Developing a Conceptual Model for Measuring the Satisfaction Levels of Malaysian Contractors

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Abstract

The evaluation of satisfaction levels related to performance is an important aspect in increasing market share, improving profitability and enlarging opportunities for repeat business and can lead to the determination of areas to be improved, improving harmonious working relationships and conflict avoidance. In the construction industry, this can also result in improved project quality, enhanced reputation and increased competitiveness. Many conceptual models have been developed to measure satisfaction levels - typically to gauge client satisfaction, customer satisfaction and home buyer satisfaction - but limited empirical research has been carried out, especially in investigating the satisfaction of construction contractors. In addressing this, this paper provides a unique conceptual model or framework for contractor satisfaction based on attributes identified by interviews with practitioners in Malaysia. In addition to progressing research in this topic and being of potential benefit to Malaysian contractors, it is anticipated that the framework will also be useful for other parties - clients, designers, subcontractors and suppliers - in enhancing the quality of products and/or services generally.

Keyword: satisfaction measurement, contractor, attributes, Malaysia.
1. Introduction

The construction industry is a dynamic entity due to the level of uncertainties involved in technologies, budgets and development processes (Chan and Chan, 2004). Identifying the appropriate means of construction project delivery has also provided an ongoing debate among researchers as the scope of the projects is quite diverse and their construction involves multiple stages and processes. This has been said to make the industry unique as it is fragmented and involves a diverse group of participants (Walker and Hampson, 2003), with each having different objectives but also contractually bound to the same construction project.

Over recent decades, construction performance has been broadly criticised due to increasing problems in many areas. Naoum (1995), for example, has highlighted the problems related to the separation of design from construction, lack of integration and effective communication, high levels of uncertainty, changing environments and increases in project complexity. In Malaysia, the inefficiency and ineffectiveness of project teams has been highlighted as the main challenge in obtaining a high quality construction performance. However, according to the Construction Industry Malaysian Planning Report (CIMP) produced by Construction Industry Development Board (CIDB, 2007) project failures are not solely caused by their contractors. Architects and engineers also contribute to the failure of overall project performance, with 50 percent of failures attributed to design faults, with 40 percent being caused by construction faults and 10 percent from material faults.

Currently, several studies address issues of performance by developing performance measurement approaches. Cheng et al. (2006) use two measures, namely objective (time and cost) and subjective (quality and satisfactory). However, performance measurement based on objective measures, also known as the iron triangle (time, cost, quality) has been criticised as ineffective in measuring the performance of large development projects (Toor and Ogunlana, 2009). Other performance indicators, such as the satisfaction level of those involved, are thought to be more useful in improving current performance measurement and project outcomes.

Contractor satisfaction (Co-S) has been recognised one of the best indicators of construction project performance (Soetanto and Proverbs, 2002) but it is seldom, if ever, used in practice. Even in academic terms, there has been very limited study of the attributes of Co-S for construction projects. In developing effective Co-S measurement for construction work, therefore, there is a need to start from basics and identify the major influencing attributes involved and their interrelationships. Accordingly, the research described in this paper aimed to determine the potential attributes of Co-S and develop a contractor satisfaction (Co-S) conceptual model or framework appropriate for construction projects.
2. Literature review

Studies of performance measurement have been rapidly progressing in the recent years, with many performance studies being conducted throughout the world. These are based on different perspectives. For instance, an increasing body of literature is primarily concerned with subjective measures.

2.1 Performance measurement

The early literature of performance measurement is mostly related to marketing or business, with very little concerning the construction industry. Recently, it begins to progressively being employed into the construction industry. This has changed more recently, with several studies conducted in construction over a spectrum of areas. A common belief is that improvements in the satisfaction levels for construction projects will promote a performance-enhancing environment.

Many efforts have been carried out to enhance construction performance. Despite the effective evaluation of the overall project outcomes being seen as fundamental, a single most effective approach has not yet been discovered. The evaluation of the performance is commonly made on the basis of three main dimensions, namely cost, time and quality (Chan and Chan, 2004). As pointed out in recent literature, the traditional measures of the iron triangle (time, cost and quality) have limited application in measuring performance due to economics changes, the large scale of projects, rapid changes in technologies and the variety of participants in a project (Toor and Ogunalana, 2009; Chan and Chan, 2004; Ling et al., 2008 and Bryde and Robinson, 2005). Instead, soft measurements, that consider participants’ satisfaction, have been more frequently used as an improvement on existing methods (Karna, 2004).

2.2 Satisfaction measurement in the construction industry

Previous work on the performance of construction projects based on satisfaction measures are variously concerned with client satisfaction (Cl-S), customer satisfaction (Cu-S), home buyer satisfaction (Ho-S), occupant satisfaction (Oc-S) and contractor satisfaction (Co-S). Their concepts, differences and relative advantages are discussed in the following sections.

2.2.1 Construction Client satisfaction (Cl-S)

Construction clients play an important role in the construction project and clients perceive service in their own unique way and use a gauge based on their cumulative memory of many positive experiences. Cl-S measurement has been identified as a function not only of output but also of the perceptions and expectations of the clients. Lim and Ling (2002), for example, assert that client expectations can be met by the fulfilment of seven criteria comprising flexibility, function, time, maintenance costs, safety, economy and quality while Tang et al (2003) hold that Cl-S measurement is a function of quality of
service, quality of product and quality of manner to customers. However, Cheng et al., (2006) argue that client characteristics including sector, size or location may have a significant impact on Cl-S levels.

2.2.2 Customer satisfaction in construction (Cu-S)

Customer satisfaction (Cu-S) has become a critical issue in recent years (Karna, 2004). In order to meet customer’s needs and requirements, the contractor is required to provide a service of three elements including: service product, service environment and service delivery (Maloney, 2002). Commonly, completion of a project in accordance with its plans and specifications within budget and on time will meet customer needs and allow contractors to make profits. Karna (2004) notes that Cu-S can be used to evaluate quality and ultimately assess the success of a company’s quality improvement programme. This means that a quality improvement effort is important in the construction project as it leads to a higher product and service quality. However, Al-Momani (2000) found that the contractors pay very little attention to the Cu-S and thus, it is thought, resulting in poor performance.

2.2.3 Home buyer satisfaction (Ho-S)

The study of satisfaction in the construction industry has evolved by investigating home buyer satisfaction (Ho-S). Ho-S measurement is important as an indicator of a project team’s performance level. According to Torbica and Ricoh (2001), the quality of the product and service is the main antecedent determining Ho-S. Their study highlighted Ho-S as not only influenced by product design or product quality, but other home buyer characteristics such as experience, income, age, knowledge and location. Furthermore, an instrument to investigate Ho-S, HOMBSAT, was introduced in the same study and comprises the three dimensions of house design, house quality and service. The model developed shows that improved product and service quality results in a positive Ho-S.

2.2.4 Occupant satisfaction (Oc-S)

Determining the occupant level of satisfaction should help identify inappropriate design and performance of the building. Additionally, this method potentially provides a major benefit to the client and designer in the form of a Post Occupant evaluation (POE). As Liu (1999) points out, several approaches can be applied for the building performance appraisal process namely: i) to identify factors, on both physical and social levels, which affect housing residents’ satisfaction, ii) develop performance criteria and grading tools, iii) identify the relationship between residential satisfaction and children’s accident risk, spatial density, crowding and neighbourhood characteristics and iv) provide a quality appraisal of the building design in terms of both function and cost. This method can be conducted during the design stage in the form of value engineering as well as after completion of the building.
2.2.5 Contractor satisfaction measurement (Co-S)

The contractor provides the overall organization of the physical resources needed to realise the design and also needs to perform efficiently in order to survive in the market place. As noted above, there is a lack of agreement on the most appropriate approach to Co-S measurement. Soetanto and Proverbs (2002) address the satisfactory performance of participants, as a pre-requisite to maintaining and improving harmonious working relationships but this is not clearly defined. Generally, Co-S is influenced by other key participant performances in a project including the client, consultant and subcontractor. The Co-S also has a great potential as a tool to enhancing performance of the project. However, the degree of Co-S cannot be determined as clear as satisfaction levels of other participants due to a lack of understanding of influencing attributes. Therefore, to alleviate this problem Co-S attributes need to be further investigated. The following discussion focuses on the development of Co-S framework by considering other significant elements that are not fully explained in previous research.

3. Research methodology

The research aims to identify the key attributes of Co-S and other causes necessary to overcome the issues discussed earlier. Additionally, the research intended to examine other potential key attributes of Co-S not yet identified, for incorporation into a preliminary conceptual framework. The potential attributes of Co-S were obtained through an extensive review of the literature and preliminary interviews. Each attribute was allocated to one of two groups, i) contractor satisfaction attributes (direct attributors) and ii) contractor characteristics (indirect attributors) for further examination. Due to the lack of consensus concerning Co-S, many studies concerning problems in the construction industry and its failures have been examined to develop a basic understanding of Co-S.

Face-to-face preliminary interviews were conducted of contractor personnel registered under the Malaysian Construction Industry Development Board (CIDB). The interviews were conducted to identify additional information and specify problems not identified in previous empirical studies. Six different grades of Malaysian contractors were selected at random for participation through open-ended interviews. This was to identify ideas, and a feel for the practical issues involved. As Cavana et al. (2000) explains, preliminary information gathering involves the search for in-depth information concerning the observed problem. As a result, valuable information was obtained from the contractors, which was then used to develop a preliminary conceptual Co-S framework.

4. Discussion and findings

As highlighted in the earlier discussion, subjective measurement based on satisfaction has been applied in the construction industry to evaluate project performance levels and identify outcomes of a product or
To understand the results of the research, the potential attributes of Co-S are discussed in the next section.

4.1 Potential attributes of contractor satisfaction (Co-S) measurement

This section discusses the development of the Co-S framework by using attributes potentially influencing Co-S levels namely: performance attributes (direct attributor) and contractor characteristics (indirect attributor). The performance attributes are a key element in the Co-S conceptual framework. The element directly influencing Co-S consists of three dimensions namely participants’ performance (service quality), project performance and business performance. Co-S levels are not only influenced by these three attributes, but external factors such as project related factors, project procedures and the external environment also play their own role. Another element of the Co-S framework comprises the contractor characteristics. This element indirectly influences Co-S levels. In this study, the indirect attributes were taken to include the experience of the contractor, with knowledge, size and culture of organization also being recognised. These attributes are appropriate for use in developing the new Co-S conceptual framework.

4.1.1 Performance attributes

Previous satisfaction studies have all been different in terms of objectives, perspectives, methodologies and scope. Every attribute has a different effect on Co-S levels and several methods have been used to determine levels of satisfaction on construction projects. In this study, three attributes of service quality were defined as depending on the participants’ performance; project performance; and business performance. Three additional elements are external factors that encompass project related factors, project procedures and external environment. The following section provides a detailed discussion of the attributes namely participant performance, project performance and business performance.

4.1.1.1 Service quality of participant performance

The existing framework of Co-S levels is limited and relates only to client performance. This paper proposes an enhancement by integrating three elements namely service delivery, relationships of people/participants and communications. Other potential attributes discussed in this paper were mainly highlighted in the interviews. Service delivery consists of items gauged on product and/or service performed by the participants (such as client, consultants (architect and engineer), subcontractors and suppliers). Several studies (Yasamis et al., 2002; Leung et al. 2004) confirm that an effective performance evaluation of the service or product leads to the enhancement of project quality. In addition, relationship management in terms of enhancement of harmonious relationships, co-operation, trust, commitment and participation among project team also help deliver projects efficiently (Karslen et al., 2008). One of the interviewees also emphasized communication as another item for evaluating the service quality of participants. Effective communication is needed to improve project team relationships as it influences
participant satisfaction (Leung et al. 2004). This means that service quality is not only based on service delivery but relationships of participants and communications between project team also need to be taken into account in developing a Co-S framework.

4.1.1.2 Project performance

In construction projects, the contractor is responsible for converting designs into practical and well performing facilities. Improvements in contractor performance leads to increase client satisfaction (Cl-S), improvements in the reputation of contractors and hence their competitiveness in the market. Additionally, the performance of the project can be achieved through the high quality of performance of each participant. Several previous studies have examined project performance in different ways. For example, several project performance measurements have been investigated - mainly concerned with construction cost, time speed and quality (Al-Momani, 2000; Liu et al. 1998). However, five additional performance measures have been identified as applicable to contractors: cost performance; time performance; quality performance; owner satisfaction; and profit margin (Ling et al., 2008). These attributes are important for contractors in order to maintain the performance of the project as they also have been emphasized by the interviewees. For example, one contractor highlighted that he was satisfied when the project was completed as stated in the contract in terms of time, cost and quality. As expected, differences in project profit margins are also seen as important contributions to Co-S.

4.1.1.3 Business performance

Business performance is another important element to measure Co-S levels. Commonly, contractor performance is gauged on cost, time and quality alone. However, a previous study (Xio and Proverbs, 2003) argues that contractor performance is extended to include the continued activity of contractors, as measured by their profitability, investment in research and development, harmonious working relations throughout projects, environmental protection and safety. Additionally, the same study asserts that business performance based on profitability is often influenced by the market conditions. In general, project success has been defined differently by owner or client, designers, general contractors and subcontractors (Bryde and Robinson, 2005). Here, the top definitions of successful performance include: profitable projects, on time or early completion, within budget, good working relationships and good communication. Furthermore, business performance also depends on other aspects such as the resources and capabilities of the construction company, its project management competencies, the strengths of its relationships between project team and strategies of the company.

4.1.1.4 External factors

Another attribute that influences Co-S levels is project characteristics. This element is important for consideration, but is rarely examined for Co-S levels as it is indirectly influenced by the participants’ performance and project performance. On another perspective, the transparency of the government’s
procedure on contractor selection is considered to be one of the main attributes influencing Co-S. Having good connections (guanxi) between the contractor and the client are still essential for the successful procurement of projects in many countries (Ling et al., 2005). Furthermore, issues such as cronyism can be seen as critical problems in the construction industry when a large project is awarded to a contractor organisation regardless of its ability (Sohail and Cavill, 2008). In addition, the environmental issues of: economic environment; social environment; political environment; physical environment; industrial relationships environment; technology advance have a potential influences on Co-S levels.

4.2.1 Contractor characteristics

The impact of indirect attributes or contractor characteristics are discussed here as it is important to examine the degree of Co-S levels. Informed by the literature and the results from the preliminary interviews, four indirect attributes of contractor’s experience, knowledge, size and culture, were found to be necessary to taken into consideration.

4.2.1.1 Experience

The contractor’s experience is an important criterion for evaluating the performance of the contractor. However, the study also found that the level of experience may influence Co-S levels. The contractor’s experience is commonly determined by the number of years working in construction. Experience also influences the contractor in evaluating Co-S levels. Ismail et al. (2006) assert that previous experience influences the expectation of the final outcome. Direct attributes possibly influence satisfaction levels, however the contractor’s expectations affect the decision as they are based on perceived service performance. The expectation or standard of experience of a contractor could be determined by its familiarity with the market, understanding of regulations and technical and management skills. The result indicates that to evaluate Co-S levels, it is important to consider experience in terms of the total work volume on similar projects, the average work volume on similar projects, experience with contract types and teams, working in similar geographical conditions and working in similar weather conditions on similar projects.

4.2.1.2 Knowledge

Another characteristic that impacts on Co-S is knowledge. Currently, most projects require a high level of skills in terms of technology, material and safety, thus the contractor’s personnel need to have sufficient basic knowledge in these areas. Interviews results indicate that an effective and knowledgeable contractor is necessary to ensure the work is delivered according to the work programme, standards of requirements and specified level of quality. This suggests that problems such as delays, cost overruns, poor quality and loss of profits can be rectified if contractors improve their current knowledge of technology, finance and management. The relationship between this knowledge and Co-S can be derived as the contractor has different level of expectation from which judge performance.
4.2.1.3 Size of the organization

In construction, contractors can be distinguished according to the size of their organization and the size of Malaysian contractors is determined by many categorizes and grades. These are identified as small, medium and large and based on their capital and financial capabilities. Additionally, this includes organizational structure, current workload, technical personnel and management capability (Watt et al., 2008). Larger contractors have different expectations than small or medium size contractors. The interviews showed that larger contractors mostly have different workloads or capacities, financial positions, equipment resources, available manpower and other safety measures that can influence Co-S levels. Although performance measurement based on Co-S levels is influenced by several direct attributors, the literature and the results of the interviews show that characteristics such as the size of the contractor indirectly impact on the degree of Co-S. For example, larger size contractors have different needs as they are as concerned as much with their reputation as with profit.

4.2.1.4 Culture

Culture is a significant issue particularly in the construction industry. Locke and Latham (1990) suggest that every organization has a culture which is determined by its history, size, corporate goals and objectives, technology of production, market and operating environment. In construction, culture is concerned with the impact of a nation’s culture on construction activity, the culture of the construction project, the culture of the construction firm and the culture of the construction site. Every organization practices different systems, arrangements and procedures. Co-S levels could be affected by culture as it relates to motivation, efforts to innovate, incentives offered and implementation of new technology. Additionally, the construction industry currently emphasizes environmental issues and innovation as there are several important requirements that need to be fulfilled. In addition, performance measurement based on Co-S levels becomes more challenging as the construction industries of developing countries penetrate into the international arena. It is therefore necessary to consider the different organizational cultures of contractors in determining Co-S levels. This aspect is absent from all related previous studies.

4.2 A preliminary of contractor satisfaction (Co-S) conceptual model

Figure 1 contains the proposed conceptual model developed from the literature review and interviews. It depicts the two key elements to accessing Co-S level of performance attributes and contractor characteristics. Performance attributes have a direct impact and contractor characteristics have an indirect impact on Co-S levels. Both influence Co-S levels and can be gauged as either positive or negative depending on the gaps in Co-S levels.
5. Conclusions

An integrated framework of Co-S levels is proposed in this paper as shown in Figure 1. This integrates the two main attributes (direct attributes and indirect attributes) that have been discussed in the previous section. The paper investigates these two highlighted components to measure performance, namely: (1) direct attributes also known as performance attributes that consist of several elements such as participants’ performance (service quality), project performance, and business performance and external factors; (2) indirect attributes also known as contractor characteristics that comprises several elements including knowledge, size of the organization, experience and culture. Focus is given on this two main attributes only because of the resource limits imposed on the research and the assumption that the chosen areas have potentially more significant outcomes. The model developed is likely to be useful for contractors in enhancing and maintaining their level of business in addition to project performance. Additionally, the proposed Co-S framework may be able to motivate clients, consultants and other participants to enhance their service and product quality, and increase their levels of trust of contractor capability.

References


