

Client Expectations in Virtual Construction Concepts

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INTRODUCTION

Meeting the expectations of clients through better service delivery has been a key concern of the construction industry over the years (Hui, 2005; Shen & Liu, 2004). One recommendation often suggested in recent studies to support the delivery of construction works to the construction client is the use of information and communication technology (ICT) (Weippert, Kajewski, & Tilley, 2003). In recent times the virtual construction concept has emerged where construction actors may rely on modern ICT tools to operate irrespective of time and space, to attain common value delivery goals in construction projects. For example, highly skilled construction parties may be in different physical geographic locations in the world, but they may use modern ICT tools to collaborate to achieve common project goals. The virtual construction concept has the potential to provide cost and time savings to the construction client, and it is also likely to play an important role in the delivery of construction works (Barima, 2003). A key party to the construction delivery process is the construction client, and it may be important to know the client's expectations in the use of the virtual construction concept. This knowledge may provide understanding on the potential expectations of construction clients and also assist construction service providers to improve on their value delivery systems to their clients. This chapter explores the potential expectations of construction clients in the virtual construction project environment. First, the background to this study is provided via review of previous literature, then the research methodology and key findings of this exploratory study are presented, before recommendations for future studies and the conclusions are given.

BACKGROUND

In recent years the customer (or client) has received attention in literature in various disciplines (Ellegaard, Johansen, & Drejer, 2003; Huang & Lin, 2002). Most of the studies have argued for paying attention to customers and their requirements, with the aim to either fulfill or exceed them, so as to create customer satisfaction (Huang & Lin, 2002; Winters, 2003). Recent perspectives on the customer appear to differ

from traditional management perceptions, where there may be the orientation to focus on the internal transformation processes of the supplier.

In the construction industry the important role or needs of the construction client has also been directly or indirectly studied by scholars over the years (Briscoe, Dainty, Millett, & Neale, 2004; Hui, 2005; Kaya, 2004; Pries, Doree, Van Der Veen, & Vrijhoef, 2004; Shen & Liu, 2004; Winters, 2003). For example, Pries et al. (2004) have argued for client orientation in the construction industry. Briscoe et al. (2004) also suggested that construction clients are the influential drivers for innovation and performance improvement in the industry. According to a study by Pries et al. (2004) in spite of the arguments by scholars for client and market orientation in the construction industry, major industry leaders are still technology or project oriented.

Recent developments in the ICT sector in addition to changing perceptions have led to paradigm changes in the way businesses are executed (Barima, 2003). Varied management concepts have emerged, and one of these is the virtual concept in the construction industry, where actors may rely on modern ICT to operate independent of time and space to support the delivery of common goals (Barima, 2003). This model differs from traditional construction works delivery, which use physical delivery systems like face-to-face interactions, traditional mail delivery, and so forth.

The virtual concept is likely to play an important role in the construction industry in the future. However, research on the virtual concept (with a few exceptions see, e.g., Andresen, Christensen, & Howard, 2003; Rivard et al., 2004) have focused on the evolution of tools, software, pedagogic issues, and so on (Clayton, Warden, & Parker, 2002; Goh, 2005; Tse & Wong, 2004). As a relatively young research area little research has been done to explore the potential value delivery expectations of clients in the use of the virtual concept to support construction works delivery. Such exploration may improve understanding in this young area of research and also assist construction service providers to provide better service to the client. This chapter reports on an exploratory study on the potential client value delivery expectations in virtual construction projects. The next section provides the research methodology and findings of the study.

RESEARCH METHODOLOGY AND FINDINGS

Research Methodology

General

Although this report will emphasize the quantitative aspects of the study, it is worthy to note that a triangulated approach involving both qualitative and quantitative studies was used for this research (see, e.g., Mangan, Lalwani, & Gardner, 2004). This research approach was adopted to answer the research question on: what may construction clients potentially expect from service providers (or agents) in projects supported by the virtual concept. The mixed method approach provides (among others) the advantage of supporting the weaknesses of each of the mainstream research methods with the strengths of the other (Mangan et al., 2004).

After initial literature review, semi-structured in-depth interviews (1-2.5 hours long) were conducted with construction experts (in Hong Kong). The respondents were selected on purpose and deemed to have adequate knowledge on the subject. The interviews provided the opportunity to collate perspectives on what construction clients were likely to expect from their agents in the use of the virtual concept to support construction value delivery. The cross validated results of the qualitative studies were then used as key input for the subsequent exploratory quantitative studies.

The Sample

Stratified random sampling was used in the quantitative studies. The addresses of the potential respondents were obtained from the available professional addresses of the various construction-related associations (contractors; property developers; civil, architectural, mechanical/electrical engineering associations; and quantity surveyors in Hong Kong). The data collection method was via postal mail, and at the end of the data collection period 31 valid responses were received. This represents a response rate of about 8%. The respondents consisted of people deemed to have adequate knowledge of this study's subject, via built-in feedback questions in the scale (on their perceived knowledge of the subject).

The median experience of the respondents was about 16 years in construction. The modal single group (22.6% of the respondents) worked for property development companies. About 45% of the respondents worked for various consultancy companies (engineering, architectural, quantity surveying, facilities management, or multi-disciplinary), while 32.3% of the respondents worked for construction contracting or subcontracting companies.

Scale

The scale applied was a 5-point interval scale with potential scores which ranged from 1 (not important) to 5 (extremely important). Respondents were asked to provide scores on the perceived importance of the set of proposed items. The items were mainly generated from the qualitative studies. The items included in the scale may be broadly classified under: communications delivery and feedback systems; trust; tasks delivery skills and behavior for results delivery; and other management issues. The reliability (Cronbach alpha) of the 13-item scale used in the research was 0.9. This alpha value is greater than the minimum acceptable limit of 0.7, and hence the various subitems of the scale were accepted for further analysis (Herrmann, Tomczak, & Befurt, 2006).

Results of the study

General

The Statistical Package for the Social Sciences (SPSS) was used in the analysis of the data in this study. Unless otherwise stated all statistical tests were done at the 95% confidence level. Data analysis in this exploratory study also includes descriptive analysis, which uses the mean and standard deviations (SD). It must be noted that although the mean is a commonly used statistic, which could be understood easily, there is the tendency for mean scores to be affected by extreme values (Urdan, 2005).

Key Findings

The unit of analysis is the construction professional employed by various construction and client companies in Hong Kong. Table 1 shows a summary of the relative rankings of the proposed items (on the potential client demands in virtual construction project delivery) and their perceived mean scores and SDs. The prime perceived item is "enhanced communication delivery and skills in the virtual environment" with a mean of 4.1 and a SD of 0.71. The second ranked item is the display of "proven competence and dependability in delivering similar tasks in the virtual environment with minimum physical supervision" (mean = 3.93, SD=1.02). The third ranked item concerns the "proven assurance in protecting the shared information of other parties in the project" (mean=3.80, SD=0.81). Surprisingly placed at the fourth position is "enhanced productivity and effectiveness in results delivery" (mean=3.73, SD= 0.81).

The first and second ranked items are statistically not different from each other ($t=-1.1$; $df=29$; $p=0.326$, 2tail). The first and the third ranked items are marginally not significantly different ($t=-1.964$; $df=29$; $p=0.06$, 2tail). The second and third ranked items are also not significantly different from

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