

APPROPRIATE STRATEGIC MANAGEMENT APPROACHES FOR ENHANCING PROJECT PERFORMANCE THROUGH THE ADOPTION OF THE INDUSTRIALIZED BUILDING SYSTEM IN THE MALAYSIAN CONSTRUCTION SECTOR

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ABSTRACT

The construction industry has a great impact on national socio-economic development. The prevailing competitive forces compel Malaysian construction firms to modernize the construction process through industrialization with the aim of improving efficiency, and lowering costs by reducing construction time, improving site management, reducing wastage and enhancing building quality. Several studies have highlighted the application of Industrialized Building Systems (IBS) as one of the options to solve the construction problems and modernize the industry. Nonetheless, there is a need for the Malaysian construction firms to overcome the competitive pressures. This underlines the need to achieve competitive advantage by adopting and implementing appropriate strategic approaches. This study will be undertaken from the perspective of dynamic capabilities which offers new insights on how competitiveness can be operationalized by construction firms by exploring an integrated approach between strategic approaches and management practices in order to improve the project performance and business performance of construction firms. It is therefore, the aim of this research to develop a theoretical framework on how a clear and specific strategic approaches will be built on the configuration of the construction firms' management practices such as value-adding activities and resources form the input to these practices or activities, whereas competences and core competences provide the skills and knowledge required to undertake IBS. With the development of this theoretical model, the Malaysian construction firms will have more guidelines in practice and their efforts in adopting and implanting IBS will be more structured towards successful project delivery and improvement in business performance.

Keywords: Industrialized Building System (IBS), Strategic Management Approaches, Strategy Formulation, Management Practices, Project Performance, Business Performance, Malaysian Construction Industry.

BACKGROUND OF MALAYSIAN CONSTRUCTION INDUSTRY:

Construction industry plays an important role in generating wealth for Malaysia and the findings of the prior research have highlighted the significant contribution of the industry to national socio-economic development (Meyers, 2013). Malaysia's National Mission is to become a developed country by 2020 and this hinges on the restructuring of the economy and the societal setting. The emphasis of the National Mission is to enhance the nation's capability and on capacity building for knowledge and innovation to move the economy up the value chain. The construction sector is targeted to play a significant role as it is recognized as a strategic tool for achieving sustainable development, creating employment opportunities and contributing to gross fixed capital formation (Olanrewaju & Abdul-Aziz, 2015).

Although the global economic climate is volatile with sharply reduced oil prices and a depreciated Ringgit, the outlook for the Malaysian construction industry remains positive. Notwithstanding the industry faces several challenges for business growth and sustainability.

The first is the need to modernize construction methods. Conventional construction methods which are labor intensive for formwork fabrication, steel bending and concreting remain prevalent in Malaysia. They require several wet trades on site such as skilled carpenters, plasterers and brick workers and these are adversely affected by quality issues (Hamid, Kamar, Zain, Ghani, & Rahim, 2008; CIMP, 2007). The construction industry also has to address issues related to the environment, health and safety and the excessive reliance on unskilled foreign workers (Hamid et al., 2008; CIDB, 2008; CIMP, 2007).

The way forward is the adoption of the Industrialized Building System IBS method (CIMP, 2007; CIDB, 2005 and CIDB, 2003) which provides for enhanced and elevated levels of expertise for all the industry players who include manufacturers, installers, engineers, planners, designers and developers. Among the advantages of the IBS are shortened construction times, better site management, reduced wastage with outcomes being better products for the population. Recognizing the pivotal role that IBS can play in improving performance, the Malaysian Government is encouraging the construction industry to embrace IBS. The use of IBS was made mandatory in 2008 for the construction of public buildings and public support for this is reflected by "the granting of accelerated capital allowances for companies with purchases on mould for the production of IBS components" (Olanrewaju & Abdul-Aziz, 2015).

Another challenge is the growing competition in the industry emerging from the removal of trade barriers which has facilitated foreign construction firms to internalize their operations by moving into the Malaysian market. This suggests that Malaysian construction firms have to emphasize on strategic approaches and develop dynamic capabilities for gaining sustainable competitive advantage (Gajendran, Brewer & Marimuthu, 2013). Notably the concept of dynamic capabilities which focuses on the ability of firms to reconfigure their firm-specific capabilities and resources for remaining competitive in changing environments is not emphasized in the current literature on competitive strategy for the construction industry (Kao, Green, Larsen & Elmualim, 2006). The literature review revealed limited prior research on progress made by Malaysian construction firms on the adoption of IBS to improve efficiency and appropriate strategies for achieving competitive advantage. This provides the background for the research.

PROBLEM STATEMENT:

The Malaysian construction industry faces several challenges which include the resource shortages, institutional weakness, outmoded construction process, adopting technology change and competitive pressures stemming from the globalization. There is a gap between Malaysian construction firms and their foreign counter-parts in technology, finance, management and leadership (Olanrewaju & Abdul-Aziz, 2015). They also have to adopt materials, techniques and practices with result in outcomes that have a minimum environmental impact (Ofori, 2000).

The findings of prior research revealed the IBS has several advantages. It provides more effective management of human resources, shortens construction period, reduces construction (Jaillon, Poon & Chiang, 2009; Baldwin, Poon, Shen, Austin & Wong, 2009) and consequently reduces cost. It also increases the quality of buildings, and enhances occupational health and safety (Blismas, Pendlebury, Gibb & Pasquire, 2005; Luo, Riley, Horman & Kremer, 2008). However, the optimal use of an IBS hinges on well-defined decision making tool to address problems such as changing orders, delays in production or construction and over budget situations (Luo et al., 2008; Chen, Okudan & Riley, 2010).

Another major challenge is a long term view of corporate development. This requires strategic approaches, plans, policies and initiatives to enable Malaysian construction firms to remain competitive domestically and in

parallel play an increasingly greater role in the global market (Hassan, Mitrovic, Gayoso & Hunter, 1998). Teece (2007) suggests that firms operating in globally competitive environments require unique and difficult-to-replicate dynamic capabilities'. Dynamic capabilities are about a firm's ability to deploy resources or capabilities in effective combinations and modify its specific organizational processes to achieve sustained competitive advantage (Barreto, 2010). The dynamic capabilities framework is appropriate for the internationalization of the construction business.

A preliminary literature review revealed several research gaps on the extent to which Malaysian construction firms have adopted IBS. The literature was also silent on the strategic approaches that they have to adopt in particular the dynamic capabilities framework for sustainable competitive advantage. Based on these research gaps, the empirical research problem can be stated as *"appropriate strategic management approaches for enhancing project performance through the adoption of the industrialized building system in the Malaysian construction sector"*

RESEARCH ISSUES:

It has been argued that a relationship exists between strategy formulation, management practices, project performance and firm performance. Thus, this research explores the knowledge for critical success factors in adoption of IBS that enables overall project success. In the context of this research, critical success factors are grouped into strategy formulation and management practices while the overall project success is measured in terms of project performance and firm performance.

Six Research Issues (RI), as listed below, were identified and these were based on the research gaps that were determined during the literature review:

1. What are the strategic management approaches of Malaysian construction firms for the adoption of IBS?
2. What are the appropriate management practices for the adoption of IBS by Malaysian construction firms?
3. What is the nature of the relationship between strategy formulation and management practices?
4. What is the influence of strategy formulation on project performance and firm performance?
5. What is the relationship between management practices to project performance and firm performance?
6. What is the relationship between project performance and firm performance?

RESEARCH OBJECTIVE:

In line with the research issues, the major aim of this research is to explore such underlying relationships and examine how these relationships can be useful to promote the uptake of IBS. To achieve these aims, this study has six specific research objectives:

1. To determine the strategic management approaches of Malaysian construction firms for the adoption of IBS
2. To identify the appropriate management practices for the adoption of IBS by Malaysian construction firms
3. To examine the nature of the relationship between strategy formulation and management practices
4. To evaluate the influence of strategy formulation on project performance and firm performance.
5. To determine the relationship between management practices to project performance and firm performance.
6. To examine the relationship between project performance and firm performance.

RESEARCH SIGNIFICANCE AND CONTRIBUTIONS:

The construction industry is an established industry with deep-seated and culturally-embedded construction practices. Each construction project is unique, complex and is subject to risk throughout the construction process. Design complexity and the multitude of stakeholders create further challenges for both clients and contractors (Kao *et al.*, 2006). The need is to successfully match the desired outcome of the project with the required skills and capabilities. While the IBS is well suited to address these challenges, its wide-spread adoption is hampered by several constraints and barriers (Ahmad Bari, Yusuff, Ismail, Jaapar & Ahmad, 2011). The adoption of the IBS requires radical and substantial change from a traditional building process towards a manufacturing process. Because the industry is familiar with the conventional building system, industry players are reluctant to switch to a mechanized system and IBS (Kamarul Kamar, Alshawi & Hamid, , 2009; Hamid-, *et al.*, 2008). Furthermore, the ability of the IBS to generate significant cost savings depends on volume of buildings constructed. There is also no guidance in terms of finance and cost control method in IBS projects (Rahman & Omar, 2006).

Another problem is the lack of professionals who are trained in the IBS due to uncoordinated and

incomprehensible training awareness and syllabus (Thanoon, Peng, Kadir, Jaafar & Salit, 2003; Rahman & Omar, 2006). The literature cites examples of building contracts being awarded and constructed using the IBS system which have been subjected to project delays and resulting bad quality (CIDB, 2010; Kamarul et al. 2009; Rahman & Omar, 2006).

Other pertinent reasons for the slow adaptation of the IBS include:

1. The absence of appropriate project management techniques that are specific for IBS and as well as specific cost control mechanism for adoption by contractors in IBS (Hussein, 2007). Due to these shortcomings contractors are unwilling to risk their current profit margins by switching to an unfamiliar technology (Hussein, 2007).
2. Poor integration and team work among the relevant players during the design stage for projects that adopt IBS could lead to redesign activity and additional costs to be incurred (Hussein, 2007; Hamid *et al.*, 2008). Successful IBS adoption also requires improvements in the conventional procurement and supply chains (Venables, Barlow & Gann, , 2004).
3. IBS adoption requires a new business approach, investment and financial planning including an effective combination of cost control and selection of projects that give enough volume to justify the investment (Pan *et al.*, 2008; Malik, 2006; Pasquire and Connolly, 2002 and BSRIA, 1998).

The adaption of IBS has to be matched appropriate strategic approaches as the final outcome is for the construction firm to offer superior products at low cost (Porter, 1979) and in the process achieve competitive advantage. Since Malaysian construction firms are also venturing abroad, they have to successfully overcome the global rivalry by achieving sustainable competitive advantage. The literature suggests that “dynamic capabilities should be at the core of strategic management processes” (Shera & Lee, 2004, p. 935), wherein dynamic capabilities are tangible and intangible capabilities for using resources to effectively deliver products and services.

There is much literature on the IBS as it is rapidly being adopted by the global construction industry. Prior research focused on the identification of problems and risks, selection criteria critical success factors for IBS implementation, identification of management factors and critical sustainability factors for improved implementation of IBS.

However, there is limited research on the critical success factors (CSF) for the adoption of IBS and overall project success in terms of project performance and firm performance in the Malaysian context.

The significance of the findings of this study can be summarized as follows:

- 1.Theory advancement by contributing to a better understanding of the underlying relationships among the critical success factors that contribute to overall project success in the context of IBS adoption. The tested model provides important insights for the transformation of the conventional construction method to IBS for achieving overall project success in terms of project performance and firm performance by examining the relationship between strategy formulation, management practices, project performance and firm performance.
- 2.Providing recommendations for industry practices. These include the importance of adopting and implementing strategic approaches in particular the application of the dynamic capabilities framework to provide a holistic perspective to connectivity between the partners involved in construction projects.

UNIT OF ANALYSIS:

The critical success factors adopted in this research were on the strategic and organizational level, thus, the unit analysis is limited to the organization itself – Malaysian Contracting Firm registered with Construction Industry Development Board (CIDB) under Class G7.

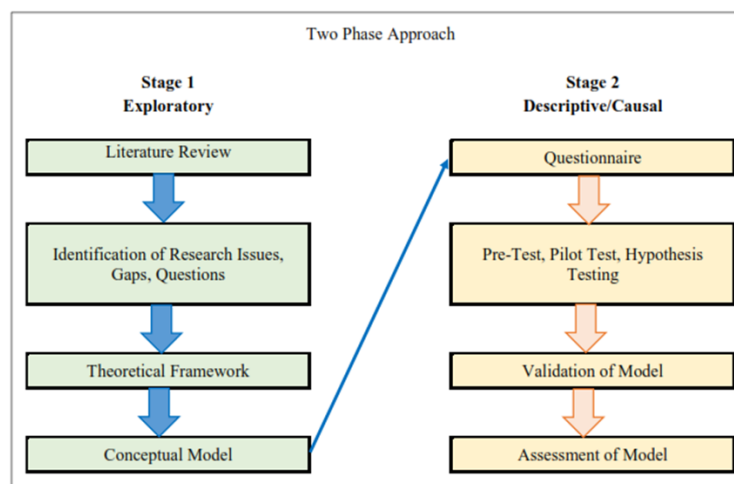
RESEARCH DESIGN:

Considering an important objective of this research is to assess the validity of a constructed model for determining the extent of the influence of strategy formulation and management practices on the dependent variable of project performance and firm performance, the quantitative – deductive approach is considered the most appropriate for this research.

Generally, this research deploys a combination of exploratory and descriptive/causal research as shown in

Figure 1. The purpose of the first is to search for new information on the research problem. This stage permits the identification of the research issues and variables for development of the conceptual model and also development of hypotheses to test the model. The second stage uses a questionnaire survey. It is a descriptive stage with the use of descriptive statistics to pre-test and pilot test the questionnaire items to obtain statistical data on the respondent's profiles and profile of the responding companies. The purpose of this stage is to obtain quantifiable data that is suited for statistical testing of the conceptual model. The analysis process is supplemented by Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM).

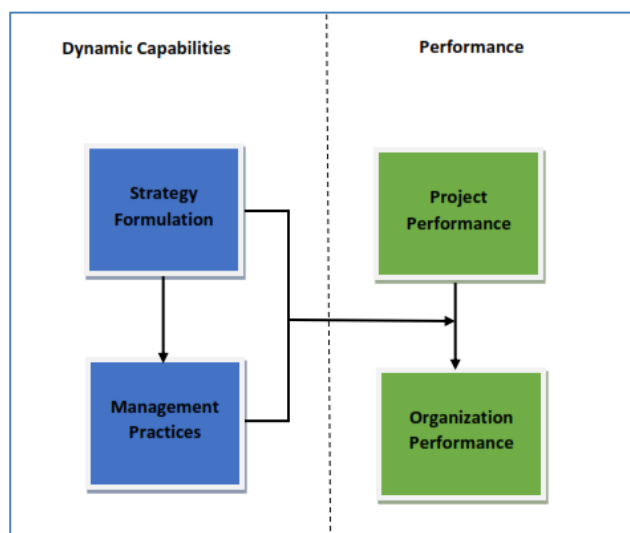
Figure 1 – Research Design for this Research



THEORETICAL FRAMEWORK AND CONCEPTUAL MODEL:

Appropriate strategies and management practices are important for the successful adoption of IBS by Malaysian construction firms. However, there is a gap in the body of knowledge on the relationship between strategy formulation and management practices. Similar research gaps exist on; (i) the relationship between strategy formulation and the performance of firms and projects and (ii) the relationship between management practices, project performance and firm performance. Guided by the dynamic capabilities concept, the theoretical framework of this study was illustrated in the Figure 2.

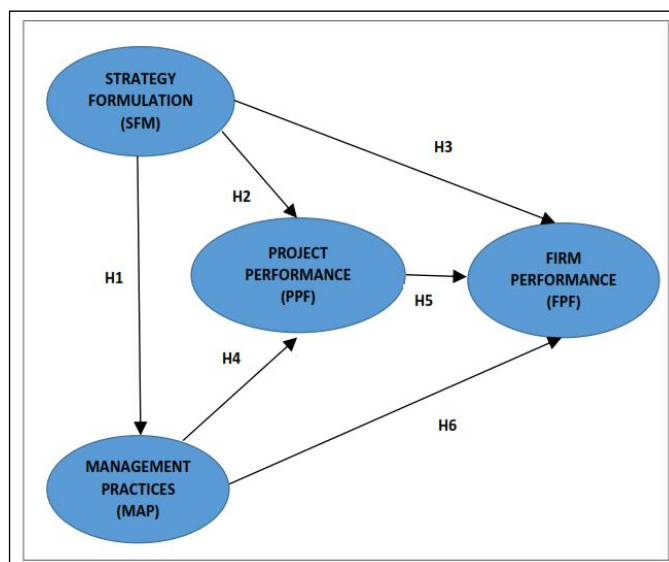
Figure 2: Dynamic Capabilities Framework for this Study



The research model centers on strategy formulation and management practices which have performance implications in terms of project performance and firm performance. By invoking the notion of these relationships in the context of the dynamic capabilities framework, this research model provides a theoretically defensible framework within which the relationships between strategy formulation, management practices,

project performance and the performance of contracting firms can be examined. Figure 3 presents the conceptual model developed in this research.

Figure 3: The Conceptual Model



DISCUSSION AND CONCLUSION:

In spite of being acknowledged experts in IBS techniques, Malaysian construction firms need to be able of integrating appropriate strategic management approaches with management practices for effective adoption and implementation of IBS as to improve efficiencies and performance in the industry. Before wider adoption of this alternative construction method - IBS, there must be a better understanding on the potential of IBS in improving performance either project performance or firm performance. Thus, this research is aimed at formulating a framework and developing a model from the perspective of the construction firms by critically examining the relationship between appropriate strategic approaches and management practices in relation to project performance and firm performance. It is believed that the inclusion of the proposed framework and model demands that construction firms become familiar with the entire adoption concept in contrast to the current practices that is typically focused on conventional construction method.

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