Chapter 20
Sustainability Performance of Construction: Conceptual Models of Satisfaction Levels in Construction Projects

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ABSTRACT
In general, the performance of construction projects, including their sustainability performance, does not meet optimal expectations. One aspect of this is the performance of the participants who are interdependent and make a significance impact on overall project outcomes. Of these participants, the client is traditionally the owner of the project, the architect or engineer is engaged as the lead designer and a contractor is selected to construct the facilities. Generally, the performance of the participants is gauged by considering three main factors, namely, time, cost and quality. As the level of satisfaction is a subjective issue, it is rarely used in the performance evaluation of construction work. Recently, various approaches to the measurement of satisfaction have been made in an attempt to determine the performance of construction project outcomes – for instance, client satisfaction, customer satisfaction, contractor satisfaction, occupant satisfaction and home buyer satisfaction. These not only identify the performance of the construction project but are also used to improve and maintain relationships. In addition, these assessments are necessary for the continuous improvement and enhanced cooperation of participants. The measurement of satisfaction levels primarily involves expectations and perceptions. An expectation can be regarded as a comparative standard of different needs, motives and beliefs, while a perception is a subjective interpretation that is influenced by moods, experiences and values. This suggests that the disparity between perceptions and expectations may possibly be used to represent different levels of satisfaction. However, this concept is rather new and in need of further investigation. This chapter examines the methods commonly practised in measuring satisfaction levels today and the advantages of promoting these methods. The results provide a preliminary review of the advantages of

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The performance of construction is an issue that has been debated for many years. Many efforts have been made in attempting to enhance construction performance. Despite the effective evaluation of the overall project outcomes being seen as fundamental, the optimal approach has not yet been discovered.

The evaluation of performance is gauged mainly on the basis of three main dimensions: cost, time and quality. However, soft measurements that consider participants’ satisfaction have also been used in construction in order to improve existing methods.

The level of satisfaction is used as a Key Performance Indicator (KPI) – for instance, in identifying client satisfaction (Cl-S), customer satisfaction (Cu-S), contractor satisfaction (Co-S), occupant satisfaction (Oc-S) and home buyer satisfaction (Ho-S). Typically, these levels are regarded as a comparative function between perceptions and expectations (Cheng et al., 2006). Lam et al. (2008) state that projects that are delivered on schedule, are functional, fulfil safety requirements and conform to users’ expectation greatly influence the judgement of performance. Moreover, owner satisfaction and profit margins are considered as indicators in performance (Ling et al., 2008).

Another perspective is that satisfaction measurement is essential in examining the level of sustainability in terms of design and performance of the building. Although many efforts have been made to explore the performance measurement issue, there is an absence of a common understanding of this approach among participants; thus, uncertainty remains. Given the above, the aim of this chapter is to identify methods that are commonly applied in gauging performance satisfaction levels in relation to project outcomes.

**PERFORMANCE MEASUREMENT IN THE CONSTRUCTION INDUSTRY**

The systematic measurement of performance is a significant activity as it is needed in order to determine areas of improvement. Basically, performance can be assessed on two dimensions: objective measures and subjective measures. As highlighted by Chan and Chan (2004), the objective approach uses mathematical formulae to calculate the value of the project based on time and cost, while the subjective approach uses subjective opinions and the personal judgement of participants. The latter mainly includes references to the quality and functionality of the building and satisfaction levels of the participants.

Time performance of the project is monitored according to the work program prepared prior to commencement of the project. Chan and Chan (2004) assert that time performance concerns the duration needed to complete the project according to its schedule and is calculated as the numbers of days or weeks from starting on site to the practical completion of the project.

Project performance also can be defined by the cost performance of the project. According to Ling et al. (2008), cost performance is a measurable indicator. Therefore, it can predict the difference between the actual and the budgeted cost of the project. Dissanayaka and Kumaraswamy (1999) note the consensus view is that of having projects completed within budget and close to the original cost estimate constitutes project success. Although cost performance indicators are broadly used to enhance the performance of projects, project