2; and 5.5.2; 5.6.2; and 5.7.2; Chi-square test in this section inspected whether the responses given by the respondents in the questionnaire are the product of the respondent's choice or a product of chance. Table 5.37 shows the significance levels for all items in part 6 of the questionnaire. All items were conducted applying the Kruskal-Wallis test with the respondent's profile since the null hypothesis is true that all scores were given at random for all tested items.

Table 5.37: Significance level (ρ) of response to item 14 and 15 of the questionnaire

Item ID		Chi-square	Significance
14-1	Receive growth and advancement opportunity	31.817	.000**
14-2	Prepare appropriate nature of work	40.268	.000**
14-3	Receive material and physical provisions	49.507	.000**
14-4	Have good relation amongst staff and management team	50.183	.000**
14-5	Receive fairness in organisational practices	38.690	.000**
15-1	Receive growth and advancement opportunity	40.380	.000**
15-2	Prepare appropriate nature of work	22.423	.000**
15-3	Receive material and physical provisions	40.042	.000**
15-4	Have good relation amongst staff and management team	32.901	.000**
15-5	Receive fairness in organisational practices	41.056	.000**

5.8.3 Kruskal-Wallis test for part 6 of the questionnaire

This section investigates the impact and effectiveness of motivational practice on individual quantity surveyors, which facilitated the responses given in questionnaire survey by using the Kruskal-Wallis test. Like in previous theme, the respondent profile was used as the independent variable and the responses analysed were used as the dependent variables in the analyses.

The independent variables selected for this analysis are similar to the previous theme, which were, respondents' position in the organisation (job title); 'respondents' length of working period in the quantity surveying profession in the Malaysian construction industry (QS exp);

respondents' length of working period in the current organisation (exp in current orgstn); respondents' gender (gender); and type of organisation (type of orgstn). Table 5.38 shows that in some cases, respondent's answers were independent of their profile and the responses were not influenced by their background.

The results showed that the respondent's profile 'respondents' length of working period in the quantity surveying profession in the Malaysian construction industry (QS exp)' and respondents' length of working period in the current organisation (exp in current orgstn)' did not affect both the level of impact and effectiveness of current motivational practices on individual quantity surveyors for all the items of motivational practices. In addition to that, gender of respondents did not affect the level of impact and effectiveness of current motivational practices on individual quantity surveyors of the entire items of motivational practices

Meanwhile, for the impact of current motivational practice employed, the results showed that three out of five motivational practices are statistically significant with types of organisation. The motivational practices were: receive growth and advancement opportunity (item 14-1); prepare appropriate nature of work (item 14-2), and receive material and physical provisions (item 14-3). Meanwhile, two out of five motivational practices' impacts on the individuals were statistically significant in term of their job title, which were: receive growth and advancement opportunity (item 14-1); and prepare appropriate nature of work (item 14-2).

Job title and types of respondents' organisation had also contribute to the statistical significant on the effectiveness of current motivational practices on individuals. The motivational practices are: receive growth and advancement opportunity (item 15-1); and receive material and physical provisions (item 15-3); respectively. On top of that, gender of the respondents was statistically significant with two of the motivational practices items, namely: prepare appropriate nature of work (item 15-2); and receive fairness in organisational practices (item 15-5).

It can be concluded that many of the impacts and effectiveness of the motivational practices on individuals were not affected by the demography of the respondents.

Table 5.38: Kruskal-Wallis analysis for part 6 of the questionnaire

Questions	Item ID	Motivational practices	Job title	QS exp	Exp in current orgstn	Gender	Types of orgstn
To investigate the level of impact of current motivational practices on individual quantity surveyors.	14-1	Receive growth and advancement opportunity	.001**	.753	.707	.775	.008**
	14-2	Prepare appropriate nature of work	.016*	.863	.688	.129	.029*
	14-3	Receive material and physical provisions	.078	.417	.865	.184	.005**
	14-4	Have good relation amongst staff and management team	.134	.636	.920	.155	.084
	14-5	Receive fairness in organisational practices	.130	.333	.749	.083	.169
To investigate the level of effectiveness of current motivational practices on individual quantity surveyors.	15-1	Receive growth and advancement opportunity	.023*	.157	.874	.405	.128
	15-2	Prepare appropriate nature of work	.168	.685	.796	.001**	.102
	15-3	Receive material and physical provisions	.620	.513	.943	.072	.009**
	15-4	Have good relation amongst staff and management team	.162	.505	.958	.052	.071
	15-5	Receive fairness in organisational practices	.759	.622	.739	.045*	.621

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

5.8.4 Cross-tabulation for part 6 of the questionnaire

Cross-tabulation analysis is conducted in order to investigate the pattern of responses given by the sample. In this section, cross-tabulation was done on motivational practices on individuals according to respondents' types of organisations, and was based on the items that are statistically significance only from Kruskal-Wallis test which was conducted in the previous section.

According to table 5.39, in items: 14-1; 14-2; and 14-3; most of the respondents have high impact or more on these motivational practices. However, there are small percentages of respondents from the government sector that indicate that motivational practices: 14-1; 14-2; and 14-3; did not impact them at all. The respondents in all three types of organisations believe that item 'receive material and physical provisions (15-3) had high effectiveness, but, there are small percentages of respondents from the government sector and private consultancy firms which expressed that motivational practice of item 15-3 are ineffective to them. This may be due to the work nature of the organisations. As for the private contracting

firms, the nature of their works is often related to work under pressure and often deals with various types of people including professionals, suppliers, and labours at site. Therefore, motivational practice item 15-3 might be acceptable to them.

Table 5.39: Cross-tabulation of motivational practices on individual and respondents' types of organisation

Item ID	Motivational practices	Type of organisation	Responses			
			None	Low	High	Very high
14-1	Receive growth and advancement opportunity	Government sector	2	7	6	5
		Private consultant	0	3	18	24
		Private contractor	0	1	2	3
14-2	Prepare appropriate nature of work	Government sector	3	3	9	5
		Private consultant	0	3	22	20
		Private contractor	0	0	2	4
14-3	Receive material and physical provisions	Government sector	3	5	5	7
		Private consultant	0	2	14	29
		Private contractor	0	0	1	5
15-3	Receive material and physical provisions	Government sector	2	5	6	7
		Private consultant	1	3	17	24
		Private contractor	0	0	0	6

5.9 Pearson's Correlation Coefficient, r

Correlation analysis was conducted on the questionnaire data in order to determine the intensity of the linear relationship between two variables. Here, the Pearson's correlation coefficient, r, is the measurement of linear relationship between two variables. This test is conducted on the data items in part 2 and part 3; and items in part 2 and part 4 of the questionnaire.

These categories of items were tested against each other, to determine if there is any correlation between the roles of the quantity surveyors with: motivation factors of the quantity surveyors; and employers' roles in the motivation of the quantity surveyors. Pearson's r has values ranging from -1 for perfectly negative relationship while +1 for perfectly positive relationship. Consequently, a value of 0 indicates that there is no linear relationship.

There are four stages of construction development and each stage consisted of particular quantity surveyors' role. The stages and the roles of each stage are presented in table 5.40.

Table 5.40: The roles of the quantity surveyors

Stages	Item ID	Item
Feasibility stage	6-1	Preparation or use of cost analysis.
	6-2	Preparation of estimates from sketch plan to detailed design.
	6-3	Preparation and use of detailed budgets.
	6-4	Preparation and use of cost plans.
	6-5	Financial feasibility studies
	6-6	Value management/engineering
	6-7	“Cost-in-use” studies/Life-cycle costing
	6-8	Profit/loss forecasts and cash flow projections.
	6-9	Cost checking
	6-10	Contractual and tendering arrangements
Pre-contract	7-1	Preparation and documentation of BQ and other tender
	7-2	Measurement, estimating and pricing for tenders.
	7-3	Value management/engineering
	7-4	Preparation of specification and/or schedule of rates.
	7-5	Data processing associated with the preparation of documentation.
	7-6	Detailed compilation and analysis of unit rates/preliminaries.
	7-7	Selection and evaluation of tenders and reporting on tenders.
	7-8	Project liaison meeting with employers and consultants.
	7-9	Pre-qualification, evaluation and registration of contractors.
Post-contract	8-1	Preparation of contract documents
	8-2	Application of cost control
	8-3	Monitoring of proposed construction methods and sequences
	8-4	Value management/engineering
	8-5	Analysis of contract pricing relative to cost recording methods.
	8-6	Preparation of interim valuations.
	8-7	Preparation of variation order and final accounts.
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.
	8-9	Preparation of reconciliation statements for management purposes.
	8-10	Project liaison meeting with employers and consultants.
	8-11	Site surveys and measurement and attendance at site meetings.
Construction management and resource procurement	9-1	Planning and programming of construction activities.
	9-2	Site planning.
	9-3	Management of resources and supervision of works.
	9-4	Liaison with employer, consultants, statutory and service authorities.

	9-5	Resource determination, scheduling and purchasing.
	9-6	Procurement of labour, plant and materials.
	9-7	Negotiation with and management of sub-contractors and suppliers.

5.9.1 Roles of quantity surveyors vs. motivation factors of quantity surveyors

This section discusses the relationship between the roles of quantity surveyors and motivation factors of quantity surveyors. The motivation factors of quantity surveyors is listed in table 5.41; meanwhile, the correlations between the motivation factors of quantity surveyors and the roles of quantity surveyors during the construction development stages are shown in tables 5.42 until 5.45.

Table 5.41: The motivation factors of the quantity surveyors

Item ID	Item
10-1	Appreciate challenges in doing task
10-2	Required by job description
10-3	Achieving job promotion
10-4	Achieving progression in career
10-5	Achieving on-the-job training
10-6	Off-the-job training
10-7	Working conditions
10-8	Financial incentives
10-9	Non-financial incentives
10-10	Have good relation with colleagues
10-11	Receiving good direction and monitoring from superior
10-12	Receiving an assignment that is suitable to capability
10-13	Receiving a fair time to finish assignment
10-14	Company honouring any promises made
10-15	Receiving fair pay equivalent to job scope
10-16	Have good teamwork
10-17	Receiving support from family and friends
10-18	Receiving compliments from superior
10-19	Having good facilities and resources at work place

Table 5.42 shows the summary of the correlation between the motivation factor of quantity surveyors and the roles of quantity surveyors during the feasibility stage.

The motivation factors had low relationship with quantity surveyor's roles during the feasibility studies. The motivation factors that have at least a relationship with any of the quantity surveyors' roles during feasibility stage were items: 10-1; 10-2; 10-4; 10-5; 10-6; 10-8; 10-9; 10-11; and 10-19. Item 6-7 (cost-in-use studies/ life-cycle costing) and item (cost checking) were the two quantity surveyors' roles that had the most relationship with

motivation factors, which can conclude that these roles have more options of motivating factors while the quantity surveyor performing the particular roles. Meanwhile, item 6-1 (preparation or use of cost analysis.) had only a relationship with one motivation factor which may work on them, which was item10-8 (financial incentives).

As a summary, it can be concluded that there are weak correlations between the motivation factors and quantity surveyors' roles in overall.

Table 5.42: Motivation factors vs. quantity surveyors' roles during feasibility stage

	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10
10-1	.047	.216	.133	.165	.016	.055	.263*	.037	.233	.069
10-2	.143	.201	.288*	.240*	.092	.048	.304**	.056	.324**	.168
10-3	-.143	-.128	-.017	-.039	-.070	.038	.007	-.111	-.009	-.087
10-4	-.049	.160	.181	.146	-.018	.117	.087	-.039	.252*	.054
10-5	.155	.135	.287*	.378**	.123	.045	.280*	.155	.206	-.043
10-6	.047	.081	.179	.266*	.002	.021	.260*	.157	.178	-.061
10-7	-.106	.054	.133	.087	.065	-.078	.182	.168	.199	.097
10-8	-.268*	-.040	-.087	-.024	-.063	.058	-.083	-.053	.193	.087
10-9	-.157	-.118	.018	.021	-.036	-.006	.147	.112	.129	.141
10-10	-.059	-.010	.114	.070	-.021	.013	.125	.098	.265*	.135
10-11	-.050	.091	.145	.155	.012	.025	.231	.039	.236*	.081
10-12	-.106	.005	.066	.016	.124	.127	.105	-.066	.191	-.002
10-13	-.232	-.020	-.076	-.115	-.027	-.034	.217	-.113	.194	.070
10-14	-.147	-.133	-.036	-.028	.071	.121	.119	.000	.125	.095
10-15	-.103	.117	-.012	.142	.030	.229	.043	.031	.197	.191
10-16	-.013	.115	.198	.115	.017	-.023	.220	.053	.174	.066
10-17	-.007	.112	.098	.073	.008	.000	.223	.012	.124	.154
10-18	-.169	.025	.086	.103	.112	.151	.104	-.138	.055	.041
10-19	-.015	.155	.154	.171	.053	-.018	.161	.096	.236*	.143

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Table 5.43 shows the summary of the correlation between the motivation factor of quantity surveyors and the roles of quantity surveyors during the pre-contract stage.

All employers' roles are significantly related to at least one quantity surveyor's roles during pre-contract stage. The results reflected that indeed there are strong correlations between item 7-5 (Data processing associated with the preparation of documentation.) and motivation factors. This may be due to the nature of the item 7-5 where it involves tedious works, time consuming and require high concentration.

All quantity surveyors' roles are significantly related to at least one of the motivation factor except item 7-3.

Table 5.43: Motivation factors vs. quantity surveyors' roles during pre-contract stage

	7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9
10-1	.248*	.260*	.076	.139	.276*	.213	.180	.101	.205
10-2	.212	.281*	.022	.217	.258*	.204	.136	.116	.207
10-3	.252*	.159	.024	.232	.347**	.227	.153	.100	.148
10-4	.284*	.411**	-.010	.391**	.335**	.250*	.264*	.184	.226
10-5	.273*	.355**	.146	.283*	.420**	.417**	.171	.217	.360**
10-6	.219	.294*	.134	.322**	.344**	.386**	.308**	.205	.361**
10-7	.244*	.188	.061	.206	.263*	.129	.162	.266*	.216
10-8	.192	.245*	.001	.245*	.289*	.138	.197	.245*	.032
10-9	.083	.065	.005	.134	.226	.195	.223	.287*	.101
10-10	.261*	.228	.092	.225	.308**	.285*	.255*	.241*	.292*
10-11	.243*	.257*	.136	.256*	.401**	.351**	.319**	.226	.356**
10-12	.096	.155	-.012	.202	.383**	.256*	.262*	.171	.239*
10-13	.288*	.256*	-.024	.258*	.428**	.319**	.264*	.104	.274*
10-14	.122	.061	.019	.125	.275*	.146	.163	.202	.134
10-15	.165	.263*	.000	.182	.244*	.197	.212	.119	.040
10-16	.196	.257*	.122	.174	.263*	.159	.137	.110	.182
10-17	.126	.278*	.150	.291*	.312**	.401**	.227	.155	.291*
10-18	.076	.124	.051	.286*	.244*	.195	.297*	.117	.227
10-19	.203	.255*	.123	.248*	.353**	.237*	.259*	.268*	.316**

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Table 5.44 shows the summary of the correlation between the motivation of quantity surveyors and the roles of quantity surveyors during the post-contract stage. All motivations factors and quantity surveyors' roles are significantly related to at least one between each other during post-contract stage.

Among the motivation factors, item 10-11 (appreciate challenges in doing task) had significant relationship with all quantity surveyors' roles during post-contract stage. It showed that there are strong correlations between the respondents' roles during post-contract stage with particularly motivation factor item 10-11. This could be attributed to the nature of the post-contract stage where works are mostly based on the site progress and sometimes, require quantity surveyors to visit the site to comply with the work. Furthermore, there is various construction personnel that the quantity surveyors need to deal with and sometimes, there are crises occur such as miscommunication among the team, delay of work on site,

drawings that are received late when there was variation of work, and many more. There was also strong correlation between motivation factors with quantity surveyors' role on item 8-2 (application of cost control) except item motivation factor in item 10-16 (has good teamwork). It can be concluded that these motivation factors help in motivating quantity surveyors in their role, as shown in item 8-2.

Table 5.44: Motivation factors vs. quantity surveyors' roles during post-contract stage

	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11
10-1	.272*	.243*	.107	.145	.076	.204	.129	.142	.037	.176	.108
10-2	.229	.261*	.271*	.151	.061	.201	.108	.095	.071	.170	.289*
10-3	.272*	.278*	.197	.197	.282*	.190	.187	.109	.100	.186	.059
10-4	.486**	.368**	.207	.158	.294*	.318**	.336**	.206	.188	.192	.213
10-5	.442**	.396**	.374**	.319**	.412**	.373**	.290*	.196	.330**	.333**	.345**
10-6	.421**	.395**	.375**	.273*	.387**	.366**	.285*	.191	.348**	.367**	.283*
10-7	.309**	.400**	.242*	.242*	.231	.286*	.194	.153	.227	.237*	.228
10-8	.208	.322**	.190	.130	.116	.231	.247*	.259*	.167	.251*	.179
10-9	.260*	.342**	.321**	.203	.271*	.263*	.268*	.294*	.341**	.342**	.211
10-10	.308**	.412**	.234*	.217	.291*	.339**	.268*	.225	.304**	.439**	.309**
10-11	.414**	.470**	.351**	.315**	.313**	.424**	.344**	.245*	.307**	.374**	.348**
10-12	.341**	.463**	.256*	.352**	.323**	.211	.271*	.363**	.258*	.252*	.119
10-13	.372**	.422**	.284*	.285*	.256*	.313**	.292*	.209	.290*	.208	.294*
10-14	.261*	.379**	.172	.257*	.259*	.172	.221	.319**	.330**	.220	.083
10-15	.306**	.259*	.178	.195	.201	.187	.236*	.204	.101	.095	.051
10-16	.192	.126	.149	.108	.091	.208	.090	.093	.076	.291*	.155
10-17	.297*	.324**	.388**	.286*	.301*	.269*	.174	.170	.206	.176	.313**
10-18	.279*	.281*	.363**	.273*	.249*	.135	.188	.263*	.164	.090	.108
10-19	.319**	.360**	.255*	.255*	.305**	.366**	.295*	.166	.147	.351**	.265*

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Almost all of the quantity surveyors motivation factors and quantity surveyors' roles had no significant relationship during construction management and resource procurement stage (see table 5.45). This could be due to that the involvement of the quantity surveying during this stage is quite minimal, compared the other stages of the construction development. Moreover, the involvement of the quantity surveyors in average was below the mean score.

Table 5.45: Motivation factors vs. quantity surveyors' roles during construction management and resource procurement stage

	9-1	9-2	9-3	9-4	9-5	9-6	9-7
10-1	.079	-.100	-.210	-.073	-.263*	-.092	-.020
10-2	.127	.022	-.098	.028	-.121	.038	-.062
10-3	.150	.086	-.046	-.109	-.075	.108	.109
10-4	.199	.107	-.074	-.006	-.094	.125	.184
10-5	.245*	.158	.022	.026	-.042	.126	.126
10-6	.302*	.258*	.096	.169	.050	.328**	.345**
10-7	.159	.061	-.136	-.015	-.205	.062	.070
10-8	.016	-.064	-.053	-.077	-.116	.002	-.128
10-9	.116	.180	.131	.047	.089	.219	.111
10-10	.196	.109	.073	.207	.037	.152	.117
10-11	.242*	.115	.104	.146	.050	.214	.140
10-12	.209	.097	.043	-.034	-.006	.096	.055
10-13	.224	.262*	.165	.096	.158	.278*	.129
10-14	.094	.151	.020	-.064	.007	.085	-.012
10-15	.127	.113	-.024	-.075	-.032	-.003	-.039
10-16	.115	.136	-.034	.099	-.022	.181	.138
10-17	.191	.181	.091	.169	.100	.262*	.201
10-18	.207	.139	.069	.013	.021	.150	.098
10-19	.228	.239*	.127	.200	.072	.235*	.185

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

5.9.2 Roles of quantity surveyors vs. employers' roles in the motivation of quantity surveyors

Similar, to chapter 5.9.2, this section discusses the relationship between two variables. The variables discussed here are the roles of quantity surveyors, and employers' roles in the motivation of quantity surveyors. The motivation factors of quantity surveyors is listed in table 5.46; meanwhile, the correlations between the motivation factors of quantity surveyors and the roles of quantity surveyors during the construction development stages are shown in tables 5.47 until 5.50.

Table 5.46: The employers' roles in the motivation of the quantity surveyors

Item ID	Item
11-1	Providing appropriate tasks to employees according to their ability
11-2	Providing accurate job description to employees
11-3	Granting job promotion to performing employees
11-4	Awarding employees who progresses in career
11-5	Providing on-the-job training
11-6	Providing off-the-job training
11-7	Providing conducive working conditions
11-8	Financial incentives
11-9	Non-financial incentives
11-10	Achieving good relations with other workers
11-11	Superior has good leadership skills
11-12	Assigning tasks that are suitable to the capability of the worker
11-13	Allocating a reasonable time frame to complete assignment
11-14	Company honouring promises made
11-15	Giving fair pay equivalent to job scope
11-16	Assigned to a good team and having good teamwork
11-17	Superior provides support to workers
11-18	Receiving complements and appreciation from superiors
11-19	Providing good facilities and resources at work place

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Table 5.47 shows the summary of the correlation between the roles of employers in motivating the employee quantity surveyors and the roles of quantity surveyors during the feasibility stage. All employers' roles had at least one strong relationship (significantly related) with quantity surveyor's roles during feasibility studies, except: providing off-the-job training (item 11-6); and assigning tasks that are suitable to the capability of the employees (item 11-12).

From the table, it can be seen that 'provide support to employees (item 11-17)' significantly related with all roles of the quantity surveyors during feasibility stage. It shows that employers' are actively providing the support to employees during this stage. 'Employer giving fair pay equivalent to job scope (item 11-15)' also has strong relationship will almost all roles of the quantity surveyors during this stage, except: cost analysis (item 6-1); feasibility studies (item 6-5); and life-cycle costing (item 6-7); roles.

Cost checking (item 6-9) role had strong relationships with many of the employers; motivation factors, followed by quantity surveyors' role, value management (item 6-6). In contrast, cost analysis role has only one motivation, from the employer, which was to 'provide support to employees (item 11-12)'.

Table 5.47: Employers’ roles vs. quantity surveyors’ roles during feasibility stage

	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10
11-1	-.009	.110	.026	.009	.234*	.288*	.185	.070	.310**	.126
11-2	.011	.242*	.134	.131	.150	.107	.253	.260	.359**	.152
11-3	-.003	.123	.078	.132	.212	.198	.178	.202	.261*	.114
11-4	-.005	.121	.031	.074	.209	.304**	.206	.244*	.151	.163
11-5	.135	.139	.091	.085	.267*	.217	.223	.138	.165	.133
11-6	.032	.206	.058	.152	.147	.101	.312	.215	.094	.069
11-7	.072	.161	.133	.143	.124	.285*	.286*	.265*	.309**	.178
11-8	-.037	.163	-.080	.105	.098	.366**	.022	.185	.158	.224
11-9	-.101	.107	.000	.103	.125	.221	.193	.267*	.291*	.270*
11-10	.210	.211	.233	.114	.172	.127	.143	.274*	.249*	.198
11-11	.074	.134	.053	.043	.183	.292*	-.001	.134	.320**	.248*
11-12	.056	.229	.082	.091	.178	.180	.115	.100	.272	.133
11-13	-.033	.231	.055	.011	-.014	.141	.119	.036	.287*	.303*
11-14	.087	.295*	.120	.200	.243*	.293*	.055	.229	.399**	.403**
11-15	.228	.454**	.273*	.319**	.229	.257*	.123	.278*	.490**	.422**
11-16	.139	.255*	.134	.072	.076	.274*	.191	.223	.352**	.238*
11-17	.256*	.413**	.274*	.265*	.358**	.256*	.296*	.340*	.448**	.398**
11-18	.165	.279*	.134	.135	.284	.339**	.066	.161	.265*	.295*
11-19	.157	.321**	.230	.282*	.181	.274*	.188	.300*	.442**	.415**

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

The correlation between the roles of employers in motivating the employee quantity surveyors and the roles of quantity surveyors during the pre-contract stage is shown in table 5.48.

As seen in table 5.48, there was at least one significant relationship between nineteen employers’ roles and nine quantity surveyor’s roles, except, providing appropriate tasks according to ability (item 11-1). Meanwhile, ‘complements and appreciate employees (item 11-18)’ was significantly related with almost all roles of the quantity surveyors during the pre-contract stage.

Quantity surveyors’ roles, including: value management (item 7-3); processing data (item 7-5); preliminaries (item 7-6); evaluate tender (item 7-7); and liaison meeting (item 7-8); are among the quantity surveyors’ roles that showed significant relationship with the roles of employers.

It can be summarised that the correlations between employers' roles in the motivation of quantity surveyors during pre-contract stage are not quite strong.

Table 5.48: Employers' roles vs. quantity surveyors' roles during pre-contract stage

	7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9
11-1	.088	-.017	.211	.098	.021	.048	.179	.056	.190
11-2	.300*	.242*	.251*	.181	.234*	.195	.172	.110	.204
11-3	.306**	.165	.155	.191	.369**	.259*	.304**	.260*	.296*
11-4	.197	.059	.280*	.002	.144	.115	.140	.112	.064
11-5	.174	-.008	.258*	.055	.127	.086	-.036	.054	.109
11-6	.198	.173	.209	.246*	.260*	.337**	.198	.103	.267*
11-7	.190	.233	.377**	.185	.200	.236*	.230	.283*	.346**
11-8	.328**	.278*	.201	.226	.379**	.334**	.224	.311**	.204
11-9	.229	.102	.216	.149	.287*	.231	.295*	.283*	.165
11-10	.141	.150	.158	.240*	.220	.296*	.239*	.299*	.313**
11-11	.115	.176	.192	.221	.154	.206	.302*	.204	.288*
11-12	.184	.138	.140	.171	.244*	.225	.101	.131	.220
11-13	.398**	.351**	.254*	.215	.358**	.285*	.344**	.227	.165
11-14	.239*	.152	.157	.138	.282	.166	.280*	.270*	.133
11-15	.231	.195	.141	.135	.293*	.293*	.360**	.363**	.249*
11-16	.184	.202	.249*	.193	.211	.244*	.192	.195	.250*
11-17	.255*	.126	.238*	.172	.192	.176	.142	.207	.174
11-18	.229	.159	.241*	.270*	.255*	.346**	.338**	.286*	.309**
11-19	.152	.158	.308**	.120	.190	.176	.241*	.365**	.119

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Table 5.49 shows the summary of the correlation between the roles of employers in motivating the quantity surveyors and the roles of quantity surveyors during the post-contract stage.

All employers' roles were significantly related to at least one quantity surveyor's roles during post-contract stage, except, providing on-the-job training (item 11-5); assigning employees to a good team (item 11-16); and provide support to employees (item 11-17).

Among the quantity surveyors' roles during post-contract stage, including: preparing contract document (item 8-1); cost control (item 8-2); and contractual issues (item 8-8); have significant relationship with many employers' roles in the motivation of the quantity surveyors.

There are also strong correlations between quantity surveyors' roles with the specific motivation factors, items: 11-18; 11-9; and 11-7; which comprised of, receiving complements and appreciation from superiors; non-financial incentives; and providing conducive working conditions; respectively.

Table 5.49: Employers' roles vs. quantity surveyors' roles during post-contract stage

	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11
11-1	.167	.191	.121	.245*	.227	.065	.152	.295*	.296*	.103	-.093
11-2	.236*	.316**	.135	.268*	.275*	.220	.170	.149	.260*	.196	.182
11-3	.356**	.336**	.223	.337**	.318**	.293	.354**	.372**	.257*	.296*	.119
11-4	.146	.209	.070	.257*	.176	.033	.070	.177	.133	.091	-.066
11-5	.066	.110	.214	.204	.081	.019	.036	.201	.180	.115	-.093
11-6	.298*	.258*	.402**	.288*	.270*	.236*	.183	.175	.187	.187	.207
11-7	.318**	.390**	.335**	.345**	.174	.273*	.222	.262*	.450*	.298*	.239*
11-8	.280*	.290*	.164	.181	.200	.293*	.369**	.398**	.160	.174	.129
11-9	.353**	.321**	.313**	.264*	.269*	.318**	.342**	.372**	.325**	.280*	.135
11-10	.263*	.231	.281*	.123	.108	.193	.185	.193	.209	.240*	.169
11-11	.386**	.255*	.205	.265*	.265*	.211	.291*	.391**	.307**	.212	.053
11-12	.188	.154	.178	.177	.190	.137	.176	.234*	.187	.132	-.031
11-13	.339**	.269*	.226	.213	.144	.262*	.257*	.279*	.219	.137	.131
11-14	.262*	.255*	.170	.185	.157	.229	.327**	.360**	.172	.187	.057
11-15	.304**	.285*	.222	.177	.186	.305**	.322**	.338**	.092	.289*	.090
11-16	.218	.164	.159	.104	.073	.201	.165	.183	.138	.200	.085
11-17	.136	.201	.189	.187	.149	.175	.143	.179	.166	.222	.145
11-18	.350**	.274*	.263*	.280*	.242*	.237*	.299*	.459**	.265*	.258*	.142
11-19	.215	.298*	.173	.198	.145	.241*	.211	.241*	.319**	.313**	.208

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

No significant relationship was found between employers' roles and quantity surveyors' roles during construction management and resource procurement stage (see table 5.50). This may be due that most of the quantity surveyors in the construction industry are working in the government agencies and private consultancy firms and very few work in private contracting firms. Because of that, the involvement of the quantity surveying during this stage is quite minimal as compared the other stages of the construction development (Ashworth and Hogg, 2007). Moreover, the involvement of the quantity surveyors, in average, was below the mean score.

Table 5.50: Employers’ roles vs. quantity surveyors’ roles during construction management and resource procurement stage

	9-1	9-2	9-3	9-4	9-5	9-6	9-7
11-1	.119	-.016	.049	-.037	.034	.054	.100
11-2	.064	.030	.029	.093	.067	.158	.205
11-3	.151	.186	.126	.039	.108	.146	.126
11-4	.025	-.001	.016	-.096	.021	.039	.026
11-5	.041	-.063	-.047	-.103	-.067	-.057	-.017
11-6	.174	.086	.107	.054	.056	.200	.123
11-7	.164	-.040	.062	.228	.067	.134	.137
11-8	-.038	-.035	.020	.026	.057	.048	.014
11-9	.046	.048	.148	.015	.159	.153	.107
11-10	.074	.017	.163	.186	.133	.155	.220
11-11	.123	-.005	.038	.017	.034	.055	.141
11-12	.020	-.036	-.009	-.004	-.014	.035	.086
11-13	-.028	-.055	-.106	-.081	-.076	.073	.052
11-14	-.010	.030	-.016	-.038	.026	-.004	-.059
11-15	.090	.118	.094	.151	.161	.133	.096
11-16	.002	-.012	-.026	.063	.003	.060	.051
11-17	.052	.064	.045	.063	.093	.091	.020
11-18	.086	-.010	.044	.028	.063	.122	.098
11-19	.014	-.080	-.064	.047	-.050	-.003	-.052

*Result is statistically significant at $\rho < 0.05$.

**Result is statistically significant at $\rho < 0.01$.

Two Pearson’s correlation tests were conducted on the motivation factors and employers’ roles against roles of the quantity surveyors at four stages of construction process. The tests were to identify the relationship between (1) motivation and roles of quantity surveyors; and (2) roles of employers and roles of quantity surveyors, in order to find which motivation factors and employer’s roles that has impact on the quantity surveyors in doing their job; and help to identify the right motivation factors or role of employer’s in improving the performance of each individual quantity surveyors, while doing their job at different stages of the construction process.

Only nine motivation factors motivated the quantity surveyors in at least one of their roles during the feasibility stage and seven during construction management and resource procurement stage. In this light, all motivation factors worked well in at least one of the roles during both pre-contract and post-contract stages.

As for employer's roles in motivating the quantity surveyors, the results are quite contradictory of those obtain in the previous section. Almost all items, except items: 11-6; and 11-12; on the employer's roles works well in motivating the quantity surveyors during the feasibility stage. Only one and three employers' roles did not motivate any one of the quantity surveyors roles during pre-contract and post-contract stages, respectively. Meanwhile, quantity surveying roles during construction management and resource procurement stage show no positive effect on any motivation factor.

5.10 Factor analysis

Factor analysis is a technique for identifying clusters of variables. There are three main uses of doing factor analysis and they are: to understand the structure of a set of variables; to construct a questionnaire to measure an underlying variable; and to reduce a data set to a more manageable size while retaining as much original information as possible (Field, 2013; Bryman and Cramer, 2003). For this research, factor analysis was applied in order to simplify the long list of motivation factors and employers' roles in the motivation of the quantity surveyors by reducing the number of the factors into fewer dimensions. The dimensions will be useful for the development of the conceptual framework, which is the aim of this research.

Before the data could be analysed by factor analysis, there were some criteria that needed to be fulfilled to ensure that the data has adequate levels of multi-collinearity or in other words, two or more variables have satisfactory levels of correlation. Firstly, the sample size to item ratio for this research, the sample size-to-item ratio was 3.75:1. Hence, the minimum acceptable ratio was 3.25:1 (Henson and Roberts, 2006). Normally, the recommended number of samples is a minimum of one hundred (100), but for this research, the sample was only seventy one (71). In this regard, Fabrigar *et al.* (1999) indicated that there are several studies that have one hundred or fewer samples, and Henson and Roberts (2006) discovered a study with forty-two samples. Meanwhile, the presence of a sufficient number of significant is indicated by Bartlett's test of significance (p is .000) which confirmed the applicability of factor analysis. The Kaiser criterion for selecting factors with an eigenvalue greater than 1 was employed and the KMO sampling adequacy value more than 0.7 was the common threshold for confirmatory analysis (Hair *et al.*, 2010).

5.10.1 Motivation factors of the quantity surveyors

Table 5.51 shows the eigenvalues associated with each factor before extraction, after extraction and after rotation. In table 5.51, before extraction, SPSS had identified nineteen within the data set. SPSS also displayed the eigenvalue in terms of the percentage of variance. The first few factors explained relatively large amounts of variance, whereas, subsequent factors explained only small amounts of variance. The eigenvalues associated with the factors were again displayed and the percentage of variance explained in the second column labelled ‘extraction sums of squared loadings’. The third column shows the ‘rotation sums of squared loadings’ shows the rotation of the eigenvalue’s factors. The rotation has the effect of optimising the factor structure, and one consequence for these data was that the relative importance of the four factors was slightly equalised.

Table 5.51: Total variance explained on motivation factors of the quantity surveyors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.120	47.998	47.998	9.120	47.998	47.998	4.598	24.201	24.201
2	1.771	9.323	57.321	1.771	9.323	57.321	3.615	19.027	43.229
3	1.178	6.198	63.518	1.178	6.198	63.518	2.931	15.425	58.654
4	1.075	5.656	69.174	1.075	5.656	69.174	1.999	10.520	69.174
5	.928	4.882	74.056						
6	.712	3.745	77.802						
7	.607	3.196	80.998						
8	.570	3.000	83.998						
9	.504	2.655	86.653						
10	.442	2.324	88.977						
11	.396	2.084	91.061						
12	.353	1.856	92.917						
13	.321	1.688	94.605						
14	.249	1.308	95.913						
15	.213	1.120	97.033						
16	.191	1.005	98.038						
17	.143	.752	98.790						
18	.135	.713	99.503						
19	.095	.497	100.000						

Table 5.52 presents the matrix table which contains the loadings of each variable on each factor. The matrix was presented in table 5.53 for interpretation. The latter table contain the same information as matrix in previous table, except that they are calculated after rotation. Most variables loaded highly on the first factor. However, the rotation of the factor has clarified things considerably.

Table 5.52: Component matrix on motivation factors of the quantity surveyors

	1	2	3	4
Receiving good direction and monitoring from superior	.828	.113	.005	-.170
Receiving a fair time to finish assignment	.797	-.170	.175	.002
Receiving an assignment that is suitable to capability	.787	-.209	.224	.115
Good working conditions	.783	.105	-.135	.025
Having good facilities and resources at work place	.741	.030	-.030	-.277
Achieving job promotion	.739	-.074	-.384	.069
Company honouring any promises made	.736	-.499	.011	.088
Achieving progression in career	.712	.185	-.309	.390
Financial incentives	.701	-.352	-.138	.067
Receiving compliments from superior	.697	-.176	.294	.162
Non-financial incentives	.687	-.394	-.223	-.324
Have good relation with colleagues	.686	-.092	.310	-.315
Achieving on-the-job training	.680	.466	-.242	-.083
Receiving support from family and friends	.670	.173	.359	-.295
Have good teamwork	.658	.235	.158	-.100
Receiving fair pay equivalent to job scope	.654	-.294	-.170	.405
Required by job description	.496	.422	.299	.162
Appreciate challenges in doing task	.475	.464	.278	.454
Achieving off-the-job training	.510	.533	-.418	-.234

Table 5.53 presents the rotated component matrix and the summary of the exploratory component analysis results on motivation factors of the quantity surveyors and the roles of employers in the motivation of quantity surveyors respectively. Consequently, PCA analyses were conducted on nineteen items in the group. Table 5.53 shows four factors had eigenvalues over the Kaiser's criterion of 1 and combined, explained 47.998% of the variance.

Table 5.53: Rotated component matrix as the summary of exploratory component analysis result on motivation factors of the quantity surveyors

Factor Component (C)	Efforts recognition	Supportive environment	Employer's organisational support	Work nature
C1- Company honouring any promises made	.806	.386	.015	.003
C2- Receiving fair pay equivalent to job scope	.800	.037	.136	.217
C3- Obtain financial incentives	.722	.288	.186	-.006
C4- Achieving job promotion	.638	.156	.520	.051
C5- Receiving an assignment that is suitable to capability	.619	.506	.058	.289
C6- Receive non-financial incentives	.603	.470	.305	-.323
C7- Achieving progression in career	.573	-.021	.528	.427

C8- Receiving a fair time to finish assignment	.569	.550	.144	.219
C9- Receiving compliments from superior	.543	.465	-.021	.342
C10- Have good relation with colleagues	.290	.753	.127	.084
C11- Receiving support from family and friends	.114	.749	.234	.259
C12- Receiving good direction and monitoring from superior	.388	.563	.470	.197
C13- Having good facilities and resources at work place	.350	.562	.433	.042
C14- Have good teamwork	.196	.507	.347	.327
C15- Achieving off-the-job training	.008	.165	.857	.107
C16- Achieving on-the-job training	.174	.272	.744	.295
C17- Good working conditions	.477	.341	.489	.245
C18- Appreciate challenges in doing task	.131	.129	.184	.810
C19- Required by job description	.048	.330	.226	.614
Eigenvalues	9.120	1.771	1.178	1.075
% of variance	47.998	9.323	6.198	5.656
Cronbach's α	.912	.856	.759	.631

The new dimensions emerged from the factor analysis process were given new labels and the process of labelling was done based on the thorough conceptual, theoretical, model study of previous works, as well as from the content analysis of the interview transcripts.

There are four new dimensions evolved for the motivation factors after running the factor analysis. The dimensions were: efforts recognition; supportive environment; employer's organisational support; and work nature.

5.10.2 Employers' roles in the motivation of the quantity surveyors

Table 5.54 shows the eigenvalues associated with each factor before extraction, after extraction and after rotation. Table 5.54 presents the nineteen components identified by the SPSS within the data set before the extraction, and three factors were extracted and rotated. SPSS also displayed the eigenvalue in terms of the percentage of variance. The first few factors relatively explained large amounts of variance, whereas, the subsequent factors explained only small amounts of variance. The eigenvalues associated with the factors were again displayed and the percentage of variance explained in the second column was labelled

as ‘extraction sums of squared loadings’. The third column shows the ‘rotation sums of squared loadings’ which is the rotation of the eigenvalue’s factors.

Table 5.54: Total variance explained on roles of employers in the motivation of quantity surveyors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.657	56.090	56.090	10.657	56.090	56.090	4.826	25.402	25.402
2	1.414	7.440	63.530	1.414	7.440	63.530	4.680	24.632	50.034
3	1.191	6.266	69.796	1.191	6.266	69.796	3.755	19.762	69.796
4	.992	5.222	75.017						
5	.714	3.758	78.776						
6	.604	3.181	81.957						
7	.558	2.939	84.896						
8	.473	2.489	87.384						
9	.398	2.092	89.477						
10	.358	1.885	91.361						
11	.340	1.790	93.151						
12	.280	1.475	94.626						
13	.255	1.344	95.970						
14	.233	1.227	97.197						
15	.141	.744	97.941						
16	.125	.658	98.599						
17	.116	.611	99.210						
18	.102	.539	99.749						
19	.048	.251	100.000						

Table 5.55 shows the matrix table which contains the loadings of each variable on each factor. The results are presented in table 5.56 for interpretation. The latter contains the same information as the matrix in previous table, except that the matrix here was calculated after rotation. Most variables were highly loaded on the first factor and the remaining factors did not really get a look on being rotated. However, the rotation of the factor had clarified things considerably.

Table 5.55: Component matrix on roles of employers in the motivation of quantity surveyors

	1	2	3
Assigning tasks that are suitable to the capability of the worker	.851	.190	-.125
Receiving complements and appreciation from superiors	.842	-.011	-.223
Granting job promotion to performing employees	.808	-.005	.169
Assigned to a good team and having good teamwork	.805	-.036	-.400
Superior has good leadership skills	.802	.101	-.093
Providing conducive working conditions	.791	.216	-.141
Allocating a reasonable time frame to complete assignment	.783	-.008	.111

Superior provides support to workers	.769	-.087	-.338
Company honouring promises made	.768	-.474	.149
Providing good facilities and resources at work place	.752	-.274	-.224
Providing accurate job description to employees	.726	.345	.019
Providing on-the-job training	.723	.364	.212
Offering annual bonuses or other financial incentives	.716	-.341	.365
Awarding employees who progresses in career	.711	.104	.369
Achieving good relations with other workers	.708	-.064	-.410
Offering company vacation trips or other non-financial incentives	.707	-.154	.438
Providing appropriate tasks to employees according to their ability	.658	.400	.109
Giving fair pay equivalent to job scope	.654	-.580	.034
Providing off-the-job training	.603	.330	.146

Table 5.56 shows the rotated component matrix and thus, presents the summary of the exploratory component analysis results on quantity surveyors' motivation factors and the roles of employers in the motivation of quantity surveyors, respectively. Both PCA analyses were conducted on nineteen items in each group. In table 5.56, three factors had the eigenvalues over Kaiser's criterion of 1, and combined, explained 56.090% of the variance.

Table 5.56: Rotated component matrix as the summary of exploratory component analysis result on roles of employers in the motivation of quantity surveyors

Factor Component (C)	Employees' organisational support	Organisational support	Company's reward policy
C1- Providing on-the-job training	.774	.223	.228
C2- Providing appropriate tasks to employees according to their ability	.724	.258	.117
C3- Providing accurate job description to employees	.695	.377	.143
C4- Providing off-the-job training	.654	.206	.157
C5- Awarding employees who progresses in career	.636	.128	.483
C6- Assigning tasks that are suitable to the capability of the worker	.611	.588	.238
C7- Providing conducive working conditions	.588	.560	.182
C8- Granting job promotion to performing employees	.548	.359	.502
C9- Allocating a reasonable time frame to complete assignment	.510	.390	.461
C10- Assigned to a good team and having good teamwork	.327	.807	.229
C11- Achieving good relations with other workers	.244	.759	.192
C12- Superior provides support to workers	.290	.743	.277

C13- Receiving complements and appreciation from superiors	.428	.687	.321
C14- Providing good facilities and resources at work place	.186	.669	.456
C15- Superior has good leadership skills	.529	.546	.291
C16- Company honouring promises made	.182	.415	.795
C17- Offering annual bonuses or other financial incentives	.320	.196	.788
C18- Giving fair pay equivalent to job scope	-.003	.451	.750
C19- Offering company vacation trips or other non-financial incentives	.473	.108	.693
Eigenvalues	10.657	1.414	1.191
% of variance	56.090	7.440	6.266
Cronbach's α	.918	.915	.876

The new dimensions emerged from the factor analysis process were given new labels and the process of labelling was done based on the thorough study of past conceptual frameworks, theories, models as well as content analysis of the interview transcripts.

There are three new dimensions that emerged with the employer's role in the motivation of the employers, namely: employees' organisational support; organisational support; and company's reward policy.

The process involved scientific and artistic effort (Tian and Pu, 2008) and is in line with another study by Machungwa and Schmitt (1983), where the themes of the factors were grouped together based on the judge's opinion and by using good research basis.

5.9 Summary

This section discussed the survey questionnaire distributed for the purpose of data collection for this research. This section also included the results for the reliability testing for the questionnaire employed in this research, as well as detailed exploration of the results from the questionnaire survey is included. It was organised into 4 sections: part 2; part 3; part 4; and part 5; of the questionnaire. The initial findings were analysed with the aid of the SPSS software version 19.0. The statistics used include descriptive frequency statistics; chi-square test; Kruskal-Wallis test; and cross-tabulation test. Factor analysis and Pearson's correlation tests were also adopted in this research to aid the development of the conceptual framework, after the four previous tests had been run. The next chapter discusses the qualitative data analysis from the finding gathered from the semi-structured interviews.

6.0 QUALITATIVE DATA ANALYSIS

6.1 Introduction

This chapter will broadly discuss another part of the research's data collection and data analysis, which is qualitative data. The discussion will begin with the summary of findings from interview transcripts based on the demographic of the research. Similar to the quantitative data analysis in previous chapter, there are three themes identified during the process of analysing the qualitative data using content analysis method. The themes were: the roles of the quantity surveyors; motivation on individuals; and motivation by employers.

These interviews were conducted in order to gain the richness of the information and to help triangulating the findings conducted through the surveys questionnaire for quantitative information.

The semi-structured interviews were conducted face-to-face with twenty-two registered quantity surveyors working in three different organisations within the construction industry in Malaysia. Eight of the interviewees were from the various government agencies. The agencies are: Department of Work of Ministry of Work; Kuala Lumpur City Hall; and Development Office and Asset Management of Universiti Putra Malaysia. Eleven interviewees were from registered quantity surveying firms which solely offer quantity surveying services; and the three remaining interviewees are from contracting firms (table 6.1).

Table 6.1: Interviewees

	Government	Consultant	Contractor	Total
Principal	-	QS3, QS11, QS12	-	3
Senior QS	QS5, QS21, QS22	QS4, QS9, QS13, QS17, QS18, QS19	QS10	10
QS	QS1, QS2, QS6, QS7, QS20	QS14, QS15	QS8, QS16,	9
Total	8	11	3	22

Nvivo 10 was used in managing the information in accordance to the themes. Initial themes were identified and decided at the early stage of the data collection process. The analysis

using the Nvivo 10 software was approved and agreed with the initial themes identified through the literature reviews.

The interviews were done in order to have more in depth and breadth of the respondents' opinions and experiences on the issues. During the analysis of the transcript using the NVivo 10 software, five initial themes were created based on the questionnaire survey questions, and after analysing the interview, the themes were compacted into four.

Theme 1 is generally about the roles of the quantity surveyors in different stages of the construction development. Each stage requires the quantity surveyors to play different roles to suit the needs or requirements of the specific stage. Therefore, there are questions asked to the respondents in order to know their roles in each stage. The involvement includes their level of involvement as well as their specific experiences while undergoing the roles.

Theme 2 depicts the motivation factors of quantity surveyors and to identify as well as to explore the level of impact, the motivation factors have on individual quantity surveyors. Each individual has different types of motivation factors and the different level of impact of each of the motivation factors.

Theme 3 represents the roles of employers or management team of the organisations in the motivation of the quantity surveyors. In this theme, the level of the employers' involvement in the motivation of the quantity surveyors were identified and explored through the question and nineteen choices of employers' roles.

Theme 4 is about the motivational practices in the current organisations. There are two parts under this theme. The first part (part 5 of the interview questions) presents the challenges and effectiveness of the motivation practices to be implemented in the organisations. This part is to explore the level of challenge faced by the employer or the management team of the organisation in employing the motivational practices in the organisation and the effectiveness of the current motivational practices. Meanwhile, the second part (part 6 of the interview questions) of theme 4 explored the impact and the effectiveness of the current motivational practices on individual quantity surveyors. Table 6.2 shows the summary of the themes of identified during the interview analysis of the research.

Table 6.2: Themes of the research

Themes	Description
Theme 1	Roles of quantity surveyors
Theme 2	Motivation factors of quantity surveyors
Theme 3	Roles of employers in the motivation of the quantity surveyors
Theme 4	Motivational practices of current organisations

The number of sources (labelled as no. of sources) indicates the number of participants being interviewed and number of references (no. of references) shows the total comments or responses given by them during the interview. These comments were placed in child nodes, where the labels are derived from the answer given by the participants as part of the content analysis process.

6.2 Theme 1: Roles of quantity surveyors

In the interview, the respondents were asked about their roles as quantity surveyors during different stages: feasibility; pre-contract; post-contract; and construction management and resource procurement. The interview questions were similar to the questions in the questionnaires. Table 6.3 summarises the number of sources and references of the role of the quantity surveyors during the construction development, which included all four stages. Tables 6.4 to 6.7 present the roles of the quantity surveyors according to each stages of the construction development.

Table 6.3: Roles of QS during construction development

Roles of quantity surveyors according to stages	No. of sources	No. of references
Feasibility	17	104
Pre-contract	21	154
Post-contract	20	164
Construction management and resource procurement	11	31

a. Roles of quantity surveyors during feasibility stage

Table 6.4: Roles of quantity surveyors during feasibility stage

Part	Objective	Item ID	Item	No. of sources	No. of references
2	To analyse and evaluate the role of QS during feasibility stage in Malaysian construction industry.	6-1	Preparation or use of cost analysis	14	14
		6-2	Preparation of estimates	14	14
		6-3	Preparation and use of detailed budget	12	12
		6-4	Preparation and use of cost plans	10	10
		6-5	Financial feasibility studies	8	8
		6-6	Value management	3	3
		6-7	Cost-in-use/ life-cycle costing	1	1
		6-8	Profit/loss forecasts and cash flow	6	6
		6-9	Cost checking	9	9
		6-10	Contractual and tendering arrangements	13	13

From the interviews, it was discovered that seventeen out of twenty-two interviewees have been actively involved in playing their role as a quantity surveyor during the feasibility stage. The roles are as listed in table 6.4. Interviewees QS9 and QS13 explained that they were involved actively in the feasibility stage as the feasibility stage is the initial stage of the project development and is the most vital stage of all. The active involvement of both interviewees in this stage may be due to that both of them are senior quantity surveyors in the private consultant firms and feasibility stage is the most important stage of all stages in the construction process and that the senior quantity surveyors are always assigned to handle the works from this stage by the clients.

“During the feasibility stage, I involved quite a lot in it especially in preparing the detailed budget, financial feasibility study, and advising in the contractual and tendering arrangements to the clients. Feasibility stage is the core part in any development in my opinion. Once the initial part is established properly, the rest of the period, will go smoothly.” QS9

“I involved quite a lot in private projects since the initial stage which deals a lot with the clients, end users, and design team i.e. architect and ID team. We have frequent meetings to establish the clients’ and end users’ needs and requirements.” QS13

Meanwhile the reason that the interviewee QS11 is involved actively in the feasibility stage is because the organisation he is working in is small and requires him to handle most of the work in the organisation at all stages. In this regards, interviewee QS11 is the principal of the firm. There is a tendency for the employer or employee to multi-task when they are working in a small-sized organisation. Sometimes, they also have to do work that is beyond their job title or even beyond the scope of their profession.

“As a principal, I am involved actively in all parts of the project. Well I need to be involved actively since this firm has small scale of staffs.” QS11

Five out of the twenty-two interviewees have minor or no roles during the feasibility stage. Four out of these five interviewees stated that the reason for not having the experience in the feasibility stage is because the roles of quantity surveyors during this stage are beyond the normal roles of their organisation. The interviewees were from different types of organisations: QS8 (private contracting firm); QS15 (private consultancy firm); QS21 and QS22 (government agencies). It can be concluded that the roles during the feasibility stage are not necessarily the compulsory roles of quantity surveyors during the construction development in all types of organisations.

“I don’t do much during the feasibility stage since I am in the contractor’s company. But I have experience in the feasibility work when I was in the consultancy firm few years back.” QS8

“I have no experience in financial feasibility studies and value management. I think these roles are mostly done by the developers or clients.” QS15

“Feasibility studies in the government and specifically in our government agency, it is not our normal role because the one who does this is the client. It is the client who does the planning and everything. Our agency does not do

the feasibility studies but the one who does this is the offices of related ministries. Our department does not do cost analysis or estimate cost plan detail. We do not need to know about financial economy evaluation. Most of the roles during the feasibility stage, we do not do and it is usually done by the private firms who focus on office and housing development.” QS21

“We do not do feasibility studies here. Government does not do this study.” QS22

One of the interviewees stated that quantity surveyors are not directly involved nor have minor roles in the feasibility stage in his organisation and that there is a separate department and team which carry out the feasibility stage. In this regard, interviewee QS10 comes from a private contracting firm and usually, contractors play very minimal roles during this stage as these roles are usually carried out by the developer companies and clients.

“I don’t do much during the feasibility stage. We have a strategic and planning development team who look into it... The tasks that I am involved in frequently during this stage are cost checking and contractual and tendering arrangement. The other team will seek advice on these issues before they decide for the company to tender the project.” QS10

Consequently, items 6-1 and 6-2 were the two roles of quantity surveyors that are most frequently practiced during feasibility stage, meanwhile, item 6-7 was the least frequently conducted by the quantity surveyors during this stage.

b. Roles of QS during pre-contract stage

Table 6.5: Roles of QS during pre-contract stage

Part	Objective	Item ID	Item	No. of sources	No. of references
2	To analyse and evaluate the role of QS during pre-contract stage in Malaysian construction industry.	7-1	Preparation and documentation of BQ and other tender	16	17
		7-2	Measurement, estimating and pricing for tenders.	15	15
		7-3	Value management/engineering	4	4
		7-4	Preparation of specification and/or schedule of rates.	11	11
		7-5	Data processing associated with the preparation of documentation.	9	9
		7-6	Detailed compilation and analysis of unit rates/preliminaries.	12	12
		7-7	Selection and evaluation of tenders and reporting on tenders.	14	15
		7-8	Project liaison meeting with employers and consultants.	15	15
		7-9	Pre-qualification, evaluation and registration of contractors.	12	12
		7-10	Preparation of specification.	13	14
		7-11	Estimating and pricing for tender.	10	10
		7-12	Comparative of design economics.	11	11

Originally, there are a total of nine roles identified and listed before the interviews, but after analysing the transcripts using content analysis, three new roles had evolved from the original roles. The interviewees chose to separate the combined roles into new and isolated roles, might be because, they thought that they are only involved in one or two roles out of the overall combined roles. Therefore, items: 7-10; 7-11; and 7-12; were created as new nodes.

Furthermore, twenty-one out of twenty-two interviewees are highly involved in quantity surveying roles during the pre-contract stage. One of the interviewees stated that:

“I involved more in the early stage. Usually when it is in the post contract stage, the other section of this department will take over.” QS1

In addition, in most instances, other than the quantity surveyors in the government sector, the quantity surveyors in private consultancy and contracting firms are actively involved in the pre-contract stage as well as post-contract stage. Interviewees QS9 and QS10 informed that they both have been involved actively in the pre-contract as well as the post-contract stages, since most of the roles in both stages are similar or are continuing roles.

“During pre-contract and post contract, my roles during these stages are as the supervisors to other QSs here. We have divided the QSs here into 2 teams, and I handled 1 of the teams which consists of 5 QSs and handle up to 20 projects at a time. I will be involved often during the earlier stage of the pre-contract and will be present at important meetings. If there are any problems arising due to contractual issues or issues at site, I will be present to help solve the problems.” QS9

“My team and I are highly involved in all activities required during pre-contract and post-contract stages. When the board decides to tender for a project, we will be in charge from the beginning of, i.e. from buying the tender documents from the developer or client, until we receive the certificate of final completion. Most of our projects are government projects like construction of schools, hospitals, and army’s quarters.” QS10

Among all the roles in the pre-contract stage, preparation of the Bills of Quantities was the role of quantity surveyors that are mostly practiced during the pre-contract stage, meanwhile, value management was the least done by the quantity surveyors during this stage.

c. Roles of QS during post-contract stage

Table 6.6: Roles of QS during post-contract stage

Part	Objective	Item ID	Item	No. of sources	No. of references
2	To analyse and evaluate the role of QS during post-contract stage in Malaysian construction industry.	8-1	Preparation of contract documents	15	17
		8-2	Application of cost control	15	16
		8-3	Monitoring of proposed construction methods and sequences and those actually required and reporting thereon.	7	8
		8-4	Value management/engineering .	10	10
		8-5	Analysis of contract pricing relative to cost recording methods.	9	10
		8-6	Preparation of interim valuations.	15	18
		8-7	Preparation of variation order and final accounts.	14	16
		8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	14	15
		8-9	Preparation of reconciliation statements for management purposes.	9	9
		8-10	Project liaison meeting with employers and consultants.	13	14
		8-11	Site surveys and measurement and attendance at site meetings.	15	16

From the interviews, twenty out of twenty-two interviewees are actively involved in playing the various roles of quantity surveying works during the post-contract stage as shown in table 6.6.

Preparation of contract documents (item 8-1); application of cost control during the progress of the work (item 8-2); preparation of interim valuation (item 8-6); and site measurement and meetings (item 8-11); were the top roles frequently practiced by quantity surveyors during the post-contract stage. Consequently, the roles mentioned above are the bread and butter of the

quantity surveying profession in all types of organisations. Among the interviewees' responses are:

“I do get involved a lot during post-contract phase. I need to make sure that the budget is as per planned.” QS8

“I often do valuation on site every month, a lot of variation of works and the final account.” QS14

“I am involved a lot in the preparation of interim valuations, meetings, and site meetings since I was previously based on site.” QS15

“During post-contract, I am greatly involved in the preparation of contractual documents for the main contract, preparation of interim valuations. I am also usually involved in the first, second and final valuation, as well as the preparation of the final accounts.” QS17

On the other hand, monitoring of the proposed construction methods and sequences is the least frequent role. Only seven interviewees have experienced monitoring of proposed construction methods and sequences in their current organisation during the post-contract stage. Perhaps this role is usually done by the project manager, or the designers, hence, quantity surveyors usually play small part in this role, like giving opinion on suggested options given by the team leader.

Table 6.7: Roles of quantity surveyors during construction management and resource procurement stage

Part	Objective	Item ID	Item	No. of sources	No. of references
2	To analyse and evaluate the role of QS during construction management and resource procurement stage in Malaysian construction industry.	9-1	Planning and programming of construction activities.	4	4
		9-2	Site planning.	2	2
		9-3	Management of resources and supervision of works.	4	4
		9-4	Liaison with employers, consultants or statutory bodies.	6	6

		9-5	Resource determination, scheduling and purchasing.	2	2
		9-6	Procurement of labour, plant and materials.	3	3
		9-7	Negotiation with and management of subcontractors and suppliers.	4	4

There were eleven responses on the involvement of quantity surveying roles in the construction management and resource procurement stage. The majority of the interviewees stated that they either: have not been involved; have minimal involvement; or have indirect involvement; in playing the role of quantity surveying roles in this stage.

Some of the comments are:

“In relation to the construction management and procurement stage, I believe this part is mostly done by the contractors. As for me, I do not have a direct experience with these tasks, but what I do is I will ask the contractor to update the progress of these tasks to me once a month in the progress report for official reference, and once a week through email.” QS9

“I just monitor these works from the contractor’s report and report from my staff when they visit the sites or attend meetings.” QS11

“I am involved actively in all parts of the project (all stages). But I am not involved much in site activities. I usually ask my manager or their subordinates to attend any site activities... I just monitor these works from the contractor’s report and report from my staff when they visit the sites or attend meetings.” QS12

“I don’t have much experience in contractual management and resource procurement since most of the work is prepared by the contractors and site engineers. But when I am at site, I regularly conduct meetings with other consultants.” QS15

“And the last stage (construction management and resource procurement stage) is usually done by the contractor and not the XYZ. We are only given the report by them, and before that, the report is checked by the consultant as the consultant will be the one doing the progress visit, discussion, and monitoring the appointed contractor.” QS20

Site planning (item 9-2) and resource determination, scheduling and purchasing (item 9-5) were the least activities done by the quantity surveyor during this stage. Often times, the project manager will be responsible for the first three roles (items: 9-1; 9-2; and 9-3). Among all of the roles in the construction management and resource procurement stage, ‘liaison with employers, consultants or statutory bodies (item 9-4)’ was the role of quantity surveyors that has been mostly practiced. It can be concluded that quantity surveyors who work in the private contracting firms have frequent high involvement in the roles in this stage.

6.3 Theme 2 – Motivation of quantity surveyors

Theme 2 was gathered from part 3 of the questionnaire. There were originally nineteen motivation listed before the interviews and after the analysis was done, four new motivation factors were gathered. From the analysis done on the interview transcripts using Nvivo10 software, the number of sources and references of each motivation factors was summarised in table 6.1.

Item 10-1 to 10-19 are the items that were pre-identified and were listed in the questionnaire based on the thorough literature reviews. After the analysis was done on the interview transcripts using the Nvivo10, there were four new items found, namely: job satisfaction (item 10-20); company expansion (item 10-21); to make money for the company (item 10-22); and to complete job (item 10-23). Interestingly, these new items were all mentioned by the same respondent.

Table 6.8: Motivation factors of quantity surveyors

Part	Objective	Item ID	Item	No. of sources	No. of references
3	To investigate the level of impact of motivation factors of quantity surveyors in the construction industry.	10-1	Appreciate challenges in doing task.	19	23
		10-2	Required by job description.	20	22
		10-3	Achieving job promotion.	19	20
		10-4	Achieving progression in career.	19	20
		10-5	Achieving on-the-job training.	17	17
		10-6	Off-the-job training.	16	17
		10-7	Working conditions.	21	23
		10-8	Receiving financial incentives	18	25
		10-9	Receiving non-financial incentives.	15	15
		10-10	Have good relation with colleagues	21	26
		10-11	Receiving good direction and monitoring from superior	19	21
		10-12	Receiving an assignment that is suitable to capability	17	17
		10-13	Receiving a fair time to finish assignment	18	19
		10-14	Company honouring any promises made	15	15
		10-15	Receiving fair pay equivalent to job scope	18	18
		10-16	Have good teamwork	21	25
		10-17	Receiving support from family and friends	19	21
		10-18	Receiving compliments from superior	18	18
		10-19	Having good facilities and resources at work place	19	20
		10-20	Job satisfaction	2	2
		10-21	Company expansion	1	1
		10-22	To make money for the company	1	1
		10-23	To complete the job	1	1

It was also found that the focal motivation factors were good relations with colleagues (item 10-10); good teamwork (item 10-16); and working conditions (item 10-7). This is because they were frequently mentioned as the motivation factors during the interviews.

a. Good relations with colleagues (item 10-10)

In the interviews, the respondents frequently mentioned ‘good relations with colleagues’ to be the best motivation factor. Twenty-one out of the twenty-two respondents considered ‘good relations with colleagues’ to be the motivation factor with highest impact on themselves in their current organisations.

“...relations with colleagues. To me this has a high impact. You need to have friends. You cannot be on your own.” QS1

“I am the only QS in the company. But the administrative staff or junior engineer will help me sometimes to do clerical works and preparing a tender. So I really need to maintain good relationship with them or else I will have to do the QS work on my own.” QS8

“The time is quite flexible here. As I have 3 kids, sometimes, I need the flexibility in time especially during the mornings. My boss is fine if I come in a little bit late. But I usually will leave later if I come in late.” QS15

“Also, it is important to me to have good relationship with my colleagues. We are like one big family in this section.” QS20

“Have good relations with colleagues. Yes. This motivation helps in motivating me to do work but, I still can survive if I do not have colleagues or do not have good relations with my colleagues. It’s just that when we have good relations with colleagues, it will be merrier and more enthusiastic to do work.” QS22

Based on the interviews, several interviewees agreed that it is important to have a good relationship with their colleagues and it can be concluded that good relation with

colleagues is the most important motivation factor for all the quantity surveyors in: all types of the organisations; by different gender; as well as different job positions. Hence, having good relation with colleagues can help to: share opinions; discuss work or personal problems; reduce stress; and lessen demotivation.

b. Good teamwork (item 10-16)

From table 6.8, it can be observed that ‘have good teamwork’ is also considered by the respondents to be another high impact motivational factor. Twenty-one interviewees mentioned it, and two of them asserted:

“Each of the Qs here will handle a project. As for me, I am in charge of projects during the pre-contract stage. I am also given assistance in helping me like: preparing taking-off and producing the BQ. It helps in reducing the risk of overlooking the quantity since the time given to complete one tender is, in my opinion, sometimes not sufficient for the QS. So, thanks to my assistants for their competence.” QS17

“Having good teamwork and loyalty is important. Most of the new quantity surveyor staff come to us, young, inexperienced, and only stay till they get some working experience and a better CV, then they leave. Last year I lost my entire team who assisted me in implementing the project. Every time new graduate staff joins, I have to train them and brief them about the project that I am in charge of.” QS18

Consequently, ‘having a good teamwork’ ranked as second highest motivation factor through quantitative analysis, and this factor is among the leading factors that were frequently cited in the qualitative analysis. Close inspection of the findings from the questionnaire survey and the interviews showed that there are similarities in the impact of motivation factors in individual quantity surveyors. ‘Have good teamwork’ was also the top ranking motivation factor for quantity surveyors in the government agencies and ranked second in private consultancy firms.

In this regards, it is normal for a quantity surveyor to work in a team when he/she is involved in the construction industry. It is an advantage to work in a team with good spirit of teamwork. Oyedele (2009) in his study emphasised the importance of working in harmonious in team. As a result, variations and mistakes can be minimised and competence can be maximised, which will then lead to better job performance when good teamwork exists. Formal briefing session and formal regular meetings among professionals can enhance commitment and job performance (Leung *et al.*, 2008).

c. Working conditions (item 10-7)

It can also be seen from table 6.8 that the motivation factor ‘working conditions’ was frequently mentioned. ‘Working conditions’ was mentioned by twenty-one respondents as the important motivation factor.

“This current working space I have is not that great. Last time when I was lent to another government agency, I was given a room for my own use. There was a sofa there as well.” QS1

“I don’t mind the low wages as long as I am comfortable working in the company.” QS15

Among the nineteen motivation factors listed, working conditions was the focal motivation factor that impacts the quantity surveyors in the construction industry. When these results were imposed onto the results from the interviews, the findings were similar.

‘Working conditions’ was the main factor in both analysis findings from both quantitative and qualitative result and this made it the top motivation factor of the quantity surveyors in job performance. Consequently, efficient working condition, pleasant and comfortable office, clean, good lighting setting and noise control can contribute to job satisfaction and thus, increase the performance of the individual employees to work and this includes quantity surveyors as well (Oyedele, 2009; Teoh *et al.*, 2011). Some quantity surveyors, when interviewed, stated that one of the conducive working condition factors for them is having privacy at workplace by having receiving rooms or cubicles as their workspace.

The second tier of the top motivation factors include: job description; challenges in doing task; support family; good direction and monitoring from superior; good facility; progress in career; and job promotion.

d. Required by job description (item 10-2)

‘Required by job description’ has been among the top motivation factors gathered from the interviews. Twenty out of twenty-two interviewees agreed that job description impacts their performance in doing the job. Therefore, clear and detailed job description is important to most of the quantity surveyors in order to ensure they are doing the prescribed job and do not waste their time doing unnecessary jobs or other employees’ jobs. In this light, some of the quantity surveyors spent their time doing clerical work which can actually be done by technical assistance personnel. Among the interviewees’ comments are:

“I am ok with doing extra work which is unrelated to my main work as long as it is not too much and does not impact my current work.” QS1

“I see many managers trying to find work outside Malaysia. It’s not the money but perhaps the job description. Maybe in other places, the salary is higher and work load is low. They are bored in doing progress payment, measurement etc. anymore, but if you work in the government sector, you can still need to do measurement when needed.” QS3

“If the task is not the assigned task to me, I do mind doing it. I might do the work half-heartedly.” QS6

e. Challenge in doing task (item 10-1)

‘Challenge in doing task’ as shown in table 6.8, was also one of the main motivational factors that has high impact on the respondents. Nineteen interviewees mentioned this factor and three of them asserted:

“In this organisation, the salary does not have that much of an increment. If the post has been held for too long, and become stagnant, it will be boring.”

QS2

“This is only from my experience. For example there is a project (project A) which is a huge project and worth RM1 Billion. However they cut the scope of work to only preparation of the BQ only. This is not motivating at all. And then they pay you by man-hour basis. That will be difficult. So if it is me, if I get a new project and receive a new scope of work that’s challenging to me, I will like it.” QS3

“I really like highly challenging jobs. The more challenge the job, the more I am excited to do it.” QS21

f. Support from family and friends (item 10-17)

It can also be noted from table 6.8 that nineteen out of twenty-two interviewees mentioned that ‘support from family and friends’ was the important motivation factor. One of the interviewees emphasised the importance of having support from the family.

“Although sometimes there are times that require me to travel outside the state, my husband and kids are fine with it. They understand the QS job and responsibility.” QS20

g. Good direction from superior (item 10-11)

Meanwhile, nineteen out of twenty-two interviewees mentioned that having received ‘good direction from superior’ as an important factor of motivation to them. Among the comments are:

“Usually, my boss will just brief the tasks at the beginning of the project. Then, he usually leaves me and the team to do it on our own in our own way as long as the result is as his expectation.” QS14

“Although the superior leaves us on how to accomplish the work, there are regular meetings like once a week to update on the progress of the work.”

QS17

In any organisation, it is important to have the mission and vision for the organisation. This applied to projects. Moreover, it is important to have a direction of the mission and vision from the superior. In this light, good directions from the superior may help lead the employees to achieve the organisation’s target of success. If the employees do not have a good direction, they might probably will not focus and will end up wasting their time doing things that they not sure the purpose of.

h. Good facilities and resources at work place (item 10-19)

Another top motivation factor was ‘good facilities and resources at the work place’ as mentioned by nineteen interviewees. Among the comments was from interviewee QS9 who is a senior quantity surveyors in the private consultancy firm. The interviewee agreed that:

“We still use traditional methods when it comes to taking off and preparation of the tender documents. So it is really important that all the machines like the photocopy machine, scanner, and desktop are functioning and in good condition and paper is available at all times.” QS9

The third highest motivation factor from the analysis of the questionnaire result was ‘having good facilities and resources at work place’. When these results were imposed onto the results from the interviews, the findings are quite similar. In this regard, Good facilities are not only limited to stationeries, photocopy machine, fax machine, and computer, but also include updated relevant software and reasonable high speed internet connection. According to interviewees QS9 and QS11 (principal of private consultancy firm), some of the quantity surveyors in their organisation still use traditional method when doing taking off and preparation of tender documents, and some of the quantity surveyors prefer to use relevant quantity surveying software like: BillSoft; Masterbill; and AutoCAD; to aid them with their works. This is in line with Oyedele (2009) who claims that construction professionals favour tangible resources like relevant software and

computer. Hence, quantity surveying software aid is really helpful especially towards private consultancy firms because they are the one who prepares tender documents and contract documents.

i. Progress in career (item 10-4)

‘Progress in career’ as shown in table 6.8, is one of the top motivational factors that have a high impact on the respondents. Employees who progress in their career indicate that they are productive employees, who are excellent in carrying their tasks. Therefore, it is important that the employers or management team recognise their efforts. Nineteen interviewees mentioned this and two of them stated that:

“Well, of course when you are in a higher level, you will be more motivated to work other than just the money.” QS1

“In this organisation, the QSs are divided into departments such as, the infrastructure department and each department has sections like for pre-contract and post contract. QSs are put under this section normally for 1 to 2 years before rotating to another section. From there, I think each QS will experience all roles of the QS. But it takes time though.” QS20

j. Job promotion (item 10-3)

Nineteen out of twenty-two interviewees mentioned that ‘job promotion’ was one of the motivation factors that highly impact them. QS2, a quantity surveyor from the government sector was among the interviewees that commented on this aspect.

“It is not a norm for us here to be promoted unless to replace a retired employee. But usually it is really competitive since the system here is depending on how long you work. Although you have been working for 5 or 6 years, it is still not possible for you to be promoted. There are hundreds of quantity surveyors in this organisation queuing to go to the next grade.” QS2

Among the motivation factors listed in table 6.8, there were four new motivation factors identified through the process analysing the interview transcripts while categorising the theme using the nodes technique, namely: job satisfaction; company to expansion; to make money for the company; and finally, to complete the job.

6.3.1 New motivation factors found through content analysis on the interview transcripts

k. Job satisfaction (item 10-20)

One of the interviewees mentioned that one of his motivation factors is job satisfaction as shown in his comment below. The job satisfaction to him is by robustly knowing every detail of projects and the development or changes of the projects he handled.

“When being in charge of projects from the beginning until the end, it gives satisfaction to me because I know every detail of the project that I handle.”
QS14

l. Company to expand (item 10-21)

Another new node found during the analysis process is company future expansion, as mentioned by interviewee QS3, who is the principal of a private consultancy firm. The bigger growth of the company escalated his motivation to be more successful in the quantity surveying profession.

“Of course as an owner, you want your company to grow big.” QS3

m. To generate money for the company and to complete the job awarded (item 10-22 & item 10-23)

Finally, the two newly found nodes are: to generate money for the company; and to complete the job assigned. These motivation factors are solely contributed by interviewee QS3, who is the principal of a private consultancy firm. Completing the job assigned may contribute in building a good reputation of the firm and hence, help the company in

getting more jobs in the future, and will generate money for the company. This is a good motivation factor, especially to the owner of an organisation.

“As the owner, the main motivation is to increase profit of the company. Then get the job done.” QS3

6.4 Theme 3 – Roles of employers in the motivation of the quantity surveyors

Table 6.9 shows the summary of quantity surveyors motivation factors based on the analysis done on the interview transcripts. Among the top roles of the employers in motivating the employee quantity surveyors, are : provide conducive working conditions (11-7); provide on-the job-training (11-5); superior has good leadership skills (11-11); good relations with workers (11-10); assigning tasks that suits the capability of the employee (11-12); allocating reasonable time frame to complete assignment (11-13); superior assigning employee to good team (11-16); giving fair pay (11-15); and providing good facilities and resources at the work place (11-19).

Table 6.9: Employers’ role in motivating the quantity surveyors

Part	Objective	Item ID	Item	No. of sources	No. of references
4	To ascertain the extent of the role of employers in the motivation of quantity surveyors and to determine their level of involvement in the motivation of quantity surveyors in the construction industry.	11-1	Providing appropriate tasks to employees according to their ability.	16	17
		11-2	Providing accurate job description to employees.	17	19
		11-3	Granting job promotion to performing employees.	17	17
		11-4	Awarding employees who progresses in career.	17	17
		11-5	Providing on-the-job training.	19	20
		11-6	Providing off-the-job training.	16	19
		11-7	Providing conducive working conditions.	20	21
		11-8	Financial incentives.	18	23
		11-9	Non-financial incentives.	15	18

		11-10	Achieving good relations with other workers.	18	19
		11-11	Superior has good leadership skills.	18	22
		11-12	Assigning tasks that are suitable to the capability of the worker.	18	19
		11-13	Allocating a reasonable time frame to complete assignment.	18	19
		11-14	Company honouring promises made.	15	15
		11-15	Giving fair pay equivalent to job scope.	17	17
		11-16	Assigned to a good team and having good teamwork.	18	19
		11-17	Superior provides support to workers.	17	21
		11-18	Receiving complements and appreciation from superiors.	17	18
		11-19	Providing good facilities and resources at work place.	18	9

a. Providing conducive working conditions (item 11-7)

From table 6.9, it can be seen that ‘provide conducive working conditions’ was the top employer’s role in the motivation of the employee quantity surveyors. Twenty out of twenty-two interviewees agreed with this statement. One of the comments was from interviewee QS4.

“I stayed long in this company mainly due to the environment and relationship with the boss, and benefits that they give, including salary etc. Previously, I worked in another company, the environment was great, but I was not compatible with the boss. Here, the boss gives the freedom to us on how we want to do the job, as long as there is no serious complaint from the clients. The boss gives the trust to the staff to handle the job on our own.” QS4

Referring to item 10-7 in the previous chapter, having a conducive working condition was one of the top motivation factors for the employee quantity surveyors. This

motivation was also the top motivation factors employers provided to their quantity surveyors. This shows that it is a highly important motivation factor since it is also noticed by the employers and the employers are highly playing their role in providing this motivation factor in the organisation.

b. Provide on-the-job training (item 11-5)

It can also be noted from table 6.9 that nineteen out of twenty-two interviewees mentioned the employer of the organisation providing training opportunities. Interviewee QS1 commented that on-the-job training or in-house training as one of the motivation practices that are easily and widely available in his organisation.

“The employer provides in-house and off-house trainings. We can request to attend any training and sometimes it is automatic when the training points are not enough. We are required to attend a minimum of seven (7) days of training sessions.” QS1

Some of the examples of on-the-job trainings are: the usage of the quantity surveying software used in the organisation for new staffs; introduction and explanation of new systems or enhancement of any system in the organisation; and knowledge sharing with colleagues from employers or employees that went to off-the-job training. In this light, on-the-job trainings are cheaper than off-the-job training and it provides more relaxed nature of learning, since the one that trains the employees are the colleagues.

c. Offering financial incentives (item 11-8)

Another top role of the employers in motivating the employee quantity surveyors is ‘offering financial incentives’, which was agreed by fifteen out of twenty-two interviewees. These financial incentives are in various forms which include: salary increment; annual bonus; and special tokens. The special token refers to gifts such as certain amount of money given as appreciation or sometimes, in the form of percentage of a secured project’s amount.

“Bonus is depending on the national budget and usually it is once a year. Money is also received during Eid celebration, and that is not a bonus but special gift. The level (the amount given) is a reasonable level.” QS1

“The staffs are often unmotivated. Usually what we do is give the staff a bonus or finder’s fees if they secure a project for the company. We also give an Overtime allowance claim for working overtime. That’s normal in QS firms. If you don’t have projects how can you sustain the staffs.” QS3

“We sometimes receive bonus but sometimes we don’t.” QS7

“As for me, I receive my reward in the form of percentage from the project won, and that is one of the reasons why I joined the contractor’s company even though registered Qs are not that important in the contractor’s company.” QS8

“Every time the company is rewarded with new projects, the team will be given some token like pocket money of MYR300 to MYR500 each to the staff. The staff seems happy when they receive the reward.” QS8

“The management staffs have been offered incentives in the form of percentage when securing projects for the company.” QS9

“We receive annual increments without fail. And last year, we received a 1.5 month bonus. That is good since now the economy is very bad and some contractor companies have suffered because of this. Every cost in this country has increased. Recently, the price of petrol increased few times in a year, and the tolls increased ridiculously.” QS10

d. Superior has good leadership skills (item 11-11)

Eighteen out of twenty-two interviewees mentioned ‘superior has good leadership skills’ as one of the top motivation practices employed by the employers in their organisations.

Interviewees QS1, QS3 and QS9 were among the eighteen interviewees that commented and agreed on this.

“They help in solving the problem. Usually it is one to one. The department of works operates like this. When I cannot make a decision, I have to refer to my superior. And then, if the superior above me also cannot make a decision, they will refer to their superior which is my super superior.” QS1

“Since my firm is not that big, the most important role I play as an employer is awarding the employees who progresses in their career, and show good leadership skills.” QS3

“We have regular discussions among the top management team to discuss and update on everything regarding the projects, office, and the future of the company... You tell them how you do it previously, you show them the way then they will be more motivated and the best thing is to lead by example. You don't go and tell people to do this and that while you yourself, are not doing what you want them to do.” QS9

There are many types of leadership and each employer may have different forms of leadership style and skills. Therefore, the employer should know which leadership style that suits his company as applying the suitable leadership skills may help in enhancing the motivation level of the employees towards job improvement. From the interviews, among the leadership skills frequently provided by the employers is having a regular discussion or meeting with the employees.

e. Assigning tasks that suits the capability of employee (item 11-12)

It can also be noted from table 6.9 that eighteen out of twenty-two interviewees mentioned ‘assigning tasks that suits the capability of employee’ as their top motivation factor. Two of the interviewees emphasised the roles of their employers in assigning the task to them. Interviewee QS4 (senior quantity surveyor of private consultancy firm) mentioned that his employer distributes the tasks to the employees in accordance to their

education level, meanwhile, interviewee QS7 (quantity surveyor of government agency) mentioned that her employer had assigned tasks that were beyond her capability.

“The employer does not assign specifically a job to each employee due to their ability. What they do usually is that, they position the job scope based on the employee’s qualification. For example, for diploma workers, the job is like this. Degree holders for their first and second year, the work is like this. No job description is given.” QS4

“My boss has a high expectation towards me. He sometimes assigns me with tasks that are beyond my capability as a quantity surveyor.” QS7

f. Superior assigning employee to good team (item 11-16)

Another top employer’s role is ‘superior assigning employee to good team’ as mentioned by eighteen interviewees. From the interviews, good team means a team with helpful member and communicate well. In this light, good team can be formed by having a mixed of members with different working experience. For instance, some might have pre-contract or post-contract experiences, as well as different period of working experiences, such as the mixture of senior quantity surveyors and junior quantity surveyors in a team.

g. Good relations with workers (item 11-10)

From table 6.9, it can be seen that ‘good relations with workers’ is also among the top employer’s role in the motivation of the employee quantity surveyors. Eighteen out of twenty-two interviewees agreed with this. Among the two comments were from interviewee QS4 who has good relations with his employers, and QS9 who shared that he has good relation with his subordinates. From the interviews, it can be concluded that superiors that have friendly relationship with the employers help the employers to feel comfortable, relaxed and create a sense of belonging which motivate them to stay longer in the organisation. Furthermore, the employees tend to think that the organisations are like their babies and they feel like they should protect and grow together with the organisations.

“My boss even asked me to consider her like an aunty. She’s 62 years old. The other boss is 63 years old. They often share information about the company’s financial status with me. Usually the management team doesn’t share confidential information with other staffs.” QS4

“As senior QS, the best way to motivate my junior colleagues is by sharing my previous job experiences. Therefore, they could know how things work out. Some of the QS did not know the best or good way to do their job.” QS9

h. Allocating reasonable time frame to complete assignment (item 11-13)

Eighteen out of twenty-two interviewees said that ‘allocating reasonable time frame to complete assignment’ is one of the motivation factors that have a high impact on them. Interviewee QS11 was among the interviewee that agreed on this.

“I always give freedom to my staff to handle the job. I give flexibility and freedom to them. But the work must be completed before the deadline.” QS11

In most private consultancy firms, quantity surveyors are known to be the last person to complete the task especially during pre-contract stage which is usually have tight deadline. If the designers complete their drawing late, usually, the time allocated for the quantity surveyors to finish their task will be shortened but projects’ deadline will not be extended. Having this kind of situations often leads to stress while doing work and this might lead to mistakes in preparing documents, and demotivation. Therefore, it is important for the employer to ensure that any given assignment have reasonable completion time.

i. Good facilities and resources at work place (item 11-19)

Another important employer’s role is ‘good facilities and resources at work place’, as mentioned by eighteen interviewees. This is also in line with the impact of motivation factors 10-19 of the part 3 in previous section, where good facilities and resources at work place was one of the top motivation factors that impact the quantity surveyors. Among the

eighteen comments, one interesting comment was from interviewee QS11, the principal of the private consultancy firm, who stated that:

“We also provide the staff with a personal desktop to each of them and we have an extra 3 laptops for the use of the staff when they are required to attend site meetings or meetings at the clients’ offices. The entire desktops are equipped with: BillSoft; Masterbill; and AutoCAD; software if they prefer to use them as most of the staff prefer to use manual and traditional ways using Microsoft Excel after doing the taking off work.” QS11

6.5 Theme 4 – Motivational practices of current organisations

Meanwhile, theme 4 consisted of 2 parts which comprised of parts 5 and 6 of the questionnaire. Each part consisted of two questions. Part 5 explored the challenge faced by the employer in implementing the current motivational practices, as well as the effectiveness of those motivational practices. Meanwhile, part 6 investigated the impact and effectiveness of current motivational practices on individual quantity surveyors.

6.5.1 Challenge of current motivational practices employed by organisations in motivating quantity surveyors

Table 6.10 shows the summary of challenges in implementing current motivational practices on quantity surveyors from the analysis done on the interview transcripts. According to the interview, ‘provide fairness in organisational practices’ and ‘provide material and physical provisions’ were the most challenging motivation practices to be implemented in the organisations, followed by: ‘prepare appropriate nature of work’; ‘provide good relations amongst staff and management team’; and ‘provide growth and advancement opportunities’.

Table 6.10: Challenge in implementing the current motivational practices on quantity surveyors

Part	Objective	Item ID	Item	No. of sources	No. of references
5	To explore level of challenge of current motivational practices employed by organisations in motivating quantity surveyors	12-1	Provide growth and advancement opportunities.	15	17
		12-2	Prepare appropriate nature of work.	17	20
		12-3	Provide material and physical provisions.	18	19
		12-4	Provide good relations amongst staff and management team.	17	18
		12-5	Provide fairness in organisational practices.	18	21

a. Provide fairness in organisational practices

Eighteen out of twenty-two interviewees informed that ‘provide fairness in organisational practices’ is one of the motivation factors that is the most challenging to be implemented in organisations with quantity surveyors. Interviewee QS21 who works as a senior quantity surveyor in one of the government agencies commented that there are some situations when quantity surveyors are selective on the assignment that has been assigned to them to the extent where they would request to not accept the task assigned to them and give excuses.

“Quantity surveyor was assigned to do an evaluation of tender but he did not want to do the task assigned with the excuse that he did not know how to do the evaluation of tender. So to me, the best thing to do is to push him to do the task. It is not fair if he does not want to do the task since that is also the scope of a quantity surveyors’ job and everybody does that as well and the salary received is the same like other quantity surveyors.” QS21

According to interviewee QS10, a senior quantity surveyor from the private contracting firm, on the other hand, the employers face challenges with the current motivation practice. However, they are still manageable. In this light, it might be difficult to

categorise these employees to give out remuneration on certain things since it is not fair to generalise due to the different scope of each employees' responsibility.

“To provide fairness to every employee is challenging, but not to the extent that it cannot be managed. For example, the company provides overtime claims for technical staffs, but not the managerial staffs. But managerial staff like me receives high pay and is seldom required to stay back late.” QS10

Meanwhile, one of the principal from the private consultancy firm, interviewee QS3, commented that nowadays, the distribution or awarding of projects to private consultancy firms is not quite fair. It can be concluded that it is difficult for private organisations to secure project nowadays and this makes it more difficult for the employer to implement the motivational practices in the organisation, particularly due to budget constraint.

“When there is no spending from the government and private sector part, especially during economic downturn. No project coming in and projects dished out from both sectors and now with mega PFI, smart partnership and so on, the projects given to one party only. Before this, projects are segregated part by part then dished out to the other consultants.” QS3

b. Provide material and physical provisions

Another motivational practice which is highly challenging to be implemented in their organisations was ‘provide material and physical provisions’, with eighteen out of twenty-two interviewees agreeing to this statement. Most of these challenges are due to the awarding of financial incentives like salary increment towards job performance. Among the interviewees that agreed that this motivational practice is very challenging to employ in the organisation were interviewees: QS1; QS21; and QS22; who are all quantity surveyors in government agencies. Most of the interviewees commented that it is not fair to reward employees with the current practice where every staff will be given a salary increment at the same rate.

“Yes it is challenging as he wants to be fair towards everyone. Therefore the effectiveness of that motivation is enjoyed by those who do the bare minimum. Unfortunately it is not effective against those who work much harder.” QS22

“The government cannot do anything to control this issue like for example the issue of giving salary and attitude of workers towards their performance.” QS1

“It would be nice to have fairness especially in terms or rewards and salary. It will help motivate employees to do their work.” QS21

c. Prepare appropriate nature of work

‘Prepare appropriate nature of work’ was one of the motivation practices that is very challenging to be implemented in their organisations, with seventeen out of twenty-two interviewees agreeing to this. Among the seventeen interviewees, interviewee QS6 commented that:

“Maybe, fairness in organisation cannot be implemented because of the government policy. Sometimes there will be some units that handle many projects, but very few quantity surveyors. How can we hire more quantity surveyors if there is no budget allocated for hiring new people? But if this motivational practice is really being implemented, it will be a success and the project developing can be handled smoothly.” QS6

In this light, in the government sector, there are many policies involved when dealing with human resources. There is even a separate, centralised agency that handles employees’ matters for all the government agencies. Sometimes, the policy constrains the success of the implementation of motivational practices at some government agencies because it is usually being generalised to all the government agencies, departments and sections.

d. Provide good relations amongst staff and management team

From table 6.10, seventeen out of twenty-two interviewees informed that they have tough challenge in the implementation of ‘provide good relations amongst staff and management team’ motivational practices. Often times, the constraint or challenges in implementing the motivational practice are related to financial issue, especially in the government sectors where there are no allocation of budget for entertainment and social activities unless it is a formal activity that involved the leader of the government agency or the ministers.

“We don't have budget allocation for entertainment like private consultants or contractors, so it is quite difficult for us to manage or plan any social events.”
QS20

e. Provide growth and advancement opportunities

Fifteen out of twenty-two interviewees said that ‘provide growth and advancement opportunities’ was one of the motivation practices that is the most challenging to be implemented in organisations with quantity surveyors. Interviewee QS22 was among the interviewees who agreed with this and had given a lengthy explanation on how this particular motivational practice is a challenge to be employed when it involves the valuation of the employees towards promotion of their grade, and salary increment. For instance, the evaluation of the employees in the government agencies involves many layers; one level involved the evaluation by the superior within the section. Then, the evaluation will be made by other superior from other section. Most of the times, the evaluator does not know the person he evaluates personally.

“Yes. For example, firstly, we have to go through the expertise itself which is the organisation’s branch itself and also the HR department. So it is already two levels, and there is another higher level government agency where its role is not just to endorse. There are two groups of different level of agency of the government that evaluate and nominate the employees to the salary and grade increment, but as there are too many employee quantity surveyors under the government agencies all over Malaysia, is it possible for these two agencies to

recognise all the employees including employees from Sabah and Sarawak? Will the evaluator know how those in Sabah and Sarawak do their work? There is no site visit to evaluate the staff. Neither are there any interviews. Unless they sit with the new staff for three months, they wouldn't know how the staffs do the work. So the only thing they can do right now is based on their yearly assessment. This is also very subjective based on the different grades given by different bosses who have different yard sticks. So the evaluator only looks at those with high marks. Therefore that person can be promoted whilst those with lower marks are not. This system is based on our superiors' recommendation which we feel is unfair." QS22

6.5.2 Effectiveness of current motivational practices employed by organisations in motivating quantity surveyors

Table 6.11 shows the summary of effectiveness of current motivational practices employed in the current organisations from the analysis done on the interview transcripts.

Table 6.11: Effectiveness in implementing the current motivational practices

Part	Objective	Item ID	Item	No. of sources	No. of references
5	To explore level of effectiveness of current motivational practices employed by organisations in motivating quantity surveyors	13-1	Provide growth and advancement opportunities.	17	21
		13-2	Prepare appropriate nature of work.	20	22
		13-3	Provide material and physical provisions.	18	20
		13-4	Provide good relations amongst staff and management team.	21	24
		13-5	Provide fairness in organisational practices.	16	18

a. Provide good relations amongst staff and management team

'Provide good relations amongst staff and management team' was the top motivational practice with high effectiveness, with twenty-one out of twenty-two interviewees agreeing to it.

“In my opinion this is effective towards all staff. My boss is good and listens to his staff. He gives a general task and allows the staff the freedom to complete the task however necessary so long as the end result is up to his satisfaction. My boss is also very supportive of his staff. For example, when staffs require items from another department on the go ahead from the superiors, he himself will deal with these other parties to ease the staff in executing their work. Sometimes he treats us all to a meal. That is why I am not under pressure working here during submission of tenders and project estimation. The boss is even lenient if we have to come late to work for personal reasons, so long as there is no urgent work at the office.” QS7

Even though the interviewees agreed with this motivational practice for being highly effective, there were also some complaints on how the things should be better.

“For ‘achieving good relations with other workers’, I had an experience while I’m in this organisation where I have a boss that cannot mix well with others. And so the other employees did their job half-heartedly and not diligently.” QS21

“The boss is problematic. This is because many other J44 staffs have requested to be transferred to different departments. Handing over of jobs are also unsmooth. For example, an employee was leaving in only two more days and there was still no proper job handover. So the replacing staffs have to find information on their own of the projects that they have to take over.” QS22

From the interviews regarding this particular aspect of motivational practice, it can be concluded that human relation is important to most the quantity surveyors. Inherently, a good relation usually will help in boosting the comfort level of the employees to work in the organisation, and by having a comfortable vibe, the motivation level of the employer to perform well can be boosted.

b. Prepare appropriate nature of work

Twenty out of twenty-two interviewees said that ‘prepare appropriate nature of work’ was one of the motivation factors that highly impacts them. Almost all the interviewees mentioned that this motivational practice is extremely effective in their organisations. It is normal for human to prefer doing a task that he/she is familiar with because he/she understands the task more. Similarly, it is normal for a quantity surveyor to feel more motivated to do the works which are within his or her job scope and suits with their education qualification or working experiences.

c. Provide material and physical provisions

The next factor is ‘provide material and physical provisions’. Eighteen out of twenty-two interviewees stated that this motivation practice is highly effective to the organisations and the employees. This can be confirmed with the comments from interviewees QS6 and QS7, who are both the quantity surveyors from the government sector.

“Even though the government is full of bureaucracy, this eases things. The financial rewards are based on the allocated budget. This is effective to me.”
QS6

“My boss is very supportive towards the staffs. When the staffs want some materials from other departments and seeking the permission from our managerial team, he himself will go get the material and meet the managerial team personnel so that the staff can execute their work smoothly.” QS7

d. Provide growth and advancement opportunities

From table 6.11, seventeen out of twenty-two interviewees specified ‘provide growth and advancement opportunities’ is highly effective to the organisations and employees when implemented in their organisation, as supported by one of the interviewees quoted below:

“It is not difficult or challenging for DBKL to provide training but it is very effective. Let’s say DBKL sends their staff for an off the job training, when the

staff returns, it is very clear the effect the training has on the staff. For example when ISO staff are sent for a 4 day off the job training, when they return all their ISO documents are completed accordingly. Because it is DBKL who creates the guidelines and they themselves implement it, so it is easy to provide training.” QS6

However, there were some negative comments on the motivational practice being a highly effective motivation practice in their organisation. Three of the comments were from: QS1; QS2; and QS22; and they are all from the government sectors.

“Trainings and motivational courses are effective but temporary. It lasts for 1 or 2 days. They feel motivated when given the motivation in the hall but, then it disappears slowly.” QS1

“I think it is like a waste of time. They go to the training but nothing has really changed. There is no continuity.” QS2

e. Provide fairness in organisational practices

From table 6.11, sixteen out of twenty-two interviewees stated that ‘provide fairness in organisational practices’ contributed to high effectiveness of the organisations and employees when implemented in their organisation. This can be confirmed with an in depth comment from interviewees QS22 in regards to APC or ‘Anugerah Pekerja Cemerlang’ (Best Employee’s Award) which is granted to the best employee annually during the organisation’s annual dinner celebration.

“Like the APC award that is supposed to be for those who have worked extremely well. However, in a big organisation like ours, it has become like a rotation where priority is given to those who have served the company longer. Or where last year one person has received it so this year it is somebody else’s turn.” QS22.

“One more thing is when working with the Government, there is no concept of performance bonus. Everyone’s is the same. Increment will be when there is

an SKT and your marks have no rating. In the private sector it can be seen that some people get a 10 month bonus whereas others only get 3. So this shows whether you have performed or not. This can be achieved from the APC. However here (the Government), everyone is the same when it comes to increment and bonus. Also, the purpose of the APC is to award excellent staff. But with big organisations they will base it on rotation. So the role is there but unfortunately the objective is not achieved.”QS22

6.5.3 Impact of current motivational practices on individual quantity surveyors

Table 6.12 shows the summary of the impacts of current motivational practices on individual quantity surveyors from the analysis done on the interview transcripts. ‘Receive material and physical provisions’ and ‘prepare appropriate nature of work’ were the top motivational practices with high impact. Next was to ‘have good relations amongst staffs and management team’ and the last two motivational practices were: receive growth and advancement opportunities; and receive fairness in organisational practices.

Table 6.12: Impact of the current motivational practices

Part	Objective	Item ID	Item	No. of sources	No. of references
6	To investigate the level of impact of current motivational practices on individual quantity surveyors.	14-1	Receive growth and advancement opportunities.	16	16
		14-2	Prepare appropriate nature of work.	20	21
		14-3	Receive material and physical provisions.	20	23
		14-4	Have good relations amongst staff and management team.	19	20
		14-5	Receive fairness in organisational practices.	16	16

a. Receive material and physical provisions (item 14-3)

Twenty out of twenty-two interviewees informed that ‘receive material and physical provisions’ is the top motivation practice which has high impact on individuals.

Interviewee QS7 are among the interviewees that commented that the current motivation practice at his organisation gives satisfaction to them.

“Bonus is only once a year and even that it is only half month to one month of salary. I work under the federal government. Every year there is an increment for government servants. 25 days of annual leave and 14 days of medical leave. In the private sector it is only 14 days of annual leave and 7 days of medical leave. (For government) the maternity leave is 3 months. For the private sector it is only 2 months. Then I can also apply for a 5 year non-paid leave after the maternity leave to care for my child. So there are lots of benefits of working in the government sector. We can even get a GL (Guarantee Letter) if say we need to have surgery at any government hospital, and we need not pay.” QS7

Meanwhile, interviewees: QS2; QS4; and QS22; are among the interviewees that had the same opinions with the previous interviewees but added some points that the practices can be improved to a better level.

“There is nothing special in terms of non-financial incentive and hospital facility is one of the examples. We are given the third class ward room. First class is given to paying patients. Previously it also applied to us. In terms of housing loan, there is no difference with private companies. We still have to pay 4% interest but at a flat rate.” QS2

“Sometimes even the machines such as the photocopier and others breakdown and demotivates us from doing our work.” QS4.

“Like us for example, our team was formed from zero and with nothing. We obtained facilities from the contracts and received some from the preliminaries part of the contract. For example the computer, you cannot expect the contractor to supply thirty units of them. One more thing is that for newly created departments, the IT support is only provided for those at the headquarters. Those at the site are left to fend for their own. The problem is with the HR planning. Maybe they overlook things.” QS22

It can be summarised that in terms of material and physical provisions, although this motivational practice do not motivate the employees, but its absence can make the employees demotivated to do their work.

b. Prepare appropriate nature of work (item 14-2)

This particular motivational practice has perceived to have positive impacts by twenty interviewees. Hence, having a suitable nature of work may help the quantity surveyors to be more focused on their specific tasks as quantity surveyors.

c. Have good relations amongst staff and management team (item 14-4)

Having good relations with colleagues and management team are important to most of the quantity surveyors. Nineteen interviewees agreed that being in a caring and friendly environment makes them happy to work in the organisation and makes them wants to stay longer and help the organisation grow bigger. Most of them agreed that this particular motivational practice contributes greatly to their motivation in performing well in their job.

d. Receive growth and advancement opportunities (item 14-1)

Sixteen out of twenty-two interviewees agreed that growth and advancement opportunities such as experiencing both on-the-job and off-the-job trainings motivate them to do well in their job. However, the quantity surveyors in the government sectors commented that it is very difficult for them to experience growth and advancement in their career because there are too many quantity surveyors in the sector.

e. Receive fairness in organisational practices (item 14-5)

Finally, similar to previous motivational practices, sixteen out of twenty-two interviewees stated that receiving fairness in their organisation has impacted them greatly. This was mostly commented by the quantity surveyors who work in the government sector, where, in most of the interviewees' opinion, most of the current motivational practices are not

fair since the government generalises the practices to all personnel, regardless of their effort in performing their work.

6.5.4 Effectiveness of current motivational practices on individual quantity surveyors

The effectiveness of current motivational practices on individuals are summarised in table 6.13. In this light, ‘Prepare appropriate nature of work’ was the most effective motivation practice on individual quantity surveyors.

Table 6.13: Effectiveness of the current motivational practices on individuals by types of organisations

Part	Objective	Item ID	Item	No. of sources	No. of references
6	To investigate the level of effectiveness of current motivational practices on individual quantity surveyors.	15-1	Receive growth and advancement opportunity.	18	19
		15-2	Prepare appropriate nature of work.	20	21
		15-3	Receive material and physical provisions.	17	18
		15-4	Have good relation amongst staff and management team.	19	23
		15-5	Receive fairness in organisational practices.	17	20

a. Prepare appropriate nature of work (item 15-2)

Twenty out of twenty-two interviewees informed that ‘prepare appropriate nature of work’ is truly effective for them. However interviewee QS21, a senior quantity surveyor from the government sector, made a comment on one of the current available methods that is widely implemented, but, is actually neglected by many individual quantity surveyors.

“Yes there is a ‘Table File’ but people do not use it. That is the problem.”
QS21

b. Have good relations amongst staff and management team (item 15-4)

From table 6.13, nineteen out of twenty-two interviewees stated that ‘have good relations amongst staff and management team’ contribute to high effectiveness on individuals. The interviewees agreed that having a good relationship with colleagues and employers makes them feel like they are in one family and makes them feel comfortable to work in the organisation.

However, interviewee QS22 commented that his organisation does not provide him with this incentive, and the staffs initiate similar incentives by themselves. His comment was:

“The family day was conducted on the staffs’ initiative and not by the employer. The staff collected money from themselves from the beginning to the end of the year to organise the family day.” QS22

c. Receive growth and advancement opportunities (item 15-1)

From table 6.13, eighteen out of twenty-two interviewees commented that ‘receive growth and advancement opportunities’ is a highly effective motivating factor. Two of the interviewees supported the statement as shown:

“The current motivational practices here have a very high impact and effectiveness on me as an individual and it’s not because I am the owner. But I don’t stress much on the staff and I provide everything that is more than the necessity borderline.” QS11

“We have APC award which is supposed to be for those who have worked extremely well.” QS22

d. Receive fairness in organisational practices (item 15-5)

‘Receive fairness in organisational practices’ was the motivational practice with the least effectiveness. Below are the comments from two of the interviewees.

“Receive fair pay. This motivation factor is not applicable in the government. We here implement APC system to get the salary and grade raise. APC is a system where there is an annual exam that can be seated by anyone who is interested to take it within the government agencies.” QS21

“There are job challenges but it is not very effective. Like I said before, when it comes to job promotion, since there are so many employees, there is no benchmark to show if one is good at the job or not, unless it is like some of the outstanding Qs who hold 2 degrees etc. What indicator can be used to identify whether an employee is truly excellent at his job.” QS22

e. Receive material and physical provisions (item 15-3)

Lastly, for ‘provide material and physical provisions’, seventeen out of twenty-two interviewees stated that this motivation practice is highly effective both to the organisation and the employees. Most of the interviewees agreed that material and physical provisions help them to work smoothly, especially having materials like aiding machines, software, and stationeries.

6.6 Summary

This section discussed the findings from the interviews conducted for the purpose of data collection of this research. Four main themes were discovered and the data from the interviews were analysed accordingly as briefly described in this section. The richness of the qualitative data assisted the researcher in gaining a fuller perspective on the understanding of motivation in the Malaysian construction industry, and how it aids the performance of individuals while working. The researcher was also able to capture the specific characteristics of the Malaysian construction industry and the view of construction professionals, specifically quantity surveyors on their roles during the construction development.

In many cases, the findings obtained in the qualitative data analysis mirrored the findings from the quantitative data analysis. This shows that the data obtained in both methods are valid, and recommendation can be made from these findings to determine the best ways to

motivate quantity surveyors in the Malaysian construction industry, towards improved job performance. The next section will present the discussion and recommendation in the final part of this research.

7.0 DISCUSSION AND DEVELOPMENT OF CONCEPTUAL FRAMEWORK

7.1 Introduction

This chapter is the continuation of chapter 5 and chapter 6. In this chapter, extensive discussion on the findings of both the quantitative and qualitative results will be presented. The results obtained from the analysis and related literature is also discussed in this chapter. Development of the conceptual framework is discussed in detail in the later section of this chapter.

7.2 Discussion

The discussions will be grouped into four themes. These themes were initially identified during the early stage of the data collection and used in the questionnaires. The questionnaire has six parts namely: general information; roles of quantity surveyors; motivation factors of quantity surveyors; roles of employers in the motivation of quantity surveyors; motivational practices by employers; and motivational practices on individual quantity surveyors. Later during the analysis of the findings, the researcher decided to group part 5 and 6 of the questionnaire into one theme, which is the motivational practice in an organisation since these themes are of similar nature.

7.2.1 Theme 1: The roles of the quantity surveyors

Theme 1 focuses on the roles of quantity surveyors at four different stages in the construction development. The researcher chose to identify the different roles of quantity surveyors according to the different types of organisations, namely: the government agencies; private consultancy firms, and private contracting firms. This can be referred to in chapter 3.6. Each of the organisations undertakes similar quantity surveying roles such as: preparation of tender and contract documents; and preparation of variation of works; even though the quantity surveyors are in different organisations. However there are also roles that are being practiced more at certain organisations as compared to other organisations such as: site planning; and resource management; which are practiced more by private contracting firms.

According to RIBA Plan of Works 2013 (RIBA, 2013), the roles of quantity surveyors can be seen in eight different stages of the construction development, however, it is identified that there are similarities in the roles and the description of the stages to the stages outlined by the RISM (2014). Meanwhile, Ashworth and Hogg (2007) categorised the roles of quantity surveyors according to the traditional roles and developed roles. The difference between these two categories of roles is that, traditional roles are the roles that have been the original roles of quantity surveyors since the beginning of the profession which started as early as the seventeenth century; meanwhile developed roles are the roles that have evolved since 1990 until now. The evolved roles of quantity surveyors are more focused on managerial issues and more general as compared to traditional roles of quantity surveyors. The former roles are developed to suit the competitive environment of the construction industry.

The summary of quantity surveyors' roles according to the different stages of the construction: feasibility stage; pre-contract stage; post-contract stage; and construction management and resource procurement stage; and in accordance to traditional and developed roles, are summarised in table 7.1.

a. Feasibility stage

Overall, contractual and tendering arrangements (early advice) (item 6-10) is considered the top role of quantity surveyors (table 7.1). The results from the quantitative test are also supported by the results from the qualitative analysis from the interviews (table 7.2), and therefore align with Male (1990). It also shows that the traditional roles of quantity surveyors are still important and valid until now.

In table 7.1, during the feasibility stage, it can be seen that among all the quantity surveyors' roles, four of the roles are developed roles. As previously mentioned, developed roles are the quantity surveyors' roles that evolved since 1990 until now, and these roles are more focused on managerial issues and more general as compared to traditional roles of quantity surveyors, in order to suit the changes in the construction environment. The developed roles are: financial feasibility studies (item 6-5); value management or value engineering (item 6-6); preparation of cost-in-use or life-cycle costing (item 6-7); and preparation of cash-flow (item 6-8). All the developed roles have a below average mean score. This can be concluded that although new roles are being

introduced, the frequency of the roles being implemented is not wide. Also, it can be seen that the rest of the roles are actively being employed, and the roles are the traditional quantity surveyors' roles. It can be summarised that, although it has been fifty five years from the first time the quantity surveying profession started in Malaysia; traditional roles are still important and are common practices even though the construction industry is in a competitive state, with the rising number of private consultant (RISM, 2011) and contracting (CIDB, 2015) firms; and the internationalisation of most of the industries which is due to globalisation (Goldberg and Pavcnik, 2007). Costing, estimating and providing contractual advice has been the key roles of quantity surveyors (Male, 1990).

Item 6-11 is the top role for quantity surveyors in the government agencies (details of the roles of the quantity surveyors during the feasibility stage can be referred to in appendix 7.1). This is perhaps due to the government being the employer's or funders of the project developments.

Meanwhile, item 6-2 shows the top roles of quantity surveyors in private consultancy firms; as well as government agencies. This may be because in traditional procurement methods, quantity surveyors come from the consultants appointed by the government, and that is why the nature of the role is more or less the same as quantity surveyors from the government agencies who are the representative of the client. This is in line with Abdul-Aziz and Ali (2004) who argue that private consultancy firms are engaged in order to undertake some of the public quantity surveyors' responsibility with regards to the project. As for private contracting firms, the top role of quantity surveyors during the feasibility stage is item 6-9. This may be due to the time of involvement of the contracting firms as it is not normally as early as the inception stage of projects (Cornick and Osborn, 1994).

There are six out of ten roles of quantity surveyors during the feasibility stage that are statistically significant with different types of organisations (chapter 5.5.4); and thus, three frameworks that focus on the quantity surveyors' types of organisations are suggested. Alternatively, a single conceptual framework shall be developed instead of three different frameworks. Table 5.15 shall be referred to when applying the conceptual framework (figure 7.4).

b. Pre-contract stage

The next stage is the pre-contract stage. Overall, there are two developed roles during the pre-contract stage which are: value management (item 7-3); and qualification, evaluation and registration of contractors (item 7-9), and both of the roles are not frequently being practiced by quantity surveyors. Similar to the quantity surveyors' developed roles at the previous stage, the evolved roles are not widely practiced as compared to the traditional roles. Again, similar to the feasibility stage, the quantity surveyors' traditional roles during the pre-contract stage are all practiced frequently by the quantity surveyors. Only one traditional role in this stage is slightly below the average score which is the preparation of specification and schedule of rates (item 7-4). Specifications are taken from previous similar projects, which may involve only minor alterations to suit the project's description (Lam *et al.*, 2004) which may result in only a slight involvement of quantity surveyors' in preparing it. Also, normally, a standard form of specifications can be obtained from previous government projects, and the standards are frequently being referred to. Minor alterations to the specifications are made where applicable. Most of the projects handled by the participants are government projects, which are amenity buildings and infrastructure.

Overall, preparation of BQ and tender documents (item 7-1) is the top role of quantity surveyors. The results from the mean score for quantitative analysis are also supported by the qualitative analysis done by using the content analysis method (table 7.2). However when looking into different types of organisations, item 7-2 is the main role of quantity surveyors in government agencies as well as in private contracting firms (details of the roles of quantity surveyors during the pre-contract stage can be referred in appendix 7.2). As for the government agencies, item 7-2 is prepared by the quantity surveyor, before the tender is released to the contractor. Item 7-2 is also prepared in order to have a benchmark for the BQ pricing made by the contractors especially if the tender is an open tender (Ashworth and Hogg, 2007). As for the contractor, item 7-2 is the main role to be done in order to ensure that the project can be estimated as accurate as it can be and become the contract value in order to enhance the chance of getting the tender accepted. Apart from item 7-2, the main roles of private contracting quantity surveyors' include: item 7-1; and item 7-7. Meanwhile, quantity surveyors in private consultancy firms are more focused on item 7-8.

There are only two out of nine roles of quantity surveyors during the pre-contract stage that are statistically significant with different types of organisations. The two roles are items: 7-5 and 7-9. Therefore, there is possibility to develop specific conceptual frameworks of motivation for different types of quantity surveyors'. This means that, due to the more significant quantity surveyors' roles during the pre-contract stage in accordance to different types of organisations, a single conceptual framework for the reference of all quantity surveyors shall be developed instead of three different frameworks segregating the three groups of the quantity surveyors. Table 5.15 shall be referred to when reading the developed conceptual framework (figure 7.4).

c. Post-contract stage

There are quite a balanced number of traditional roles and developed roles of quantity surveyors during the post-contract stage. However, the trend is still similar to the previous two stages where the developed roles are still not among the top roles of quantity surveyors as compared to the traditional roles. Among the developed roles, item 8-8 is seen to be a prominent role. Contractual specialist is a nickname given to quantity surveyors and the reason can be because there are no other professionals in the construction industry that can replace the job of a quantity surveyor in that particular role. This is in line with Male (1990) who concluded the importance of quantity surveyors in the construction industry.

The variation of works during the construction stage, and also, final account (item 8-7) is extremely important to be done at the end of the contract stage in order to ensure that the project done is as per the contract and ensure the completion of the project is as per the agreement of all contracted parties so that there will be no issue that arises later. This is consistent with Ashworth and Hogg (2002) and agreed by Zakaria *et al.* (2013) that the final account is the final calculation and agreement of the final construction cost between the client and contractor and the process of incorporating a fair valuation of the work done. The preparation takes a long time to do and it is meticulous work, and hence needs to be well-planned from the beginning of the project.

Overall, preparation of interim valuations (item 8-6); and preparation of variation order and final accounts (item 8-7) have been among the top roles of quantity surveyors. It is

also the main role for quantity surveyors in government agencies as well as in private contracting firms. This result from the quantitative test is also supported by the result from the qualitative analysis obtained through the interviews (table 7.2); where many interviewees mentioned that they have involve frequently in both roles, item 8-6 and 8-7 during this stage.

Besides the previously mentioned roles, item 8-10 is also among the top roles of quantity surveyors in government agencies as well as in private consultancy firms. Communication is vital when working in a team in order for the team players to have the same information and receive up to date information regarding the work progress, problem arising, and other related works on the project (Ochieng and Price, 2010). Besides item 8-10, reporting, evaluating and negotiating on contractual and extra-contractual issues (item 8-8) is another top role of the quantity surveyors in private consultancy firms during the post-contract stage. This matched a study by Abdul-Aziz and Ali (2004), who concluded that the consultant quantity surveyor is like the bridge between the client and the contractor. Therefore, if there is a dispute or issue regarding the project, quantity surveyors from the private consultancy firms are in charge of handling the matter. Meanwhile, application of cost control during the progress of the work (item 8-2) is also another top role of private contracting quantity surveyors other than item 8-6 and 8-7. These roles have been among the top roles of quantity surveyors in private contracting firms and the result is in line with the study by Cornick and Osbon (1994).

Seven out of eleven roles of quantity surveyors during the post-contract stage are statistically significant with different types of organisations (refer table 7.2). In conclusion, there is a possibility that a specific conceptual framework of motivation for quantity surveyors can be generated to differentiate quantity surveyors roles during this stage in accordance to their organisations. There are three out of seven roles of quantity surveyors during the feasibility stage that are statistically significant according to the different types of organisations (chapter 5.5.4). Alternatively, a single conceptual framework shall be developed instead of three different frameworks.

d. Construction management and resource procurement stage

The last stage of the construction project is construction management and resource procurement. From table 7.1, it can be seen that quantity surveyors are frequently involved in liaising with the employer, consultants, statutory and service authorities (item 9-4). It can be confirmed by both the quantitative results and qualitative results from the interviews (table 7.2). This confirms the importance of communication activities in the construction development (Abdul-Rahman *et al.*, 2014).

From table 7.1, it can also be seen that all roles of quantity surveyors during this stage are developed roles. Referring to figure 3.5 chapter 3.8 of this thesis, developed roles started to evolve since the 1990s and still continue until today. When comparing the roles of the quantity surveyors according to different types of organisations (appendix 7.4), quantity surveyors from private contracting firms have frequent involvement in all the roles as compared to other organisations. It can be concluded that, contractors' quantity surveyors are involved more in the project management as compared to the other organisations. Although it is not a common situation in Malaysia that the quantity surveyors act or are appointed as the project or construction manager of projects, but the quantity surveyor can become one if he or she has the necessary skills (Love *et al.*, 2001).

Two out of seven roles of quantity surveyors during the construction management and resource procurement stage are statistically significant with different types of organisations (refer table 7.2). Thus, there is a possibility to develop specific conceptual frameworks of motivation for each different type of quantity surveyors' organisations. This means that, due to the more significant quantity surveyors' roles during this stage of the construction development, in accordance to the different types of organisations, a single conceptual framework shall be developed instead of three different frameworks. Table 5.15 shall be referred to when reading the developed conceptual framework (figure 7.4).

Further discussion regarding this issue specifically relating to the choices of the conceptual framework for this research will be discussed in chapter 7.3.2

Table 7.1: Summary of the types of quantity surveyors' roles at different stages of the construction development process

Stage	Item ID		Overall mean score	Traditional role	Developed role
Feasibility stage	6-1	Preparation of cost analysis.	2.08	√	
	6-2	Preparation of estimates from sketch to detailed design.	2.32	√	
	6-3	Preparation of detailed budget.	2.14	√	
	6-4	Preparation of cost plan.	2.06	√	
	6-5	Financial feasibility studies incl. economic.	1.69		√
	6-6	Value management/ engineering.	1.70		√
	6-7	Preparation of cost-in-use/ life-cycle costing.	1.32		√
	6-8	Preparation of turnover, profit/loss forecast & cash-flow projections.	1.54		√
	6-9	Cost checking during the development design.	2.07	√	
	6-10	Contractual and tendering arrangements (early advice).	2.34	√	
Pre-contract stage	7-1	Preparation of BQ & tender docs.	2.54	√	
	7-2	Measurement, estimating & pricing for tenders.	2.45	√	
	7-3	Value management including comparative design economics.	1.79		√
	7-4	Preparation of specification and schedule of rates.	1.96	√	
	7-5	Processing associated with the preparation of documentation.	2.04	√	
	7-6	Detailed compilation & analysis of unit rates/ preliminaries.	2.07	√	
	7-7	Selection & evaluation of tender & reporting on tenders.	2.39	√	
	7-8	Project liaison meeting with employers and consultants.	2.51	√	
	7-9	Qualification, evaluation and registration of contractors.	1.93		√
Post-contract stage	8-1	Preparation of contract documents for main contract sub-contracts or contracts of supply including rationalisation of contract rates.	2.21	√	
	8-2	Application of cost control during the progress of the works.	2.08	√	
	8-3	Monitoring of proposed construction methods and sequences and those actually required and reporting thereon.	1.49		√
	8-4	Value management/engineering including preparation of cost/benefit reports upon alternative construction methods.	1.58		√
	8-5	Analysis of contract pricing relative to cost recording methods.	1.68		√

	8-6	Preparation of interim valuations.	2.37	√	
	8-7	Preparation of variation order and final accounts.	2.38	√	
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	2.28		√
	8-9	Preparation and/or interpretation of cost/value and other reconciliation statements for management purposes.	1.86		√
	8-10	Project liaison meeting with employers and consultants.	2.35	√	
	8-11	Site surveys and measurement and attendance at site meetings.	2.04	√	
Construction management and resource procurement stage	9-1	Planning and programming of construction activities.	.89		√
	9-2	Site planning.	.73		√
	9-3	Management of resources and supervision of works.	.86		√
	9-4	Liaison with employer, consultants, statutory and service authorities.	1.13		√
	9-5	Resource determination, scheduling and purchasing.	.77		√
	9-6	Procurement of labour, plant and materials.	.75		√
	9-7	Negotiation with and management of sub-contractors and suppliers.	.92		√

Table 7.2: Summary of findings of involvement of quantity surveyors in the construction industry during the construction development process

Stage	Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
Feasibility stage	6-1	Preparation of cost analysis.	2.08	Significant	14
	6-2	Preparation of estimates from sketch to detailed design.	2.32	Not significant	14
	6-3	Preparation of detailed budget.	2.14	Not significant	12
	6-4	Preparation of cost plan.	2.06	Significant	10
	6-5	Financial feasibility studies incl. economic.	1.69	Significant	8
	6-6	Value management/engineering.	1.70	Significant	3
	6-7	Preparation of cost-in-use/life-cycle costing.	1.32	Not significant	1
	6-8	Preparation of turnover, profit/loss forecast & cash-flow projections.	1.54	Significant	6
	6-9	Cost checking during the development design.	2.07	Significant	9
	6-10	Contractual and tendering arrangements (early advice).	2.34	Not significant	13
Pre-contract stage	7-1	Preparation of BQ & tender docs.	2.54	Not significant	16
	7-2	Measurement, estimating &	2.45	Not	15

		pricing for tenders.		significant	
	7-3	Value management including comparative design economics.	1.79	Not significant	11
	7-4	Preparation of specification and schedule of rates.	1.96	Not significant	13
	7-5	Processing associated with the preparation of documentation.	2.04	Significant	9
	7-6	Detailed compilation & analysis of unit rates/preliminaries.	2.07	Not significant	12
	7-7	Selection & evaluation of tender & reporting on tenders.	2.39	Not significant	14
	7-8	Project liaison meeting with employers and consultants.	2.51	Not significant	15
	7-9	Qualification, evaluation and registration of contractors.	1.93	Significant	12
Post-contract stage	8-1	Preparation of contract documents for main contract sub-contracts or contracts of supply including rationalisation of contract rates.	2.21	Significant	15
	8-2	Application of cost control during the progress of the works.	2.08	Significant	15
	8-3	Monitoring of proposed construction methods and sequences and those actually required and reporting thereon.	1.49	Significant	7
	8-4	Value management/engineering including preparation of cost/benefit reports upon alternative construction methods.	1.58	Not significant	10
	8-5	Analysis of contract pricing relative to cost recording methods.	1.68	Not significant	9
	8-6	Preparation of interim valuations.	2.37	Significant	15
	8-7	Preparation of variation order and final accounts.	2.38	Significant	14
	8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	2.28	Significant	14
	8-9	Preparation and/or interpretation of cost/value and other reconciliation statements for management purposes.	1.86	Significant	9
	8-10	Project liaison meeting with employers and consultants.	2.35	Not significant	13
	8-11	Site surveys and measurement and attendance at site meetings.	2.04	Not significant	15

Construction management and resource procurement stage	9-1	Planning and programming of construction activities.	.89	Not significant	4
	9-2	Site planning.	.73	Not significant	2
	9-3	Management of resources and supervision of works.	.86	Not significant	4
	9-4	Liaison with employer, consultants, statutory and service authorities	1.13	Significant	6
	9-5	Resource determination, scheduling and purchasing.	.77	Not significant	2
	9-6	Procurement of labour, plant and materials.	.75	Significant	3
	9-7	Negotiation with and management of sub-contractors and suppliers.	.92	Significant	4

7.2.2 Theme 2: The factors that impact the motivation of quantity surveyors

Theme 2 emphasises on the factors of motivation of quantity surveyors. This theme is to explore the motivation factor(s) that have impact on the individual quantity surveyors in their current organisations, which include: the government agencies; private consultancy firms, and private contracting firms. This was broadly and deeply discussed in chapter 2.4 before its continuation in this current chapter.

Motivation factors are derived from the existence of the many: definitions (chapter 2.2); theories (chapter 2.3); concepts (chapter 2.3.1 and chapter 2.3.2); and models, frameworks, and dimensions from the previous studies summarised in table 2.2 of chapter 2. For this research, initially, there were nineteen motivation factors identified, and grouped into five themes, which are: growth and advancement opportunity; work nature; material and physical provisions; relations with others; and fairness in organisational practices; as shown in chapter 2.4.2. The motivation factor themes were summarised in table 2.5 of chapter 2. The process of grouping the motivations into themes can be referred to in chapter 2.4, figure 2.2.

However, after the data was analysed, the motivation factors were distributed into four new different themes, namely: efforts recognition (MF1); supportive environment (MF2); employer's organisational support (MF3); and work nature (MF4). The new themes appeared after the data was collected and analysed using statistical analysis, through the process of factor analysis test (refer chapter 5.10, specifically in table 5.53). Previous studies have shown the existence of these factors and their impact on the job performance of quantity surveyors. The explanation for the relationship between motivation factors and job

performance in related literatures was shown in the chapter 2.5. The new motivation factors themes were summarised in figure 7.1.

The effort recognition (MF1) theme is related to reward received by the employees' own effort or in some situations, group effort. The supportive environment (MF2) theme circulates around the condition and atmosphere of the workplace, where these elements are the aiding factors of an individual to perform well in their job. The employer's organisational support theme (MF3) is quite similar to theme MF1. However, MF3 is more related to rewards that are received by the employees' from the organisation where in the future, and for long term, can also benefit both the individual and organisation through the rewards, such as new knowledge or improved skills previously given to the individual employees, which benefits the individual employee as well as the organisation, with the improved skills gained. MF4 is the last theme of motivation factor that circulates around the nature of the job of the quantity surveyor, which includes the suitability of the job assigned and the level of challenge of the task.

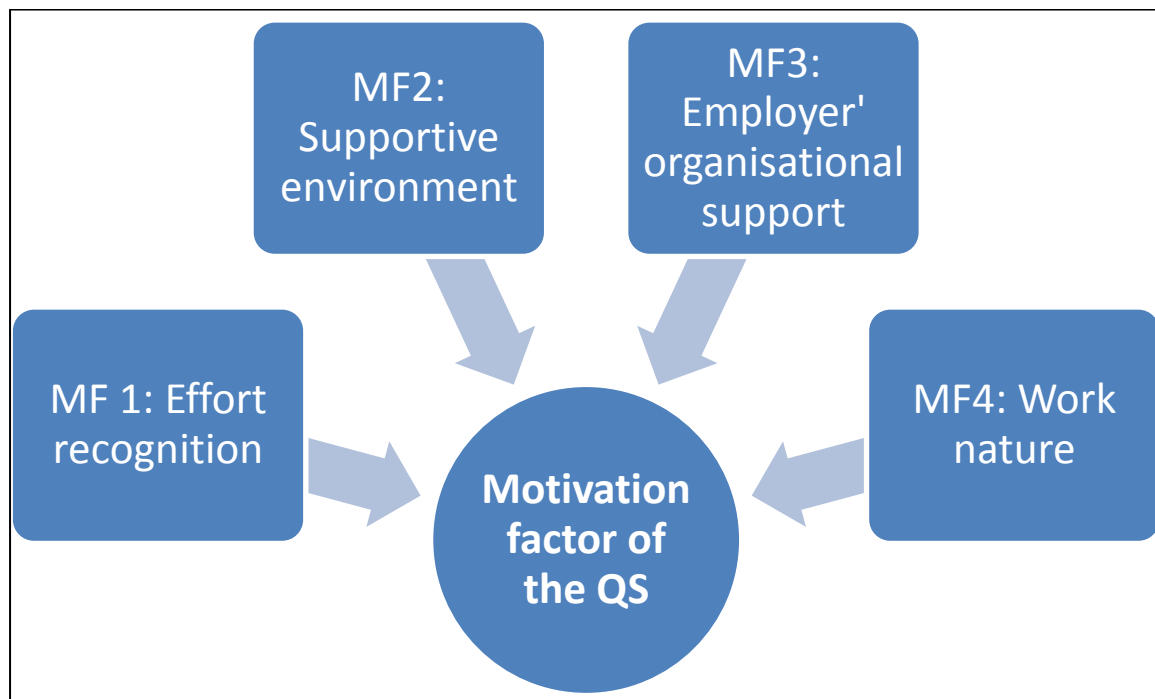


Figure 7.1: Motivation factors of quantity surveyors.

Table 7.3 shows the summary of the main findings of the factors that impact on the motivation of quantity surveyors in the construction industry and at their current organisation. Based on Kruskal-Wallis test, it shows that there was no statistical

significance difference between the levels of impact of all motivation factors of quantity surveyors in the construction industry according to the different types of organisations. This means that, all three organisations have quite similar distribution of impact of motivation factors. Therefore a single conceptual framework shall be developed instead of three different frameworks. Table 5.19 shall be referred to when reading the developed conceptual framework (figure 7.4). Further discussion regarding motivation factors, in the development of the conceptual framework for this research will be discussed in chapter 7.3.2.

Table 7.3: Summary of findings of the factors that impact on the motivation of quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
MF 1: Efforts recognition				
10-8	Financial incentives	2.34	Not significant	18
10-9	Non-financial incentives	1.89	Not significant	15
10-3	Job promotion	2.28	Not significant	19
10-4	Progression in career	2.37	Not significant	19
10-12	Assignment suitable to capability	2.30	Not significant	17
10-18	Compliments from superior	2.25	Not significant	18
10-13	Fair time to finish assignment	2.25	Not significant	18
10-14	Company honouring any promises made	2.21	Not significant	15
10-15	Fair pay equivalent to job scope	2.27	Not significant	18
MF 2: Supportive environment				
10-10	Good relation with colleagues	2.41	Not significant	21
10-17	Support from family and friends	2.38	Not significant	19
10-11	Good direction and monitoring from superior	2.39	Not significant	19
10-19	Good facilities and resources at work place	2.44	Not significant	19
10-16	Good teamwork	2.58	Not significant	21
MF 3: Employer's organisational support				
10-5	On-the-job training	2.20	Not significant	17
10-6	Off-the-job training	1.92	Not significant	16
10-7	Working conditions	2.62	Not significant	21
MF 4: Work nature				
10-1	Challenges in doing task	2.35	Not significant	19
10-2	Job description	2.20	Not significant	20

The most favoured motivation factor is from MF 3, which is item 10-7, 'working conditions' (ranked first). However, all top preferred motivation factors are from MF2 except the previously mentioned motivation factor from MF3. The factors are: good teamwork (item 10-16); good facilities and resources at work place (item 10-19); good relation with colleagues (item 10-10); good direction and monitoring from superior (item 10-11); and support from family and friends (item 10-17). The relevance of Oyedele's (2009) and Teoh *et al.*'s (2011) motivational path is also confirmed in this study. Therefore, it can be concluded that a supportive environment plays the most important role in the motivation of quantity surveyors. Among the nineteen motivation factors listed, item 10-7 is the top role as being the main motivation factor that impacts quantity surveyors in the construction industry. When these results are imposed onto the results from the interviews, the findings are similar. 'Working conditions' is the top factor in both analysis findings from both quantitative and qualitative results, and these lead to being the top motivation factor of quantity surveyors in job performance. Efficient working conditions, pleasant and comfortable office, cleanliness, good lighting settings and noise control can contribute to job satisfaction and thus, increase the performance of the individual employees to work and this includes quantity surveyors as well (Oyedele, 2009; Teoh, *et al.*, 2011). Some quantity surveyors when interviewed stated that, one of the conducive working condition factors for them is, having privacy at the workplace by receiving a room or cubicle as the workspace. 'Have good teamwork' was ranked the second highest motivation factor through the quantitative analysis, and this factor is among the top factor that was frequently cited in the qualitative analysis. Close inspection of the findings from the questionnaire survey and the interviews show that there are similarities in the impact of motivation factors in individual quantity surveyors. 'Have good teamwork' is also a top rank motivation factor for quantity surveyors in government agencies and ranked second in the private consultancy firms (appendix 7.5) and it is a norm for a quantity surveyor to work in a team when involved in the construction industry. It is an advantage to be in a good team with teamwork spirit. Oyedele (2009) in his study emphasised the importance of working in harmony in a team. Variations and mistakes can be minimised and competence can be maximised, which will then lead to better job performance when good teamwork exists. Formal briefing sessions and formal regular meetings among professionals can enhance commitment and job performance of a team (Leung *et al.*, 2008).

The third highest motivation factor from the analysis of the questionnaire result is 'having good facilities and resources at work place'. When these results are imposed onto the results

from the interviews, the findings are quite similar. Good facilities are not only limited to stationeries, photocopy machine, fax machine, and computer, but also include updated relevant software and reasonable high speed internet connection. During the interviews, it was discovered that some of the quantity surveyors still use traditional methods when doing taking off and preparation of tender documents, and some of the quantity surveyors prefer to use relevant quantity surveying software. This is in line with Oyedele (2009) who views that construction professionals favour tangible resources like relevant software and computers.

Based on the interviews several interviewees agree that it is important to have a good relationship with colleagues. “...*you need to have friends...you cannot be on your own...* [QS1]; *I need to maintain good relationship with them* (administrative staff and junior engineer)... [QS8]; *...it is important to me to have good relationship with my colleagues* [QS20]; *...when we have good relations with colleagues, it will be merrier and more enthusiastic to do work* [QS22].”

Meanwhile, among all the motivation factors, non-financial incentives (item 10-9); is the least favourite factor of motivation of quantity surveyors. This non-favourite motivation factor is parallel with Tian and Pu’s (2008) study on the employee’s job satisfaction; and Neckermann and Frey (2013) that discovered non-monetary rewards is the least favoured as compared to financial rewards.

Off-the-job training (10-6) is also among the least favourite motivation factor. This is contradictory to some studies, such as: Sahinidis and Bouris (2007); and Harrison (2000); who claim trainings improve job satisfaction and thus job performance of employees. Findings from some interviews (Interviewee QS1 and QS2) showed that off-the-site training enabled them to feel temporarily enthusiastic and motivated for only a few days after the training session before it then vanished.

7.2.3 Theme 3: The roles of employers in the motivation of quantity surveyors

Theme 3 highlights the roles of employers in the motivation of quantity surveyors. This theme is to ascertain what the employers have done and plan to do in order to help their

employee quantity surveyors to stay motivated to do their job. Similar to theme 2, this theme was extensively discussed in chapter 2.4 before its continuation in this current chapter.

The roles of employers in the organisations are vital in the motivation of the quantity surveyors especially now, that the construction industry is very competitive. Employees need to compete in the challenging industry in order to maintain his or her job performance. Employees' performance concurrently relates with the organisations' performance.

Basically, employers' roles' variables are the same as motivation factors' variables. The difference is that the employers' roles' variables are the motivation factors implemented by the employers' in order to motivate or help in the motivation of quantity surveyors.

During the literature review, there were five themes of motivation gathered (see table 2.4 in chapter 2.4.2 of chapter 2), and after the data has been collected, the analysis summarised that there are three themes for the employers' roles. The roles include: employees' organisational support (ER1); organisational support (ER2); and company's reward policy (ER3). During the literature review, the themes were constructed as per shown in table 2.5 and figure 2.2 of chapter 2. While the themes summarised in figure 7.2 are from the process of factor analysis using the SPSS software, where the results from the findings are more reliable and valid for this research. The employers' roles that help in motivating quantity surveyors are summarised in figure 7.2. Each of these themes consists of the roles that the employers' implement to the employees in order to achieve improvement in job performance of quantity surveyors (refer table 7.4).

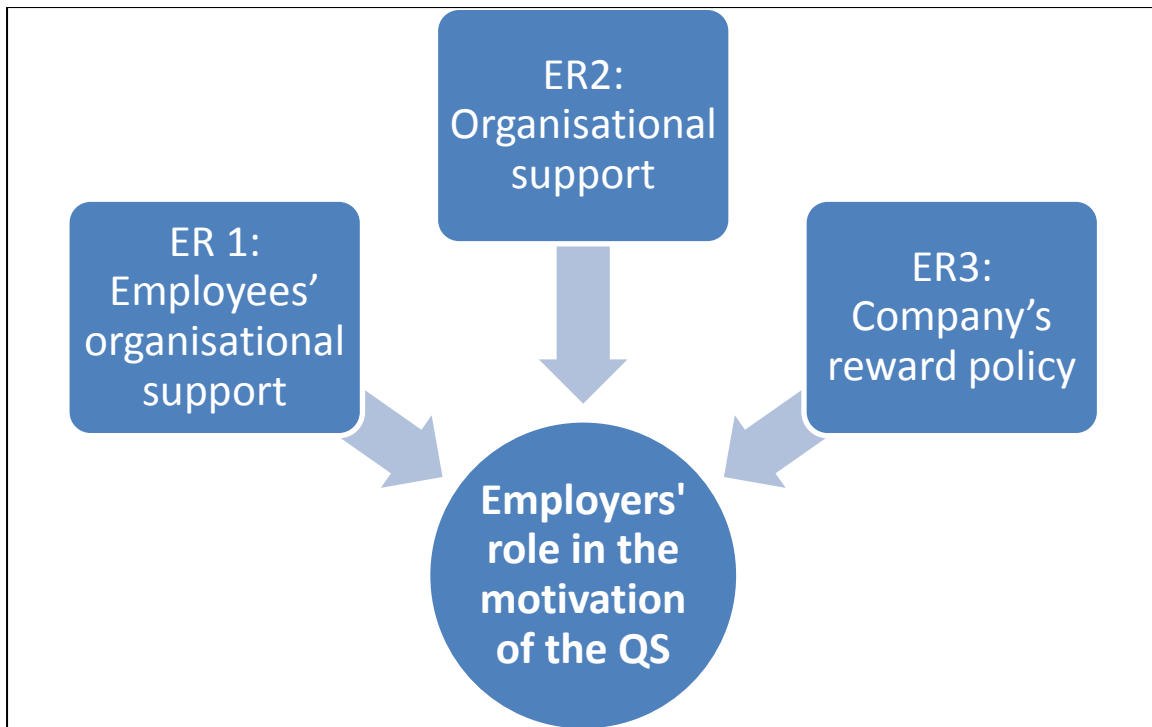


Figure 7.2: Employers' roles in the motivation of quantity surveyors.

Employees' organisational support (ER1) and organisational support (ER2) themes are quite similar, where both of these themes circulate around the support given by the employers' and received by the employees. The difference is minor where the latter theme is more on the employers' effort in motivating the employees and relates more on: the job; social; and leadership; skills. Meanwhile the former theme does not require specific skills for the employer to adopt but more on the willingness to spend the money and time to motivate employees.

One of the important points from ER1 is that employers arrange and plan the task that suits their: capability; ability; skill; and job description; or prepare and support the employees that are not yet competent with positive improvement mediums such as to provide trainings and a reasonable time frame to complete tasks. Skill utilisation and training development facilitate the intrinsic satisfaction of the employees (Boxall *et al.*, 2015) and thus impact on the improved job performance. The findings on some of employers' roles in the employees' organisational support (ER1) provide evidence to support Porter and Lawler's Expectancy Theory (chapter 2.3) where improvement in job does not only depend on the work effort but also in the skills and the ability of an individual in a particular task.

Among the three themes, ER2 is consisted with the most favoured roles of employers in motivating the quantity surveyors. The most preferred role that employers implement onto their employees is ‘assigning employees to a good team and employees having good teamwork (item 11-16)’. This is in line with Lim and Ling (2012) and Ichniowski and Shaw (1999) whom agree that the productivity and job satisfaction can be achieved when professionals are given the chance in making crucial decisions while being in a problem-solving team. This role of the employers is significant to all three quantity surveyors’ organisations which indicate that item 11-16 is the important choice of role by employers to adopt in their organisations. Numerous interviewees also agreed that item 11-16 is the favoured employers’ roles in the motivation of quantity surveyors in their organisations. One of the interviewees, QS9 stated that “...*We have regular discussions among the top management team to discuss and update everything regarding the projects, office, and the future of the company*”. This shows that the employee might appreciate the roles of the employer in ensuring the employee is involved in the organisation’s matter as well as obtaining direct information from the employee regarding: the progress of projects handled; and problems regarding projects or in the office.

Provide support to workers (item 11-17) is among the top employers’ roles in quantity surveyors’ organisations. Several interviewees also supported this.

QS8 is a superior at his organisation and he shows his support by being present when there are times that require his subordinates to stay back at the office until late hours, in order to complete the required task with a tight deadline. “... *if the staffs need to stay back during tendering time, I usually buy them take-away dinner*”. Support to workers is not limited only by physical support, but also moral support. Moral support can be in the form of providing guidance and direction (Oyedele, 2009); sharing experience “...*the best way to motivate my juniors is by sharing your previous experiences and previous job, so that they know how things work out...*” (QS9); and motivating staff regularly “...*provide motivator to the office to boost up the motivation level of staffs...*” (QS1). By providing support to employers, feelings and self-determination can be revitalised, and hence increase the motivation level of individuals (Oyedele, 2009).

Thus, the results can lead to the possibility of developing multiple conceptual frameworks for quantity surveyors in all organisations in the construction industry; alternatively, a single framework is also relevant to be developed.

Further discussion regarding this theme that specifically relates to the choices of the conceptual framework for this research will be discussed in chapter 7.3.2.

Table 7.4: Summary of findings of the employers' roles in the motivation of quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
ER 1: Employees' organisational support				
11-5	Providing on-the-job training	2.20	Not significant	19
11-6	Providing off-the-job training	1.92	Not significant	16
11-1	Providing appropriate tasks according to ability	2.39	Not significant	16
11-12	Assign tasks that suits the capability	2.46	Significant	18
11-2	Providing accurate job description	2.42	Not significant	17
11-4	Awarding employees who progress	2.37	Significant	17
11-7	Conducive working conditions	2.35	Significant	20
11-3	Job promotion	2.35	Significant	17
11-13	Allocate reasonable time frame to complete assignment	2.38	Significant	18
ER2: Organisational support				
11-16	Create a good teamwork	2.51	Significant	18
11-10	Good relations with other workers	2.45	Significant	18
11-17	Provides support to workers	2.48	Significant	17
11-18	Superiors complements and appreciate employees	2.30	Significant	17
11-19	Providing good facilities and resources at work place	2.44	Significant	18
11-11	Superior has good leadership skills	2.46	Significant	18
ER3: Company's reward policy				
11-8	Financial incentives	2.30	Significant	18
11-9	Non-financial incentives	1.90	Significant	15
11-15	Giving fair pay equivalent to job scope	2.35	Significant	17

11-14	Company honouring promises made	2.32	Significant	15
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Company's reward policy (ER3) is a concept focusing on the policy of the organisation in rewarding the employees. The rewards are given when a particular job scope agreed during discussions or mutual understanding is achieved. The rewards policy in the form of profit sharing; gain-sharing; and stock option; other than the normal rewards such as annual bonus; maternity leave; and lunch coupon; creates the feeling of belongingness within the employees. The incentive of employee ownership can affect firm improved performance but with the involvement of participation (Kruse *et al.*, 2004).

Almost all employers' roles show there are statistically significant to different types of organisations, except: providing trainings; provide appropriate tasks according to ability; and provide accurate job description. This shows that the employers' roles in each type of organisation may differ in terms of the level of importance of the roles.

7.2.4 Theme 4: Motivational practices

Motivational practice is theme 4 in this chapter, and consists of five different themes. The five themes have been derived from the analysis of several studies and literature as described in detail previously in table 2.5 and figure 2.2; and summarised briefly in table 2.4; in chapter 2.1.4.

7.2.4.1 The challenges and effectiveness of current motivational practice employed by organisations in motivating quantity surveyors

Motivational practices may be challenging to be implemented in the organisation. However, these practices are important to be provided in the organisations and especially construction related organisations, where the nature of the industry is very distressed and people-reliant.

The result from the analysis does not show much difference in the level of challenges among five motivational practices faced by the employer in implementing them in the organisations, except item 12-1 which shows a slightly low level of challenge (table 7.5).

From appendix 7.7, the respondents from the government sector indicate that, there are challenges faced by the organisation in employing all the motivational practices (items 12-1 to 12-5), be it small challenges or extreme challenges. This may be due to the system in the government sector where all government employees, including quantity surveyors, are managed and controlled by a central department, which is human resource department. Unlike private contracting firms, the respondents indicated that all motivational practices have at least a small level of challenge in implementing them in the organisation. The private consultancy firms have quite a balanced result where some of the motivational practices are challenging and some do not have any challenges at all. In most cases for both private firms, the respondents agree that the motivational practices have a high level of challenge in implementing them. This may be due to the financial state of private firms since they need to self-fund any projects or activities, in order to implement the motivational practices in private firms. As for the government sector respondents, the response shows that the challenges are quite well distributed from no challenge at all to a very high challenge, especially item: Prepare appropriate nature of work (12-2); and provide good relations amongst staff and management team (12-4).

The findings on item 12-5 being amongst the challenging motivational practice faced by the employers, provide some evidence to support Pritchard's (1969) argument on Adam's (1963) equity theory where it is difficult to formulate the correlation between input and outcomes of a person. The implementation of fairness in organisational practice is most challenging in government agencies and amongst the lowest motivational practice in the private consultancy and contracting firms (appendix 7.7). Among the reasons given by the interviewees on the reason of the challenge are due to government policies and the large number of employees in the government sector. Therefore to maintain justice in the reward system in order to make the implementation of this particular motivational practice effective, Aguinis *et al.* (2013) suggested four guidelines: to only make promises of rewards that are actually available; to increase employees' variable pay rather than the base pay when increasing monetary rewards; organisations should make all of their employees eligible to earn rewards from any incentive plan, instead of only a selected group of individuals; and to provide a convincing explanation for any undesirable circumstances such as budget constraints or organisation-wide pay cuts that make it no longer feasible to keep promises of rewards that were previously available.

Table 7.5: Summary of findings of the challenges of current motivational practices employed by organisations in motivating quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
12-1	Provide growth and advancement opportunities	1.90	Significant	15
12-2	Prepare appropriate nature of work	2.01	Significant	17
12-3	Provide material and physical provisions	2.04	Significant	18
12-4	Provide good relations amongst staff and management team.	2.09	Significant	17
12-5	Provide fairness in organisational practices	2.06	Significant	18

Items 13-1 until 13-5 show the effectiveness of motivational practices employed by organisations. It can be seen that both private consultancy and contracting firms have the most positive responses on the effectiveness of the motivational practice ‘Provide fairness in organisational practices (13-5)’ employed (refer appendix 7.8). This shows that the implementation of motivational practice 13-5 is really effective and the implementation shows a positive impact on the motivation of quantity surveyors in the organisations. Meanwhile respondents from private contracting firms indicate that the motivational practices affect them at various levels. Responses from the government sector show many respondents agreeing that item 13-5 motivational practice is not really an effective motivational practice in the government sector. This may be due to the nature of the government sector where there are too many employees which make it difficult to provide fairness to everyone.

Contradictory to the result of this research (see table 7.6), Aguinis *et al.* (2013) identified that monetary rewards can be a powerful motivator of employees performance and in retaining top performers; however monetary rewards do not improve employees’ job-relevant knowledge, skills, and abilities. Therefore, it can be concluded that, it is more effective to reward the employees with item 13-1 before providing them with item 13-3. However, if the employer prefers to reward the employees with ‘material and physical provisions’ that meet the specific employees’ needs (Long and Shields, 2010); the rewards are contingent on performance and not due to the number of years in the organisations (Trevor *et al.*, 2012); and to reward the employees in a timely manner (Aguinis *et al.*, 2013).

Table 7.6: Summary of findings of the effectiveness of current motivational practices employed by organisations in motivating quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
13-1	Provide growth and advancement opportunities	2.27	Not significant	17
13-2	Prepare appropriate nature of work	2.20	Not significant	20
13-3	Provide material and physical provisions	2.31	Not significant	18
13-4	Provide good relations amongst staff and management team.	2.42	Not significant	21
13-5	Provide fairness in organisational practices	2.08	Significant	16

7.2.4.2 The impact and effectiveness of current motivational practice on individual quantity surveyors

The highest impact and highest effectiveness of motivational practice item 14-4 in organisations suggest that the perceived quality of team support; quality of relationship with colleagues and management team; are important and valued by the individual quantity surveyors (tables 7.6 and 7.8). The qualitative analysis also supports the results from the quantitative analysis since almost all the interviewees responded positively to this particular motivational practice as being effective. This is in line with the study done by Anderfuhren-Biget *et al.* (2010) who conclude that the quality of team support; recognition by and relationship with superior and teammates contribute to positive impact on work motivation. Also this result supports all the theory of needs: third level of Maslow's Hierarchy Theory; Hygiene factor of Herzberg's Two Factor Theory; Need for affiliation of McClelland's Need for Achievement Theory; and Relatedness Needs of Alderfer's ERG Theory (chapter 2.3); where there is the element of social needs and awareness in part of the theories.

Item 14-3 is among the preferred motivational practice that has a high impact on individuals. This result is supported by both the quantitative and qualitative analysis of the research. The result also shows that item 14-3 and the types of organisations are statistically significant. However, when comparing the impact of item 14-3 between the different types of

organisations, quantity surveyors in government agencies shows they are less impacted on this particular motivational practice unlike the other two organisations. Anderfuhren-Biget *et al.* (2010) in their study on the public sector has a parallel result with this research where the material incentives have a negative impact on work motivation.

Also, it can be concluded that quantity surveyors in government agencies value having a good relationship amongst their colleagues and superiors. This motivational practice has the highest impact amongst government employees compared to the other motivational practices.

Table 7.7: Summary of findings of the impact of current motivational practices employed by organisations in motivating quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
14-1	Growth and advancement opportunities	2.24	Significant	16
14-2	Appropriate nature of work	2.25	Significant	20
14-3	Material and physical provisions	2.41	Significant	20
14-4	Good relations amongst staff and management team.	2.42	Not significant	19
14-5	Fairness in organisational practices	2.28	Not significant	16

Item 15-1 shows the lowest effectiveness of motivational practice for quantity surveyors in Malaysia. This result contradicts with the study by Boxall *et al.* (2015) where higher satisfaction leads to higher job performance due to greater skill utilisation through training and development of knowledge.

When looking at the effectiveness of motivational practices on an individual as a whole, item 15-4 shows the most effective one. This is also supported with the large number of sources from the interviewees that agree with it. When magnifying the effectiveness of item 15-4 according to the different types of organisations, the findings contradicted with Gkorezis and Petridou's (2012); where their study concludes that public organisations' employees are more motivated by social extrinsic reward and private organisations' employees are more motivated by physical and material rewards. Therefore it can be summarised that although public employees have a high intrinsic level of motivation, that does not mean that their extrinsic motivation level is low.

Table 7.8: Summary of findings of the effectiveness of current motivational practices employed by organisations in motivating quantity surveyors

Item ID		Overall mean score	Kruskal-Wallis test	Thematic analysis (no. of sources)
15-1	Growth and advancement opportunities	2.29	Not significant	18
15-2	Appropriate nature of work	2.36	Not significant	20
15-3	Material and physical provisions	2.32	Significant	17
15-4	Good relations amongst staff and management team.	2.51	Significant	19
15-5	Fairness in organisational practices	2.30	Not significant	17

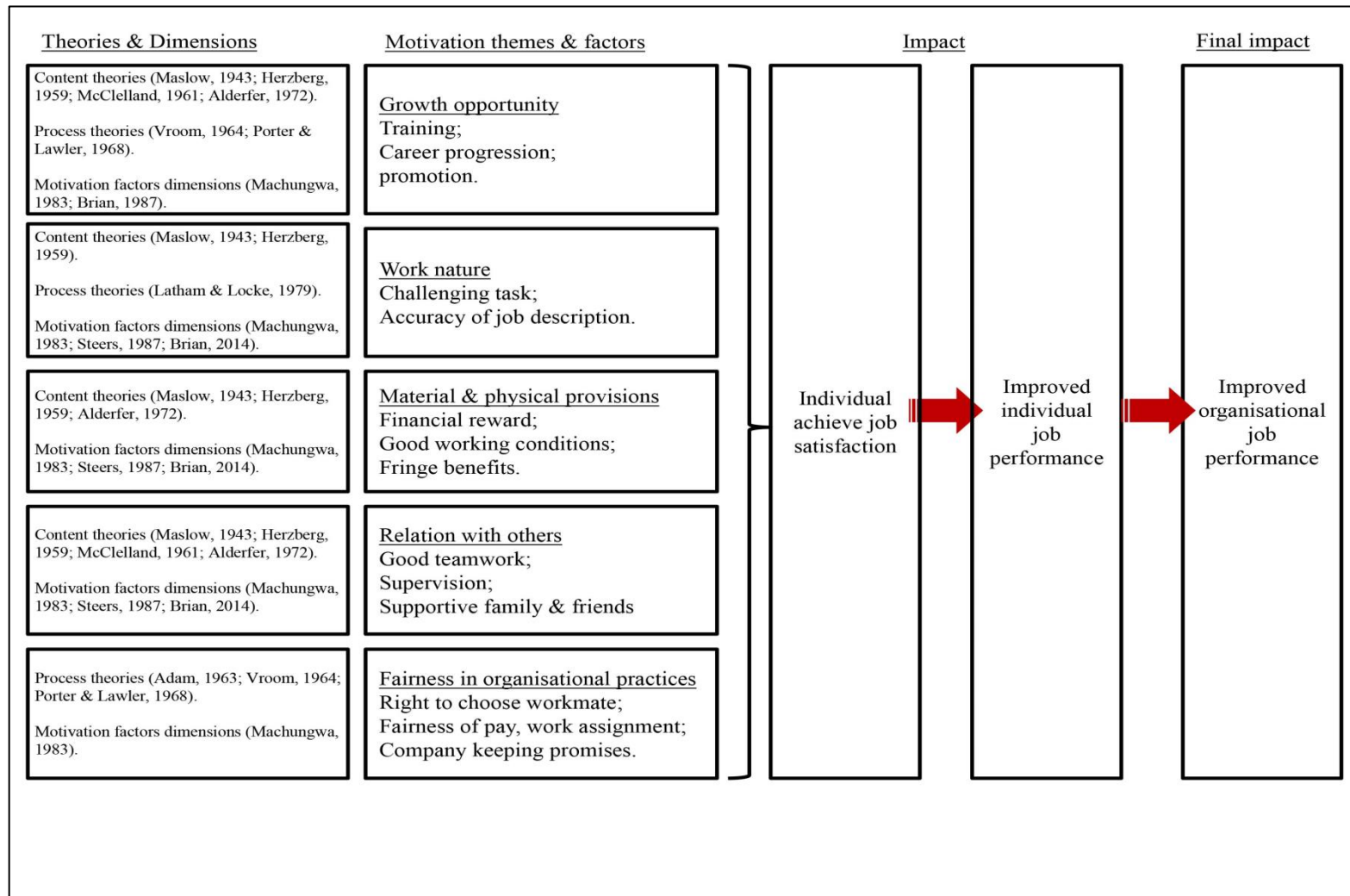
7.3 Proposed framework for motivation of quantity surveyors towards job improvement

7.3.1 The development of the conceptual framework

Imenda (2014) defines conceptual framework as an end result of bringing together a number of related concepts to explain or predict a given event, or give a broader understanding of the phenomenon of the research problem. In other words, conceptual framework is a set of specific ideas that can be used to make conceptual distinction and organise ideas, and can be used within the larger theoretical framework. Accordingly, the conceptual framework for this research consists of a few components that encapsulate the whole objective of this research and thus achieve the aim of this research.

Initially, the conceptual framework of the study was developed based on the literature reviews. The literature includes the motivation models; motivation frameworks; motivation dimensions; and up to single motivation theories. The motivation factor components and employers' roles components in the conceptual framework were gathered from the literature that have frequently been cited and from well-known authors in the area of motivation and relating to the construction industry (figure 2.3 of chapter 2).

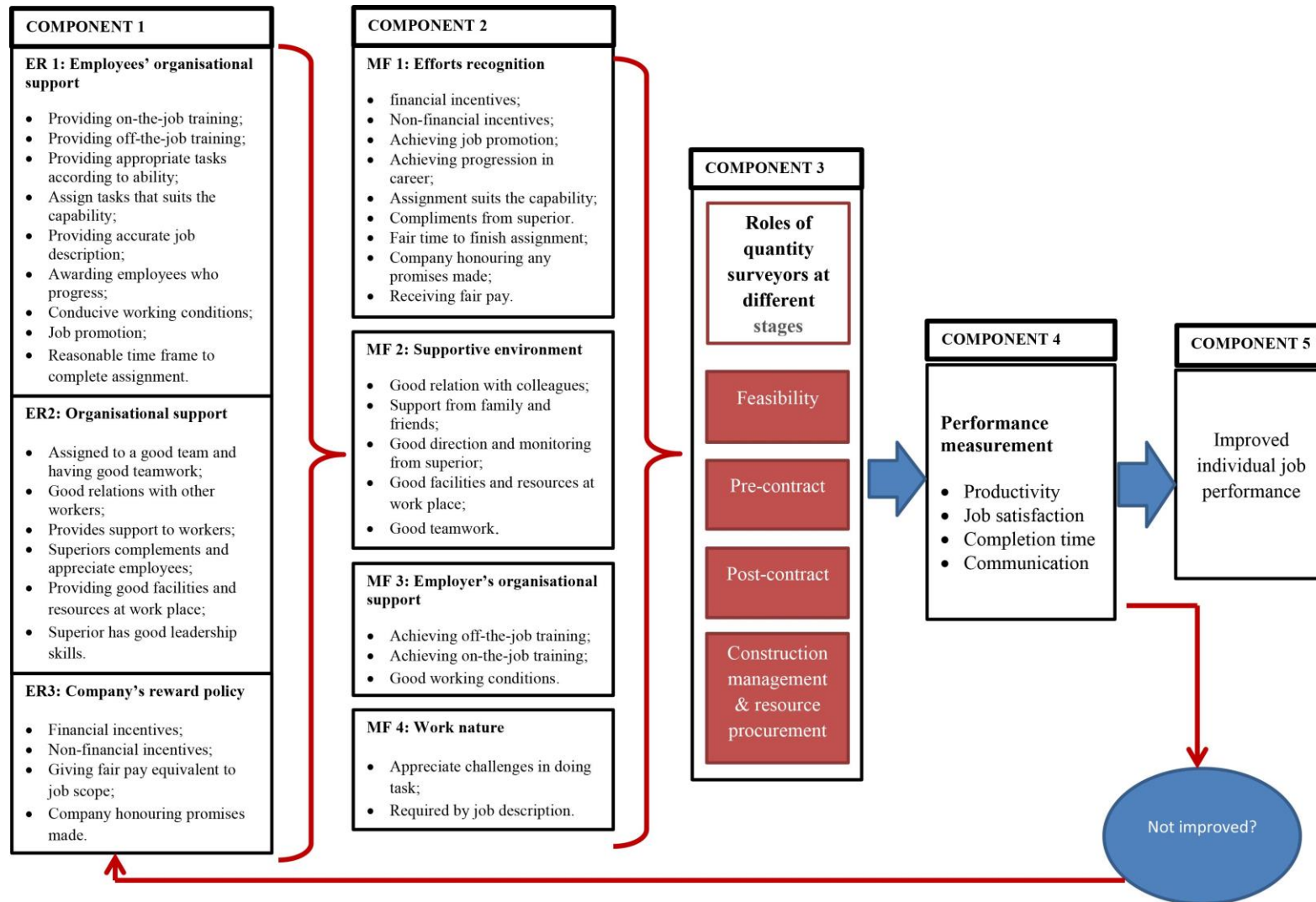
Figure 2.3 of chapter 2: Initial conceptual framework on motivation of quantity surveyors in the construction industry based on literature reviews



Further, the conceptual framework was improved based on the quantitative findings from the seventy one number of questionnaires and qualitative findings from twenty two numbers of interviews. These motivation factors and employers' role components in part 3 and part 4 of the questionnaire surveys were then tested respectively, before they were grouped into four motivation factors dimensions and three employers' role dimensions individually.

The new themes are: efforts recognition (MF1); supportive environment (MF2); employer's organisational support (MF3); and work nature (MF4); after the analysis applying the factor analysis method using the SPSS software. The employers' role components in the framework was also tested in part 4 of the questionnaire survey, and consequently, produced three dimensions: employees' organisational support (ER1); organisational support (ER2); and company's reward policy (ER3); after being analysed using the factor analysis, also by employing the SPSS software. Accordingly, this conceptual framework is developed within the Malaysian context. The conceptual framework developed in this research is as shown in the following figure 7.3.

Figure 7.3: Conceptual framework of motivation of the quantity surveyors in construction industry towards improved job performance after analysis of findings



7.3.2 How the conceptual framework works:

The central element of this framework is the improved performance of quantity surveyors in their job (component 5). There could be two possible outcomes in this framework. The first possible outcome is that the quantity surveyors achieve performance improvement in their job. This can be achieved if they are impacted by one or more motivation factors in one or more themes which are: MF1; MF2; MF3; and MF4 (detail construction and explanation are in chapter 5.10.1; and chapter 7.2.2 respectively) (component 2). The second is that the quantity surveyors have not gained performance improvement and hence further evaluation of their current motivation factors as individuals and in the current organisation should be made. Other motivation factors should be implemented on the quantity surveyors if the current motivation factors do not impact and affect the individuals.

Concurrently, employers or the management team of the organisation shall play their part in accelerating the motivation of the individual quantity surveyor with relevant motivation factor or factors from one or more dimensions in the employer's roles theme listed in: ER1; ER2; and ER3 (detail construction and explanation are in chapter 5.10.2; and chapter 7.2.3 respectively) (component 1). By doing so, it may accelerate the motivation of quantity surveyors. Different stages of the construction development (detail explanation in chapter 3.2) have different nature of works (component 3) and this might also affect the motivation of the quantity surveyors differently.

Accordingly, the employers may employ the same motivation factors during all stages; and employ different strategies in the motivation of the quantity surveyors by implementing different motivational practice or factors when the quantity surveyors show signs of demotivation. This can be seen in component 4, 'performance measurement' such as low in productivity; job dissatisfaction or low job satisfaction; delay in completing their task; and lack of communication. The impact of the effectiveness of the motivation factors can be identified through job performance measurements but for this research, we do not focus on the performance measurement of the quantity surveyors.

Table 7.9 suggests that, at each stage of the construction process, different employers' roles and different motivation factors can be referred to and applied to individual quantity

surveyors in order to achieve the maximum improvement in their performance. This table also shows that the motivation factors impact one or more roles of quantity surveyors at all four stages of the construction. It shows the relationship between component 1; 2; and 3 of the framework; which summarised the relevance of the components to be put in the framework. The details of the relationship of the motivation factors and the employer's roles with the quantity surveyors roles at different stages can be referred in chapter 5.9.1 and 5.9.2.

Table 7.9: Summary of employers' roles and motivation factors in the motivation of quantity surveyors at different stages of the construction development

Employers' roles (ER)	QS roles at different stages	Motivation factors (MF)
Few ER correlate with QS roles	Feasibility	Several MF correlate with QS roles
Several ER correlate with QS roles	Pre-contract	Several MF correlate with QS roles
Several ER correlate with QS roles	Post-contract	All MF correlate with QS roles
No correlations at all	CM & resource procurement	Several MF correlate with QS roles

During the discussion in chapter 7.2.1, it is mentioned that, quantity surveyors' roles during feasibility and post-contract stages has several significant results and hence a single framework is recommended for the quantity surveyors regardless their different types of organisations. Meanwhile, developing specific frameworks according to different types of organisations are initially suggested to cater the quantity surveyors' roles during: pre-contract; and construction management and resource procurement; stages.

The discussion in chapter 7.2.2 and 7.2.3 also mentioned the options available to develop conceptual frameworks specific to the quantity surveyors' groups, as well as a single general framework that is applicable to all types of quantity surveyors' group.

After gathering all the results from the analyses, and comparing them, the researcher believes that a single but robust conceptual framework which encapsulates the motivation practices for quantity surveyors towards improved job performance is sufficient enough to achieve the aim of this research; provided that, detailed explanation and guidance is provided and referred.

The next important step is to get the framework validated and this will be discussed in the next chapter.

7.3.3 The validation of the conceptual framework

The final important process of this research is to validate the conceptual framework. The question is whether the proposed framework and its concepts make sense not only to the researcher but also to other scholars and practitioners, as well as to ensure the framework present a reasonable theory for scholars studying the phenomenon from different disciplines (Jabareen, 2009). Validating a conceptual framework is a process that starts with the researcher, who then seeks validation among ‘outsiders’ and for this particular research, the expert quantity surveyors who have experienced in various disciplines of quantity surveying field in Malaysian construction industry.

A theory or a theoretical framework representing a multidisciplinary phenomenon will always be dynamic and may be revised according to new insights, comments, literature, and so on. As the framework is multidisciplinary, the theory should make sense for those disciplines and enlarge their theoretical perspective on the specific phenomenon in question.

Two experts have been given a set of open-ended questionnaires each regarding the conceptual framework proposed. The feedbacks were received two weeks later. There were some unclear comments from the questionnaires; however, clarifications have been made by telephone conversations, as well as email communications. Some of the comments from the validation are tabulated in table 7.10 and later a framework was developed and presented in figure 7.4.

Table 7.10: Comments from experts for validation of conceptual framework process

Validation questions	Validator 1	Validator 2
<p>What do you think of the layout of the conceptual framework?</p>	<p>The layout of the conceptual framework is fine. However, the motivational concept should be defined as motivation is a subjective matter. Motivation passion; and motivation is the difference between having a job and having a career. Sometimes it's not about the money, it is also about the environment, self-satisfaction and liking the work it self</p>	<p>The layout of the conceptual framework is fine. However, it is too crowded. I would suggest that the framework being simplified, but at the same time, supplemented with details in somewhere else.</p>
<p>What do you think about the content of the framework?</p>	<p>Quantity surveying has advance tremendously over the years and has diversified into other areas. Therefore you should define the job description of a quantity surveyor in maybe into categories where a Quantity Surveyor would be in be it in consultancy, construction, project management , procurement etc. There is also those in the private and also in the public sector with different job specifications.</p>	<p>The content is good. But do all the quantity surveyors in different organisations have the same motivation factors since different quantity surveyors' organisations plays different roles and carry different tasks.</p>
<p>Do you think that the framework is practicable to be implemented in the organisation for the quantity surveyors? Why and how.</p>	<p>It is workable if the job specification covers the different categories as defined. It is also about the key performance index but it is also about the correlation about the work environment, the security of work and other immeasurable considerations. It is practicable in the sense that of a quantity surveying consultancy scenario but I do not think it is that practical for QS in other fields.</p>	<p>I think it will be practicable to be implemented in the organisation. However, the organisation should regularly, say annually; perform the evaluation process on the job performance of their employees in order to see whether the framework is workable.</p>

<p>What do you think that needs to be done to improve the framework in order to make it more effective to be implemented in the organisation for the quantity surveyors? Please explain your opinion in detail.</p>	<p>The framework should detail out the correlation between the motivational themes with respect of the quantity surveyor in the different organisation that they are in. There is also the prospect of promotions whereby the quantity surveyor would have an entirely different job scope. Maybe the framework should look into the progression of the work skill and body of knowledge required for the job. An enthusiastic quantity at the beginning of his/her career might be bored doing the same job, day in and day out till the end of his or her career. A new skill or job responsibility during the career path might give him new motivation and also new knowledge level</p>	<p>The framework should be more precise according to types of quantity surveyors; position of the quantity surveyors in the organisation; and gender.</p>
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Both validators are registered quantity surveyors in Malaysia and have more than twenty years working experience as quantity surveyors in the construction industry and have working experience in various organisations of quantity surveyors which include: government agency; private consultancy firm; and private contracting firms. On top of that, Validator 1 had three years working experience in the Middle-East country as a senior quantity surveyor for building and infrastructure projects. He also has experience in various types of procurement which include: traditional; design and build; and build and transfer; projects.

Both of them own medium-sized private consultancy firms in Kuala Lumpur, the central business region in Malaysia. In addition, both validators are actively involved with the programmes organised by professional bodies such as: Board of the Quantity Surveyors, The Royal Institution of Surveyors, Malaysia; and Construction Industry Development Board.

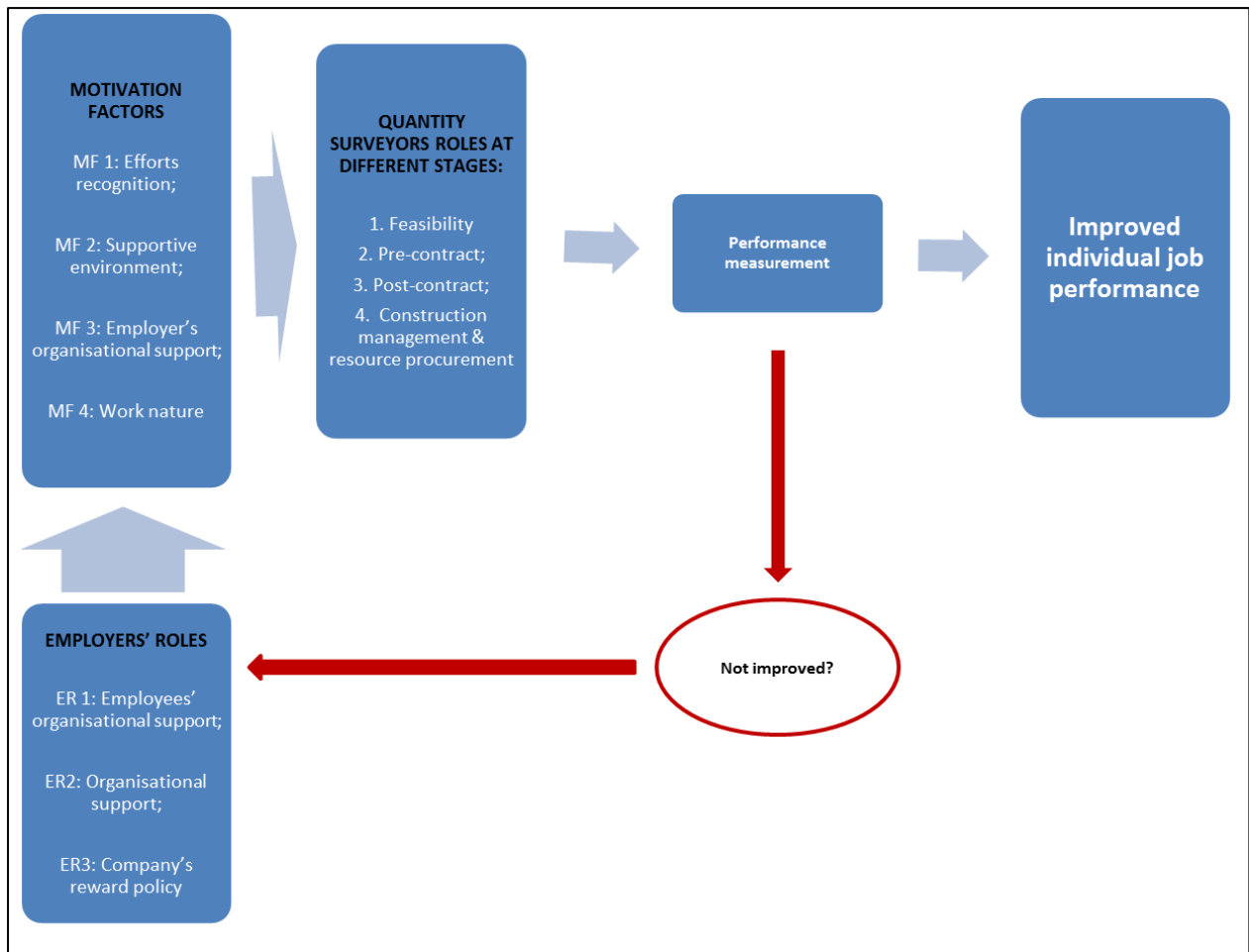


Figure 7.4: Final conceptual framework of motivation of the quantity surveyors in construction industry towards improved job performance after validation process

The final conceptual framework has the same concept with the framework before the validation process where the components and the flow of the components of the frameworks are maintained. The final framework is a simplified conceptual framework for reasons of simplicity in understanding it. However, the conceptual framework shall be complemented with the details of how the framework works so that quantity surveyors can understand and apply the framework on them; or for the employers to apply it on their employees. The details shall be provided in writing, explaining each component of items in the framework, i.e. the details of components: motivation factors; employers' roles quantity surveyors roles at different stages; and performance measurement. The conceptual framework should also be accompanied with a step by step explanation showing the flow of how the framework works. A detailed explanation of how the framework works can be referred to in chapter 7.3.2.

Also, it is strongly advisable for quantity surveyors to refer to the following table, when interpreting the framework, in order to obtain a more precise result of which then leads to more effective improvement on the job:

- (a) Table 5.42 until table 5.45 in order to obtain the suitable motivation factors according to the quantity surveyors' roles in particular;
- (b) Table 5.47 until table 5.50, in order to obtain the suitable employers' roles according to the quantity surveyors' roles in particular (suggested for employers' reference);
- (c) Appendix 7.5, in order to see the appropriate motivation factor according to the types of the organisation of the quantity surveyors; and
- (d) Appendix 7.6 in order to see the appropriate employers' roles in the motivation of the quantity surveyors according to the types of organisation.

7.4 Summary

This chapter contains the discussion of the research which covers the four themes. The four themes initially arose from the qualitative analysis through content analysis, and later was strengthened with the findings from the quantitative analysis through feedback from the questionnaires using the SPSS software. The discussions take place after the analysis of the quantitative and qualitative data has been done and the discussion is to explore the results from the findings in order to achieve triangulation.

This chapter also presented the process of the development of a conceptual framework. The final conceptual framework has covered the main topics that need to be understood on motivation factors of quantity surveyors in the different stages of the construction industry in order to achieve improved job performance. The conceptual framework also covers the roles of the employers in the motivation of the quantity surveyor employees in the organisation.

The first draft of the conceptual framework was developed using information from the literature review. Furthermore, data analysis of the questionnaire surveys and interviews reshaped the draft of the conceptual framework, and the final framework was finalised after the validation process.

The next chapter will present the conclusion and the recommendations of the research, which will also discuss: the limitations of the study; contribution to the body of knowledge; future research and summarising the research process.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter presents the overall conclusion and reflections towards the whole process of this research. Other than contributions to the body of knowledge, this chapter summarises the key findings and main conclusions of the study. The limitation of the study is highlighted and it offers recommendations for future research.

8.2 Contributions to the body of knowledge

This research focused on highlighting the relationship between motivation and the quantity surveyors' roles, which has been scarcely mentioned in current literature. This research also contributes to the body of knowledge in its novelty approach, where the mixed methodology survey design was employed to answer the research questions established in chapter 1 of this thesis.

The qualitative findings discussed in chapter 6 of this thesis provide the insights gained from the individual quantity surveyors who work in the construction industry, namely: the government agencies; private consultancy firms; and private contracting firms. The findings from the qualitative data collection has demonstrated the issues in the quantity surveying profession which focuses on their roles at the current organisations; a segment not often focused on previous studies within the context of the Malaysian construction industry and at various organisation settings.

This research has contributed to the understanding of motivation concepts and the differences of ways on how they contribute to the performance of the individual quantity surveyors. In conducting an extensive literature review, the key motivation factors from previous studies have been identified and compiled as elaborated in chapter 2.4.1 of this thesis. Within the same chapter, in table 2.4, this research has also compiled motivation themes in the development of the frameworks for motivation of quantity surveyors in the construction industry from the motivation factors. The classification of the motivation factors into themes

from the literature reviews, has led to the development of new themes that suit quantity surveyors; and hence fill the research gap as previously mentioned in chapter 1.

Another significant contribution of this research is the identification of new motivation themes that fits quantity surveyors in the Malaysian construction industry. Also, suitable motivation factors and employers' roles in the motivation of quantity surveyors were identified in accordance to the different types of organisations as well as at different stages of the construction industry.

The key ideas gathered through the exploration of key concepts and theories in the literature review have complemented the methodological decision made in answering the research questions. Chapter 4 of this thesis has explored the methodological approach in conducting this research, as well as justifying the appropriate design for this research. This research also adds to the body of knowledge through the research design selected, which is the mixed methodology survey design, within the context of the Malaysian construction industry.

The final contribution of this research is the realisation of the research aim in developing a conceptual framework on the motivation of quantity surveyors in the Malaysian construction industry for improved job performance, as shown in figure 7.4. Therefore, it can be concluded that the development of this framework has also reduced the current gap in quantity surveyors job performance, which lacks the suitable motivation factors to be chosen from and applied at different types of organisations, as well as during different stages of construction. Although this framework is under the Malaysian context, it can also be applied in other developing countries that share a similar cultural and regional background such as: Brunei; Indonesia; and Thailand.

Accordingly, the outcomes from this research can be adopted for future educational or training use which will be beneficial for practitioners as a hands-on professional development programme or for use as theoretical understanding in academic programmes. This dissemination of conceptual knowledge in motivation and job performance on individual quantity surveyors in the construction industry will provide an in-depth understanding amongst academia, policy makers, practitioners, and students, which in turn will create more motivated individuals and a positive ambience at the work place within the Malaysian construction industry.

8.3 Conclusions of the research

As described in the aim and objectives section of this study (refer chapter 1.5 and 1.6), this research aims to develop a conceptual framework on the motivation of quantity surveyors in the Malaysian construction industry for improved job performance. In order to achieve the aim, seven objectives were provided and executed which have been reported within previous chapters. Examinations of findings across the objectives show that motivation plays an important role for quantity surveyors to improve job performance, and different stages of the construction development offers different motivation factors.

The main findings of the present research are in the following sub-sections, divided by research objectives.

8.3.1 Objective 1: To critically review the literature on motivation, and document the motivation factors and practices in general, and especially in the area of construction

Motivation is identified to be in correlation with the performance of quantity surveyors in the construction industry. The evidence shows that it is essential for the Malaysian construction industry to apply motivational practices in organisations through individual quantity surveyors in order to be competitive in the future, especially in moving towards globalisation.

8.3.2 Objective 2: To explore the role of quantity surveyors, generally, and specifically in the Malaysian construction industry for the last fifty five years

Quantity surveyors' roles have been identified and categorised in accordance to different stages of the construction development. Over the years, the roles have been characterised as traditional roles and developed roles, where the former roles are the roles that have been the original roles of quantity surveyors since the beginning of the profession which started as early as the seventeenth century; meanwhile the latter roles are quantity surveying roles that have developed since the 1990s to suit the competitive environment of the construction industry.

For aggregate level, the main role of quantity surveyors' during the feasibility stage is contractual and tendering arrangements (early advice). Meanwhile, the main roles of quantity

surveyors according to different types of organisations are: preparation of estimates from sketch to detailed design and contractual and tendering arrangements early advice (government agencies); preparation of estimates from sketch to detailed design (private consultancy firms); and cost checking during the development design stage (private contracting firms).

Overall, the main role of quantity surveyors during the pre-contract stage is the preparation of BQ & tender documents. Meanwhile, quantity surveyors focal roles according to the different types of organisations are: measurement, estimating & pricing for tenders (government agencies); and project liaison meeting with employers and consultants (private consultancy firms). As for private contracting firms, the top roles include: preparation of BQ & tender docs; measurement, estimating & pricing for tenders; and selection & evaluation of tender & reporting on tenders.

For aggregate level, the central role of quantity surveyors during the post-contract stage is preparation of variation orders and final accounts. The main roles of quantity surveyors according to the different types of organisations are: preparation of interim valuations; preparation of variation orders and final accounts; and project liaison meetings with employers and consultants (government agencies). Meanwhile, as for private consulting firms, the focal roles include: reporting; evaluating and negotiating on contractual and extra-contractual issues; and project liaison meetings with employers and consultants. Finally, the top roles for quantity surveyors for private contracting firms are: application of cost control during the progress of the works; preparation of interim valuations; and preparation of variation orders and final accounts.

The leading role of quantity surveyors during the construction management and resource procurement stage is: liaison with the employer, consultants, statutory and service authorities. Meanwhile, the focal roles of quantity surveyors according to the different types of organisations are: planning and programming of construction activities (government agencies); and liaison with the employer, consultants, statutory and service authorities (private consultancy firms). As for private contracting firms, the main roles include: liaison with the employer, consultants, statutory and service authorities; procurement of labour, plant and materials; and negotiation with and management of sub-contractors and suppliers.

Overall, it can be concluded that, the level of involvement of quantity surveyors during: the pre-contract; and construction management and resource procurement; stages are similar between the government agencies; private consultancy firms; and private contracting firms. This can be concluded that, during these two stages, the quantity surveyors in the three organisations play the same amount of importance of quantity surveying roles during these stages. Meanwhile, during the post-contract stage, it shows that quantity surveyors from private consultancy firms and contracting firms are more involved in this stage; and this can be interpreted that, during this stage, a lot of works are more focused on the construction site and the involvement of quantity surveyors from the government agencies are moderate especially roles such as the: preparation of interim valuations; preparation of the variation order and final accounts; and reporting, evaluating and negotiating on contractual issues.

8.3.3 Objective 3: To investigate and identify the factors that impact on the motivation of quantity surveyors in the Malaysian construction industry

The nineteen main motivation factors that contribute to the job performance of quantity surveyors in the construction industry are established.

- Challenges in doing tasks;
- Required by job description;
- Job promotion;
- Progression in career;
- On-the-job training;
- Off-the-job training;
- Working conditions;
- Financial incentives;
- Non-financial incentives;
- Relationship with colleagues;
- Direction and monitoring from superior;
- Suitability of the assignment received in accordance to the capability;
- Fair time to finish assignments;
- Company honouring promises made;
- Fair pay equivalent to job scope;

- Teamwork;
- Support from family and friends;
- Compliments from superiors; and
- Facilities and resources at work place.

For aggregate level, the top three motivation factors are: working conditions; good teamwork; and good facilities and resources at the work place. The least motivation factor is non-financial incentives.

Among the top motivation factors for quantity surveyors in the government agencies are: working conditions; good teamwork; job promotion; and progression in career. The least motivation factor is non-financial incentives.

The leading three motivation factors for private consultancy firms are: working conditions; presence of good teamwork; and good facilities and resources at the work place. Similar to government agencies, the least effective motivation factor is also non-financial incentives.

Top motivation factors for private contracting firms include: required by job description; financial incentives; achieving job promotion; working conditions; having good relations with colleagues; good direction and monitoring from superiors; fair time to finish assignments; company honouring any promises made; and support from family and friends. The least motivation factor is off-the-job training.

The motivation factors of quantity surveyors have no difference in impact amongst the three organisations which conclude that all the quantity surveyor groups have similar motivation factors and this may be due to the: same nature of workplace and industry environment; and similar needs and wants; between these groups.

8.3.4 Objective 4: To ascertain the role of employers in the motivation of quantity surveyors in the Malaysian construction industry

Like objective 3, there are nineteen employers' roles listed in the questionnaires and interviews. However, in terms of rank, there are slight differences of motivation factors

required by the individual quantity surveyors and provided by the employers. The nineteen main employers' roles that contribute to the job performance of quantity surveyors in the construction industry are established.

- Providing appropriate tasks to employees according to their ability;
- Provide accurate job description to employees;
- Granting job promotion to performing employees;
- Awarding employees who progresses in career;
- Providing on-the-job training;
- Providing off-the-job training;
- Providing conducive working conditions;
- Offering financial incentives;
- Offering non-financial incentives;
- Achieving good relations with other workers;
- Superior has good leadership skills;
- Assigning tasks that are suitable to the capability of the worker;
- Allocating a reasonable time frame to complete assignments;
- Company honouring promises made;
- Giving fair pay equivalent to job scope;
- Assigned to a good team and having good teamwork;
- Superior provides support to workers;
- Receiving compliments and appreciation from superiors;
- Providing good facilities and resources at the work place.

For aggregate level, the top four employers' roles are: creating good teamwork; providing support to workers; assigning tasks that suits employees capabilities; and superior has good leadership skills. The least effective employers' roles are offering non-financial incentives.

The leading three employers' roles for government agencies are: providing appropriate tasks to employees according to their ability; assigning employees to a good team that has good teamwork; and providing an accurate job description to employees. Similar to objective 3, non-financial incentives has been the employers' least choice in the motivation of quantity surveyor employees. The least required motivation factor is non-financial incentives.

The principal three employers' roles for private consultancy firms are: superior provides support to workers; assigning employees to a good team that has good teamwork; and assigning tasks that are suitable to the capability of the worker. The least favoured employers' role is off-the-job training.

Top employers' roles for private contracting firms include: providing accurate job description; granting job promotion to performing employees; granting financial incentives; achieving good relations with other workers; company honouring any promises made; and giving fair pay equivalent to job scope. The least employers' role is off-the-job training.

The result of this objective shows that employers' in different groups of quantity surveying organisations do not play similar roles in motivating their quantity surveyor employees. The dissimilarity of the employers' roles among these groups may be due to budget allocation; purpose of the organisation; and expectation of the employers from the employees.

8.3.5 Objective 5: To synthesise the current motivational practices employed by organisations, including the challenges and effectiveness of the practices in motivating quantity surveyors

This research investigated the challenges and the effectiveness faced by the employers in employing motivational practices in their organisation. There are five motivational practices that can be implemented and according to this research, the most challenging methods in descending order are:

- Provide good relations amongst staff and management team;
- Provide fairness in organisational practices;
- Provide material and physical provisions;
- Prepare appropriate nature of work;
- Provide growth and advancement opportunities.

The challenges of implementing the motivational factors have impact on the different types of organisations. The most effective motivational practices in descending order are:

- Provide good relations amongst staff and management team;
- Provide material and physical provisions;
- Provide growth and advancement opportunities
- Prepare appropriate nature of work;
- Provide fairness in organisational practices;

All quantity surveyor groups faced different levels of challenges in employing the motivational practices in the organisations. This is because each type of group has different sources of budget allocation in aiding the implementation of the motivational practices. This is also due to the size and number of employees of the organisation, especially in providing fairness among employees in the organisation. However, almost all practices have a similar level of effectiveness on all types of organisation groups.

8.3.6 Objective 6: To synthesise the impact and effectiveness of the motivational practices on individual quantity surveyors in the organisation

This research investigated the impact and effectiveness of the motivation practices on individual quantity surveyors in the organisation and the results of the research show that the highest impact of motivational practices in descending order are:

- Good relations amongst staff and management team ;
- Material and physical provisions ;
- Fairness in organisational practices ;
- Appropriate nature of work;
- Growth and advancement opportunities.

This research also identified the effectiveness of motivational practices on individual quantity surveyors and the five practices in significant descending order are:

- Good relations amongst staff and management team ;
- Appropriate nature of work;
- Material and physical provisions ;

- Fairness in organisational practices ;
- Growth and advancement opportunities.

Different quantity surveyor groups faced a different level of impact in employing most of the motivational practices in their organisations. The differences are especially obvious in receiving the material provision and growth in career. Both motivational practices are offered at a different rate between the public and private sectors and thus, lead to the difference of impact level. However, almost all practices have a similar level of effectiveness on each individual in all types of organisation groups.

8.3.7 Objective 7: To develop and validate a conceptual framework that encapsulates motivation and its practices towards quantity surveyors in the Malaysian construction industry

The research has synthesised relevant literature and examined findings from the questionnaire surveys and the interviews. It provided the foundation for the development of the framework of the motivation of quantity surveyors in the Malaysian construction industry for improved job performance.

The development of the framework is presented in chapter 7. The framework consists of five components which entail: employers' roles; motivation factors; stages in the construction development; performance measurement; and the final expected result, which is, improved job performance. The high impact of the effectiveness of this framework can be obtained when referring to tables and appendices (items (a) until (d)) listed at the last part of chapter 7.3.3.

8.4 Limitations of the study

8.4.1 Data only from the construction industry

This research only takes on board the investigation of individual quantity surveyors who work in the construction industry. Future work should include data from other industries as

well, so the pattern of motivation factors on individual quantity surveyors in Malaysia can be profiled.

8.4.2 Research is focused within the Malaysian context

The research has only included findings from the Malaysian construction context. It would be expected if the research context is expanded to include other countries, more factors than what has been mentioned in this thesis contributing to the motivation of individual quantity surveyors will emerge. Also, the difference of the motivation factors according to different types of organisations is clearer.

8.4.3 Cultural barriers, personal values and self-doubt of participants

Typical Malaysians possess some observable values of shyness, limited expression of feelings, respect for others, religious orientation and a collectivistic lifestyle. During the interview sessions, the researcher had to coax some of the participants to provide their insights in regards to the motivational practices. Some of the participants felt uneasy to provide their feedback on questions relating to organisational culture and structure, despite being assured of their anonymity in this research.

8.5 Recommendations

This section proposes related areas of research where additional inquiries could further enhance the value of this research. The many issues and problems encountered throughout the course of this research have inspired several recommendations for future work to extend the performance issue of quantity surveyors with the aid of the motivation aspect. These recommendations are as follows:

Recommendations for quantity surveyors in government agencies:

- Working conditions is found to be the most influential motivation factor on individual quantity surveyors.

- The research found that good relations amongst staff and the management team are the most influential and effective motivation practice in motivating the quantity surveyors. It is important for the employers to provide a friendly environment to the organisations to support in the improvement of job performance of the quantity surveyors.

Recommendations for quantity surveyors in private consultancy firms:

- Working conditions is found to be the most influential motivation factor on individual quantity surveyors.
- The research found that receiving material and physical provisions is the most influential motivation practice in motivating the quantity surveyors. However, having good relations amongst staff and the management team is the most effective motivational practice. It can be suggested that the employers provide motivational practices that combine these two motivational practices in their organisations. For example, granting financial-incentives or offering non-financial rewards for the team that performs.

Recommendations for quantity surveyors in private contracting firms:

- Financial incentives are found to be the most influential motivation factor on individual quantity surveyors.
- The research found that receiving material and physical provisions is the most influential and effective motivation practice in motivating the quantity surveyors. Employers can focus more in providing this sole motivational practice to the employee quantity surveyors such as awarding annual bonuses; company shares or bonds mainly as financial incentives.

8.6 Suggestions for future research

The performance measurement of the conceptual framework in the area of motivation towards improved job performance can be further developed so that the framework can be more robust. Also, the development of the framework in the area of motivation towards

improved job performance can be further developed for other professional roles, such as the architects and engineers.

There is an opportunity for future research on motivation towards job improvement for quantity surveying professions in other industries other than the construction industry such as: the heavy engineering industry; and the education field. Future studies can focus on the motivation for improved job performance according to different types of job position; period of working experience; as well as genders of the quantity surveyors. Future studies could also explore the demotivation factors of quantity surveyors.

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Appendices

Academic Audit and Governance Committee**College of Science and Technology Research Ethics Panel
(CST)**

To Sarah Herman (and David Eaton)
cc: Professor Hisham Elkadi, Head of School of SOBE
From Nathalie Audren Howarth, College Research Support Officer
Date 10/10/2014

MEMORANDUM

Subject: Approval of your Project by CST
Project Title: Motivation of Quantity Surveyors towards Job Improvement
REP Reference: CST 14/47

Following your responses to the Panel's queries, based on the information you provided, I can confirm that they have no objections on ethical grounds to your project.

If there are any changes to the project and/or its methodology, please inform the Panel as soon as possible.

Regards,



Nathalie Audren Howarth
College Research Support Officer

POSTAL QUESTIONNAIRES

Research Topic: Motivation of Quantity Surveyors towards Job Improvement in the Malaysian Construction Industry

Return to:

Siti Sarah Herman

PhD Research Student

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Overview of the Research Study

This survey is based on an ongoing PhD research study. The aim of this research is to develop a model and a set of guidance notes on the motivation of quantity surveyors in the Malaysian construction industry for improved organisation performance.

Questionnaire Survey Instructions

- There are no right or wrong answers to the questions in this survey. Select the most appropriate answer for each question based on your view/experience.
- There may be questions that appear irrelevant or impertinent. However, it is necessary in this study that all questions are answered, as the questionnaire is designed to achieve particular research objectives, and it is hoped not to offend respondents in any way. If there is a question(s) that you are unwilling or unable to answer, you may leave it unanswered and continue to the remainder of the questionnaire.
- Remember that **BOTH YOUR IDENTITY** and that of the company you work for **WILL REMAIN STRICTLY CONFIDENTIAL**.

PLEASE SEND THE COMPLETED QUESTIONNAIRE TO THE ABOVE ADDRESS.

PART 1: GENERAL INFORMATION

Select the most appropriate answer by ticking (/) **ONE** box for each question based on **YOUR VIEW AND EXPERIENCE**.

1. Which title best describes your position in your organisation?

- Principal/ Director/ Partner QS
- Senior QS
- Quantity Surveyor
- Assistant QS
- Others (please indicate position) _____

2. How long have you worked in the quantity surveying profession in the Malaysian construction industry?

- Less than 1 year
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- More than 20 years

3. How long have you worked in your current organisation?

- Less than 1 year
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- More than 20 years

4. What is your gender?

- Male
- Female

5. What type of organisation are you currently working for/in?

- Government sector
- Private consultancy firm
- Private contractor firm
- Other (Please specify: _____)

PART 2: ROLES OF QUANTITY SURVEYORS

The purpose of this section is to explore the level of involvement of quantity surveyors in the construction industry.

Please select the appropriate answer by ticking (/) for each question based on **YOUR VIEW AND EXPERIENCE** of **YOUR ROLE** at your current organisation.

Scale of involvement:

0 (No involvement), 1 (Low involvement), 2 (High involvement), 3 (Very high involvement)

Roles	Level of involvement			
	0	1	2	3
6. FEASIBILITY STAGE				
1. Preparation or use of cost analysis.				
2. Preparation of estimates from sketch plan to detailed design.				
3. Preparation and use of detailed budgets.				
4. Preparation and use of cost plans.				
5. Financial feasibility studies including economic evaluation and assessment of total expenditure.				
6. Value management/engineering including comparative design economics.				
7. "Cost-in-use" studies/Life-cycle costing, namely the relationship between capital and expenditure for individual sections of work and/or components.				
8. Preparation/interpretation of turnover, profit/loss forecasts and cash flow projections.				
9. Cost checking during the development of design.				
10. Contractual and tendering arrangements in the context of early advice.				
7. PRE-CONTRACT STAGE				
1. Preparation and documentation of BQ and other tender documents for main contracts, sub-contracts or contracts of supply.				
2. Measurement, estimating and pricing for tenders.				
3. Value management/engineering including comparative design economics.				
4. Preparation of specification and/or schedule of rates.				
5. Data processing associated with the preparation of documentation.				
6. Detailed compilation and analysis of unit rates/preliminaries.				
7. Selection and evaluation of tenders and reporting on tenders.				
8. Project liaison meeting with employers and consultants.				
9. Pre-qualification, evaluation and registration of contractors.				

Roles	Level of involvement			
	0	1	2	3
8. POST-CONTRACT STAGE				
1. Preparation of contract documents for main contract sub-contracts or contracts of supply including rationalisation of contract rates.				
2. Application of cost control during the progress of the works.				
3. Monitoring of proposed construction methods and sequences and those actually required and reporting thereon.				
4. Value management/engineering including preparation of cost/benefit reports upon alternative construction methods.				
5. Analysis of contract pricing relative to cost recording methods.				
6. Preparation of interim valuations.				
7. Preparation of variation order and final accounts.				
8. Report, evaluating and negotiating on contractual and extra-contractual issues.				
9. Preparation and/or interpretation of cost/value and other reconciliation statements for management purposes.				
10. Project liaison meeting with employers and consultants.				
11. Site surveys and measurement and attendance at site meetings.				
9. CONSTRUCTION MANAGEMENT AND RESOURCE PROCUREMENT				
1. Planning and programming of construction activities.				
2. Site planning.				
3. Management of resources and supervision of works.				
4. Liaison with employer, consultants, statutory and service authorities.				
5. Resource determination, scheduling and purchasing.				
6. Procurement of labour, plant and materials.				
7. Negotiation with and management of sub-contractors and suppliers.				

PART 3: MOTIVATION FACTORS OF QUANTITY SURVEYORS

The purpose of this section is to investigate the level of impact of motivation factors of quantity surveyors in the construction industry.

10. Please select the appropriate answer by ticking (/) for each question based on **YOUR VIEW AND EXPERIENCE** on factors of motivation **AT YOUR CURRENT ORGANISATION**.

Scale of impact:

0 (No impact), 1 (Low impact), 2 (High impact), 3 (Very high impact)

Motivation factors	Level of impact			
	0	1	2	3
1. Appreciate challenges in doing task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Required by job description	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Achieving job promotion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Achieving progression in career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Achieving on-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Achieving off-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Good working conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Obtain annual bonuses or other financial incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Obtain company vacation trip or other non-financial incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Have good relation with colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Receiving good direction and monitoring from superior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Receiving an assignment that is suitable to capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Receiving a fair time to finish assignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Company honouring any promises made	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Receiving fair pay equivalent to job scope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Have good teamwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Receiving support from family and friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Receiving compliments from superior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Having good facilities and resources at work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 4: ROLE OF EMPLOYER IN THE MOTIVATION OF QUANTITY SURVEYORS

The purpose of this section is to ascertain the extent of the role of employers in the motivation of quantity surveyors and to determine their level of involvement in the motivation of quantity surveyors in the construction industry.

11. Please select the appropriate answer by ticking (/) for each question based on **YOUR VIEW AND EXPERIENCE** on the extent of the **ROLE OF EMPLOYERS** in the motivation of quantity surveyors at your current organisation.

Scale of extent of role:

0 (No role), 1 (Low extent of role), 2 (High extent of role), 3 (Very high extent of role)

Role of employers	Level of extent			
	0	1	2	3
1. Providing appropriate tasks to employees according to their ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Providing accurate job description to employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Granting job promotion to performing employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Awarding employees who progresses in career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Providing on-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Providing off-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Providing conducive working conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Offering annual bonuses or other financial incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Offering company vacation trips or other non-financial incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Achieving good relations with other workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Superior has good leadership skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Assigning tasks that are suitable to the capability of the worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Allocating a reasonable time frame to complete assignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Company honouring promises made	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Giving fair pay equivalent to job scope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Assigned to a good team and having good teamwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Superior provides support to workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Receiving complements and appreciation from superiors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Providing good facilities and resources at work place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 5: THE CURRENT MOTIVATIONAL PRACTICES EMPLOYED BY ORGANISATIONS

The purpose of this section is to investigate the level of challenges and effectiveness of current motivational practices employed by organisations in motivating quantity surveyors.

Current motivational practices are listed below:

Question 12: Please indicate by ticking (/) the level of challenge associated with the motivation practices.
Scale of challenge: 0 (No challenge), 1 (Low challenge), 2 (High challenge), 3 (Very high challenge)

Question 13: Please indicate by ticking (/) the effectiveness of the motivation practices
Scale of effectiveness: 0 (Not effective), 1 (Low effectiveness), 2 (High effectiveness), 3 (Very high effectiveness)

Current motivational practices	Question 12				Question 13			
	Level of challenge				Extent of effectiveness			
	0	1	2	3	0	1	2	3
1. Provide growth and advancement opportunities (i.e.: Training, career progression, job promotion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Prepare appropriate nature of work (i.e.: Challenging task, accuracy of work description, appropriate task completion time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Provide material and physical provisions (i.e.: Financial reward, conducive working environment, fringe benefits, good facilities and resources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Provide good relations amongst staff and management team. (i.e.: Good teamwork, appropriate supervision, supportive colleagues and superior)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Provide fairness in organisational practices (i.e.: Right to choose workmate/teammate, fairness of pay, fairness of work assignment, company honouring promise (s) made)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 6: IMPACT OF MOTIVATION AND EFFECTIVE MOTIVATIONAL PRACTICES ON INDIVIDUAL QUANTITY SURVEYORS

The purpose of this section is to investigate the level of impact and effectiveness of current motivational practices on individual quantity surveyors.

Current motivational practices are listed below:

Question 14: Please indicate by ticking (/) the level of challenges associated with the motivation practices on individual quantity surveyors.

Scale of impact: 0 (No impact), 1 (Low impact), 2 (High impact), 3 (Very high impact)

Question 15: Please indicate by ticking (/) the effectiveness of the motivation practices on individual quantity surveyors.

Scale of effectiveness: 0 (No effectiveness), 1 (Low effectiveness), 2 (High effectiveness), 3 (Very high effectiveness)

Current motivational practices	Question 14				Question 15			
	Level of impact				Extent of effectiveness			
	0	1	2	3	0	1	2	3
1. Receive growth and advancement opportunity (i.e.: Training, career progression, job promotion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Prepare appropriate nature of work (i.e.: Challenging task, accuracy of work description, appropriate task completion time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Receive material and physical provisions (i.e.: Financial reward, conducive working environment, fringe benefits, good facilities and resources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Have good relation amongst staff and management team. (i.e.: Good teamwork, appropriate supervision, supportive colleagues and superior)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Receive fairness in organisational practices (i.e.: Right to choose workmate/teammate, fairness of pay, fairness of work assignment, company honouring promise (s) made.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 7: CLOSING

Thank you for your time in completing this questionnaire. If you have any queries, please contact **Siti Sarah Herman** by e-mail s.s.herman@edu.salford.ac.uk or telephone **+44(0)7943269995** or **+601133340129**.

If you have any concern, you may also contact my supervisor **Prof. David Eaton**. He can be contacted by e-mail: d.eaton@salford.ac.uk or telephone **+44(0)1612955222**.

16. RESULTS & FINDINGS

If you would like to receive a summary of the final survey report, please complete the following contact details:

Name: [.....]

Email address: [.....]

Office address: [.....]

Appendix 7.1: Descriptive statistics – level of involvement of quantity surveyors in the construction industry during feasibility stage by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
6-1	Preparation of cost analysis	1.75	4	2.31	4	1.50	7	2.08
6-2	Preparation of estimates from sketch to detailed design	2.00	1	2.49	1	2.17	3	2.32
6-3	Preparation of detailed budget	1.90	3	2.27	5	2.00	4	2.14
6-4	Preparation of cost plan	1.50	6	2.33	3	1.83	5	2.06
6-5	Financial feasibility studies incl. economic	1.15	8	1.96	8	1.50	7	1.69
6-6	Value management/engineering	1.15	7	1.98	7	1.50	7	1.70
6-7	Preparation of cost-in-use/life-cycle costing	.90	10	1.56	10	1.00	10	1.32
6-8	Preparation of turnover, profit/loss forecast & cash-flow projections	.95	9	1.76	9	1.83	5	1.54
6-9	Cost checking during the development design	1.70	5	2.16	6	2.67	1	2.07
6-10	Contractual and tendering arrangements early advice	2.00	1	2.47	2	2.50	2	2.34

Appendix 7.2: Descriptive statistics – level of involvement of quantity surveyors in the construction industry during pre-contract stage by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
7-1	Preparation of BQ & tender docs	2.30	2	2.58	2	3.00	1	2.54
7-2	Measurement, estimating & pricing for tenders	2.40	1	2.40	4	3.00	1	2.45
7-3	Value management including comparative design economics	1.45	8	1.96	9	1.67	9	1.79
7-4	Preparation of specification and schedule of rates	1.70	6	2.02	8	2.33	7	1.96
7-5	Processing associated with the preparation of documentation	1.75	5	2.07	7	2.83	4	2.04
7-6	Detailed compilation & analysis of unit rates/preliminaries	1.70	7	2.20	5	2.33	7	2.07
7-7	Selection & evaluation of tender & reporting on tenders	2.10	4	2.44	3	3.00	1	2.39
7-8	Project liaison meeting with employers and consultants	2.15	3	2.64	1	2.67	5	2.51
7-9	Qualification, evaluation and registration of contractors	1.35	9	2.11	6	2.50	6	1.93

Appendix 7.3: Descriptive statistics – level of involvement of quantity surveyors in the construction industry during post-contract stage by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
8-1	Preparation of contract documents for main contract sub-contracts or contracts of supply including rationalisation of contract rates	1.80	4	2.31	5	2.83	4	2.21
8-2	Application of cost control during the progress of the works	1.75	6	2.11	6	3.00	1	2.08
8-3	Monitoring of proposed construction methods and sequences and those actually required and reporting thereon	1.15	11	1.56	11	2.17	8	1.49
8-4	Value management/engineering including preparation of cost/benefit reports upon alternative construction methods	1.20	10	1.69	10	2.00	10	1.58
8-5	Analysis of contract pricing relative to cost recording methods	1.50	8	1.71	9	2.00	10	1.68
8-6	Preparation of interim valuations	1.95	1	2.47	4	3.00	1	2.37
8-7	Preparation of variation order and final accounts	1.95	1	2.49	3	3.00	1	2.38
8-8	Report, evaluating and negotiating on contractual and extra-contractual issues.	1.70	7	2.49	1	2.67	5	2.28
8-9	Preparation and/or interpretation of cost/value and other reconciliation statements for management purposes	1.40	9	2.02	8	2.17	8	1.86
8-10	Project liaison meeting with employers and consultants	1.95	1	2.49	1	2.67	5	2.35
8-11	Site surveys and measurement and attendance at site meetings	1.80	4	2.09	7	2.50	7	2.04

Appendix 7.4: Descriptive statistics – level of involvement of quantity surveyors in the construction industry during construction management and resource procurement stage by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
9-1	Planning and programming of construction activities	.85	1	.87	2	1.17	7	.89
9-2	Site planning	.70	4	.67	6	1.33	6	.73
9-3	Management of resources and supervision of works	.75	3	.82	4	1.50	5	.86
9-4	Liaison with employer, consultants, statutory and service authorities	.80	2	1.16	1	2.00	1	1.13
9-5	Resource determination, scheduling and purchasing	.55	7	.76	5	1.67	4	.77
9-6	Procurement of labour, plant and materials	.60	6	.64	7	2.00	1	.75
9-7	Negotiation with and management of sub-contractors and suppliers	.70	4	.87	2	2.00	1	.92

Appendix 7.5: Descriptive statistics – level of impact of motivation factors of quantity surveyors in the construction industry and at current organisation by types of organisations

Item ID	Motivation factor	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
10-1	Appreciate challenges in doing task	2.20	12	2.44	4	2.17	18	2.35
10-2	Required by job description	2.15	13	2.20	15	2.33	16	2.20
10-3	Achieving job promotion	2.40	3	2.16	17	2.83	2	2.28
10-4	Progression in career	2.40	3	2.31	9	2.67	9	2.37
10-5	On-the-job training	2.25	8	2.16	16	2.33	16	2.20
10-6	Off-the-job training	1.90	18	1.89	18	2.17	19	1.92
10-7	Working conditions	2.55	1	2.62	1	2.83	2	2.62
10-8	Financial incentives	2.30	6	2.27	11	3.00	1	2.34
10-9	Non-financial incentives	1.75	19	1.84	19	2.67	9	1.89
10-10	Have good relation with colleagues	2.35	5	2.38	7	2.83	2	2.41
10-11	Good direction and monitoring from superior	2.25	8	2.40	5	2.83	2	2.39
10-12	Assignment suitable to capability	2.25	8	2.29	10	2.50	14	2.30
10-13	Fair time to finish assignment	2.15	13	2.22	14	2.83	2	2.25

10-14	Company honouring any promises made	1.95	16	2.24	13	2.83	2	2.21
10-15	Receiving fair pay equivalent to job scope	1.95	16	2.36	8	2.67	9	2.27
10-16	Have good teamwork	2.50	2	2.60	2	2.67	9	2.58
10-17	Support from family and friends	2.25	8	2.38	6	2.83	2	2.38
10-18	Compliments from superior	2.15	13	2.27	11	2.50	14	2.25
10-19	Good facilities and resources at work place	2.30	6	2.47	3	2.67	9	2.44

Appendix 7.6: Descriptive statistics – level of extent of role of employers in the in the motivation of quantity surveyors in the construction industry and at current organisation by types of organisations

Item ID	Motivation factor	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
11-1	Providing appropriate tasks to employees according to their ability	2.15	1	2.51	15	2.33	17	2.39
11-2	Providing accurate job description to employees	2.10	3	2.51	13	2.83	1	2.42
11-3	Granting job promotion to performing employees	1.80	13	2.53	11	2.83	1	2.35
11-4	Awarding employees who progresses in career	1.95	9	2.51	13	2.67	12	2.37
11-5	Providing on-the-job training	1.90	11	2.36	17	2.00	18	2.20
11-6	Providing off-the-job training	1.60	18	2.07	19	1.83	19	1.92
11-7	Providing conducive working conditions	1.85	12	2.53	10	2.67	7	2.35
11-8	Offering annual bonuses or other financial incentives	1.65	17	2.51	12	2.83	1	2.30
11-9	Offering company vacation trips or other non-financial incentives	1.30	19	2.09	18	2.50	16	1.90
11-10	Achieving good relations with other workers	1.95	8	2.62	6	2.83	1	2.45
11-11	Superior has good leadership skills	2.00	6	2.64	5	2.67	12	2.46
11-12	Assigning tasks that are suitable to the capability of the worker	2.05	5	2.64	3	2.50	14	2.46

11-13	Allocating a reasonable time frame to complete assignment	2.05	4	2.49	16	2.67	7	2.38
11-14	Company honouring promises made	1.65	16	2.56	8	2.83	1	2.32
11-15	Giving fair pay equivalent to job scope	1.75	14	2.56	7	2.83	1	2.35
11-16	Assigned to a good team and having good teamwork	2.15	1	2.64	2	2.67	7	2.51
11-17	Superior provides support to workers	2.00	7	2.67	1	2.67	7	2.48
11-18	Receiving complements and appreciation from superiors	1.70	15	2.53	9	2.50	14	2.30
11-19	Providing good facilities and resources at work place	1.90	10	2.64	4	2.67	7	2.44

Appendix 7.7: Descriptive statistics – level of challenge of current motivational practices employed by organisations in motivating quantity surveyors by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
12-1	Provide growth and advancement opportunity	1.25	4	2.18	5	2.00	4	1.90
12-2	Prepare appropriate nature of work	1.40	3	2.27	3	2.17	3	2.01
12-3	Provide material and physical provisions	1.15	5	2.36	1	2.67	1	2.04
12-4	Provide good relations amongst staff and management team.	1.50	2	2.32	2	2.33	2	2.07
12-5	Provide fairness in organisational practices	1.65	1	2.25	4	2.00	4	2.04

Appendix 7.8: Descriptive statistics – level of effectiveness of current motivational practices employed by organisations in motivating quantity surveyors by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
13-1	Provide growth and advancement opportunity	2.10	2	2.36	3	2.17	3	2.27

13-2	Prepare appropriate nature of work	2.05	3	2.27	5	2.17	3	2.20
13-3	Provide material and physical provisions	2.00	4	2.44	2	2.33	2	2.31
13-4	Provide good relations amongst staff and management team.	2.25	1	2.51	1	2.33	1	2.42
13-5	Provide fairness in organisational practices	1.65	5	2.29	4	2.00	5	2.08

Appendix 7.9: Descriptive statistics – level of impact associated with the motivation practices on individual quantity surveyors by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
14-1	Receive growth and advancement opportunity	1.70	5	2.48	3	2.33	4	2.24
14-2	Prepare appropriate nature of work	1.79	3	2.39	5	2.67	2	2.25
14-3	Receive material and physical provisions	1.79	3	2.61	1	2.83	1	2.41
14-4	Have good relation amongst staff and management team.	2.11	1	2.52	2	2.67	2	2.42
14-5	Receive fairness in organisational practices	1.95	2	2.43	4	2.17	5	2.28

Appendix 7.10: Descriptive statistics – level of effectiveness of the motivation practices on individual quantity surveyors by types of organisations

Item ID	QS role	Government		Private consultant		Private contractor		Overall mean score
		Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	
15-1	Receive growth and advancement opportunity	1.95	4	2.41	4	2.50	4	2.29
15-2	Prepare appropriate nature of work	2.16	2	2.39	5	2.83	2	2.36
15-3	Receive material and physical provisions	1.84	5	2.43	2	3.00	1	2.32
15-4	Have good relation amongst staff and management team.	2.26	1	2.57	1	2.83	2	2.51
15-5	Receive fairness in organisational practices	2.05	3	2.41	3	2.33	5	2.30