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FACTORS INFLUENCING THE DEVELOPMENT OF HONG KONG’S CONSTRUCTION INDUSTRY: A QUALITATIVE STUDY

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ABSTRACT

Construction industry development has drawn attention for decades. However, there have been very few conceptual models which provide theoretical constructs to the knowledge base of construction industry development. The research on which this paper is based, aimed to validate a generic model developed by Fox (2003a) for the development of international construction by using Hong Kong’s construction industry as a case study. Semi-structured interviews with key stakeholders in Hong Kong’s construction industry were conducted. Stakeholders included construction clients, consultants, contractors, designers, educators/trainers, government officials, professional bodies, quasi-government officials, researchers, material and plant suppliers, construction lawyers, trades unions, and politicians. Results indicate that the factors influencing the industry are largely in line with Fox’s generic model and that cultural factors are particularly important. These findings are not only relevant to the development of the construction industry in Hong Kong but also to the industry worldwide.

Keywords: construction industry, culture, development, generic model, Hong Kong

INTRODUCTION

Calls for improving the construction industry in both developing and developed countries have existed for decades. Two of the earliest industry reports to document the need for change are linked to studies done by the Tavistock Institute of Human Relations (Higgins & Jessop 1965). In more recent years, there have been reports by Latham (1994) and Egan (1998) in the United Kingdom, the C21 (1999) report on the Singapore construction industry, and the HKHA (2000) and the Tang (2001) reports in Hong Kong, all of which have generated a considerable number of recommendations for improving the construction industry in their respective countries. In addition to these reports, an array of research has been carried out on construction industry development, such as ‘formulating long-term strategy’ (Ofori, 1994a), ‘role of technology transfer’ (Ofori, 1994b), ‘implications of globalization in the Asia construction sector’ (Raftery et al, 1998), and ‘moving towards a knowledge-based industry’ (Ofori, 2002).
Although these reports and studies have contributed enormously to the development of the construction industry as a whole, there are still knowledge gaps and very little in the way of a theoretical foundation (Ofori, 2002). There is clearly a need for a theoretical framework of construction industry development, against which problems can be identified and remedies evaluated. This framework should not only focus on traditional or hard measures, such as economic, political, and administrative actions, but should also include cultural or soft factors, such as attitudes, practices, and values (Fox, 2002 & 2003a). Fox (2003a) developed a six-factor generic model encapsulating 62 variables of construction industry development that revealed cultural factors to be extremely important, and later carried out an initial comparison (Fox & Skitmore, 2003b) that provided evidence to suggest that it would be reasonable to apply the model to the Hong Kong construction industry. The aim of this paper is to validate Fox’s model for use in the context of Hong Kong and determine the characteristics of the local construction industry. The results would be useful to government policy-makers and industry leaders as a means of helping them to focus on the key areas for developing Hong Kong’s construction industry.

**FACTOR IDENTIFICATION**

According to Fox (2003a), the construction industry may be defined as the production, alteration, renovation, maintenance, facility management, demolition, and re-cycling of building and civil engineering works, including the supply of resources. It includes those who promote the industry’s policies, procedures, practices, and culture, which help the industry to fulfil the tasks required of it and thus satisfy its internal and external stakeholders. Ofori (2000) defined construction industry development as ‘the deliberate and managed process to improve the capacity and effectiveness of the construction industry to meet the national economic demand for building and civil engineering products, and to support sustained national economic and social development objectives.’

As the construction industry is known to be complex and multidimensional (Ofori, 2000), it is therefore not surprising that construction industry development involves multi-faceted factors that are difficult to identify. However, Ofori (1980) identified eight factors for construction industry development in developing countries, and just over a decade later Al-Omari (1992) derived six factors from a case study in Abu Dhabi.

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In the developed world, Napier (1970) adopted a systems theory to model the Swedish construction industry and took into account the concepts of power, status, learning,
boundaries, goal evaluation, innovation, and group values. Nearly twenty years later, Fox (1989) developed a causal model of 50 factors to explain the development of Hong Kong’s construction industry, and seven years after that Momaya’s (1996) investigation into the competitiveness of the Canadian construction industry produced a model hierarchically grouping ninety-five variables into factors, and then the factors into three facets of competitiveness: assets, processes and performance.

**GENERIC MODEL**

Rather than simply adding another set of factors to the available literature, Fox (2003a) developed a six-factor generic model using the results from his international study of construction industry development. Fox’s research took a grounded theory approach, and identified 62 variables, 32 correlated variables, and ultimately six factors. It is probably the first model developed from multi-type and multi-country sources. The model, shown in Figure 1, clearly shows the traditional factors identified by Ofori (1980) and the cultural factors identified by Fox.

![Generic Model Diagram]

**DATA COLLECTION AND ANALYSIS**

On the basis that qualitative data has the potential for revealing complex situation, attitudes and perceptions (Miles & Huberman, 1994), a qualitative research approach was used in this study for providing sentient evidence as to whether the development of Hong Kong’s construction industry can be explained by Fox’s generic model.

The study encapsulates the views of thirteen stakeholders connected with Hong Kong’s construction industry. These stakeholders include construction clients,
consultants, contractors, designers, educators/trainers, government officials, professional bodies, quasi-government officials, researchers, material and plant suppliers, construction lawyers, trades unions, politicians, and information providers. Semi-structured interviews were the instrument for collecting the qualitative data. Interview questions were sent to the interviewees along with the request for an interview. The interviews were conducted between September 2005 and December 2005. Nearly all of the interviewees are in the top management level and have over ten years of experience in the industry. Each interview lasted for about approximately ninety minutes and was tape recorded. The transcribed interview data were coded for comparison with the list of variables in Fox’s generic model, which provided a valid framework for determining whether there were any factors specific to Hong Kong.

When the variables mentioned by interviewees were compared to the 62 variables of the generic model, 38 were found to be the same (a 61% match). In addition, four variables representing the local characteristics of Hong Kong’s construction industry were added to the list making a total of 42 variables that were identified from the interview data. Two of these four local variables were identified under the ‘Thinking the best and behaving the best’ factor, they are: (1) Claims culture, and (2) Lowest bid tendering. Only one variable (3) Innovative project procurement strategy, represents the local characteristics of Hong Kong’s construction industry, belongs to the factor ‘learning culture’ and it implies that the industry needs to accumulate knowledge and learn from its mistakes when the same problems keep recurring. The final variable (4) Sufficient time for construction has been located under the traditional factor ‘Basic Resources and Institutional Infrastructure’ since Hong Kong is a developed city with adequate resources and physical infrastructure, but traditional social infrastructure limits the scope for innovation.

**APPLYING THE GENERIC MODEL TO HONG KONG**

By applying Fox’s six-factor generic model to Hong Kong, not only is the validity of the model itself tested but also valuable insights are gained into Hong Kong’s construction industry. Using the generic model as a framework, the following explains the variables identified by the interviewees in this study.

(1) **Basic resources and institutional infrastructure (Traditional factor)**

**Availability of materials**
China’s rapid development to become what many see as the factory of the world has changed the way in which Hong Kong views the concept of sourcing construction material. Whereas at one time they had to be sourced from all over the world at great expense, cheap and reasonable quality material can now be obtained from just across the border.

**Professional associations and trade unions**
Professional associations, such as the Hong Kong Institute of Engineers (HKIE) and the Hong Kong Institute of Architects (HKIA), provide continuous professional development (CPD) and training courses to the industry to help it keep up with the latest market developments, whilst trade unions provide a check and balance for the industry, in particular by expressing views on unrealistic government requirements.
Fragmentation of organization and function

The problem of fragmentation in the construction industry is not new and has been recognized by many studies (Latham, 1994; Egan, 1998; Tang, 2001). Whilst fragmentation is still an industry norm, there is a recognised need for integration of functions in construction. Fox (2003a) contended that the way to improve efficiency and productivity is integration of construction processes, and one of the interviewees in this study suggested that the ultimate solution might be for developers do all things in-house. There is in fact evidence of a move towards integration as many contractors who at one time only undertook construction work now act as developers, and consultants who at one time only provided consultancy services now often engage in project creation activities. The industry also makes more use of project management and risk management techniques and works closer with banks and financial companies in order to better control costs.

Sufficient time for construction (New)

Developers in Hong Kong want their projects finished as quickly as possible because they pay interest on high land prices. In order to satisfy this requirement, the construction cycle is often compressed to just four days compared to twelve days in Japan. Insufficient time for construction directly affects performance in terms of safety and quality. For example, it is common to find honey-combing in concrete because not enough time has been allowed for adequate vibration. Some interviewees suggested that in order to produce buildings more quickly, there should be a better sequence of work and project coordination rather than an unrealistic compression of the programme.

(2) Financial and human resources (Traditional factor)

Training and education

The Construction Industry Training Authority (CITA) provides basic training and certificate courses for the various trades, and plays a key role in the recently introduced licensing system for tradesman. Also, some construction companies offer apprenticeship schemes although for a number of reasons including a lack of work continuity, the project-based nature of the industry, the subcontracting system, and a lack of relevant regulatory procedures, most construction companies are reluctant to invest in such schemes.

Availability of technical knowledge

Being at the forefront of high-rise building construction and the provision of sophisticated infrastructure not only is Hong Kong technologically advanced but also exports its expertise to South East Asia, China, and India.

Availability of investment

Over the past twenty years Hong Kong invested heavily in both infrastructure and building works. With the downturn of the economy in 1998 the government imposed stringent controls on its spending but as a result of a recent economic improvement the government is once again investing, this time in the area of tertiary education by providing new educational facilities and enhancing existing ones. A new government headquarters is also on the cards and there are investment opportunities in the area of the old Kai Tak airport in central Kowloon where the plot ratio has been increased from seven to twelve.
(3) Techniques and technology supporting high production performance (Traditional factor)

Attention to supply chain management
The multi-layer subcontracting system in Hong Kong has long been criticized. Among the interviewees, only the trade union representative and the information provider supported the existing subcontracting system. One reason cited by them is that subcontracting has been used in the construction industry for many years and it does appear to work. Contractors can sublet specialist work to subcontractors and do not need to retain a large pool of direct labour. They also argued that if the subcontracting system was not efficient, market forces would have made it obsolete by now.

Prefabrication and standardized production
There has been greater use of prefabrication in recent years due to the cheap labour in China that produces it and improved quality control. Although prefabrication helps to promote safety because its use requires fewer workers to work at high levels, it has adversely affected the employment of Hong Kong construction workers.

Construction IT
The biggest change would be the invention of computer graphics. It’s a big change to our work. We now use AutoCAD. Measurement of quantity surveyor and architect’s drawing changed with the invention of software and personal computer hardware. Everything changes with the new ages. Documentation, the way of monitoring of construction are all affected.

(4) Long-term vision and policy for the industry (Cultural factor)

Government intervention
Government intervention is considered to be an important variable that directs construction industry development. Five interviewees (client, consultant, designer, educator/trainer, and the quasi-government official) expressed support for government intervention while another five (contractor, researcher, material supplier, trade union, and information provider) expressed opposition to it. The argument for government intervention is based on the notion that the government as a major client in the construction industry should use its influence to promote and encourage best practice (Egan, 1998: 39; Tang, 2001:2). The reason against government intervention is that when there is government intervention, free market mechanism does not work and the government may not always make the right decision.

Long-term thinking of the industry
One characteristic of the Hong Kong construction industry that the interviewees identified as in need of changing is its short-sightedness; they consider that healthy development requires forward thinking and long-term planning. Before the change of sovereignty, people worried about the consequences of China’s rule over Hong Kong. It appeared that there was no permanence or planning in the industry and that most developers just wanted to make money quickly and leave. The casual way in which relatively new buildings are pulled down to make way for more profitable developments without any regard for environmental or social issues suggests that this way of thinking still exists today.
**Research and development**
Although the Buildings Department has carried out studies on lighting, ventilation, water seepage and falling window, the interviewee representing professional bodies observed that there is no applied scientific research in the industry. For example, there has been no proper testing of external wall tiles even though falling of external wall tiles is a long-term problem; research and development has not actually been addressing the needs of the industry but has instead concentrated solely on improving productivity. Hong Kong’s Research Grant Committee was also criticised for the way in which it allocates funds.

**Influence of business environment**
Hong Kong’s construction industry is business-led and is directly affected by the performance of the property market, which is extremely volatile. After the 1997 financial turmoil, there was an economic downturn in Hong Kong, which was exacerbated by the high land price policy of the government. The interviewee representing information providers described the pre-1997 property boom period as the ‘dark age’ of the Hong Kong construction industry. At that time, professionalism and workmanship were neglected as the whole industry rushed to finish projects and put them on to the market before the handover of sovereignty to China.

**Flexibility of government to contract conditions**
Unlike the private sector, a commercial settlement of a dispute is not allowed or extremely difficult when using the government conditions of contract.

**Government bureaucracy**
For the sake of accountability and fairness the government has established a multitude of regulations and procedures. However, these have resulted in inefficient operation, lack of innovation, and no flexibility; it would seem that the more sophisticated the system, the less efficient it is. The problem of government bureaucracy has been worsening since the localisation of government departments in 1992. Many government officials are unwilling to make decisions, there has been an increased in the amount of paper work and form filling, disputes take twice as long to settle than they did in colonial times and contract administration generally has become more difficult.

**Availability of information**
Information should be released through authoritative channels so that regulations and guidelines can be assimilated by those actually involved in the construction process. For instance, the Provisional Construction Industry Coordination Board (PCICB) and Construction Industry Institute (CII) could work with professional institutions to disseminate knowledge through continuous professional development (CPD) events. The fact that this does not currently happen suggests that there is a lack of communication and cooperation amongst organisations and institutions within the industry.

(5) **Thinking the best and behaving the best (Cultural factor)**

**Ethical behaviour**
Corruption in Hong Kong’s construction industry was a serious problem prior to the establishment of the Independent Commission Against Corruption (ICAC) in 1974.
Since then, ethical standards have improved to the point where some construction companies have developed their own code of ethics. However, the sub-standard piling case in 2000 revealed that there are still major ethical problems in the industry and the material supplier interviewee even expressed the view that the industry is still corrupt especially amongst small and medium size firms.

**Attention to best practice**
As the social status of construction workers is very low, most of them do not take pride in their work and are not interested in what they do. The norm in the industry is to finish the job as quickly as possible and get paid, even at the expense of quality and safety. The problem reveals people’s mindset, which regulation and codes of practice can only change superficially. The reality is that developers are only really interested in profitability, not with safety standards; an average of four to five accidents per month on a construction project is the accepted norm.

**Lowest bid tendering (New)**
Egan (1998) recommended that the construction industry should end the practice of competitive tendering. The interviewees concurred with this view and suggested that the key to changing the industry is to establish a tendering system which ensures that bidding is not unrealistically high or low. Although the assessment criteria of contractors bidding for government contracts now includes performance, the issue of accountability still makes it difficult for the government to justify not accepting the lowest tender. Interviewees commented that private sector developments are generally less problematic than those developed by the government and that this may be due to private sector clients not having a lowest bid constraint when choosing contractors.

**Claims culture (New)**
Tied in with the lowest bid tendering practice is the claims culture. The fact that most contractors in Hong Kong make claims, has naturally given rise to a multitude of construction lawyers and claims consultants. Contentious claims are usually settled through mediation or arbitration.

**(6) Learning culture (Cultural factor)**

**Competition between overseas contractors**
Raftery et al. (1998) identified three affects of globalization on Asian construction industries: larger private sector participation in infrastructure projects; increasing vertical integration in the packaging of construction projects; and increased foreign participation in domestic construction. Unlike other Asian countries such as Japan and Korea, there are no barriers to international construction companies wishing to enter the Hong Kong construction market, although most do so by forming joint ventures with local companies. The greatest competition currently faced by local contractors is from mainland China. Although overseas contractors take away market share from local contractors, they bring in technology and expertise which is ultimately beneficial to the local construction industry.

**Innovative project procurement strategy (New)**
The interviewees see the need for innovative procurement strategies in order to avoid the fragmentation and adversarial nature of the traditional contract arrangement and as a way of accelerating the whole construction process.
CONCLUSIONS AND RECOMMENDATIONS

This study used the generic model of construction industry development (Fox, 2003a) to examine both the traditional and cultural factors that impact the development of Hong Kong’s construction industry. The study validated the generic model by demonstrating that most of the variables identified by the study were to be found in the model; a few additional cultural variables were also identified. It can be concluded that construction industry development involves a multitude of inter-related factors and variables that cannot be entirely separated and that there are many problems besetting the industry as a whole. Finding solutions to these problems is an ongoing exercise, but as a result of this study a few recommendations can be made to help alleviate some of the problems in Hong Kong’s construction industry, and many of these will also be relevant to construction industries in other countries.

The implications for stakeholders wanting to improve their construction industry are as follows. Government should clarify its role in the construction industry and intervene only when necessary, and the industry for its part should not rely too much on the government but instead be more pro-active in promoting itself. Fragmentation of the industry should be addressed by reviewing the fundamental approach to procurement, construction sequence, and subcontracting. Professional institutions and trade union should take the initiative to drive cultural change in the industry by promoting best practice and a more forward thinking mindset. In connection with this, training and education should be restructured to better match the needs of the industry. A concerted effort by all stakeholders in the construction industry will ensure that its development balances the needs of all parties.

REFERENCES


