

# Developing a Framework to Facilitate “Joint Effort” Initiatives in Malaysian Industrialized Building System (IBS) Projects

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**Abstract**— Poor ability to meet growing housing demands are a major problem for Malaysia. Despite the initiatives to move towards the uptake of Industrialized Building System (IBS), it has been hampered by fragmentation issues, a typical picture of traditional mentalities. “Joint Effort”, initiatives have the potential to rescue the current predicament however, the industry hesitance has been a major hindering factor. This paper reports the progress to date of on-going research aimed at developing a validated framework to facilitate “Joint Effort” uptake in Malaysian IBS projects. “Joint Effort”, being among the core component of Supply Chain Management (SCM), is a collaborative endeavor that has the potential to overcome fragmentations. It leans towards the creation of effective teamwork which benefits all parties at both short and long term. Encouraged by a few success cases, there is cautious optimism that it may as well benefit the Malaysian dilemma. This paper considers fragmentation as a major hindrance on IBS uptake, establishes the need to embrace “Joint Effort” initiatives and then elucidates the needs and strategies towards coming out with the final research framework. A combination of quantitative and qualitative approaches will be used and the final outcome will be a framework that proposes beneficial tools to curb the critical barriers to “Joint Effort” uptakes. It is expected that the framework would aid in improving IBS practices thus better able to meet the housing demands.

**Keywords**— *Barriers, Enablers, Fragmentation, Industrialized Building System (IBS), Joint Effort, Malaysia.*

## 1. Introduction

A major problem haunting Malaysian construction industry is the inability to meet the growing housing needs [1], which is estimated at five million new units needed between 1995 to 2020 [2]. However, old construction method cannot satisfactorily deliver these needs in short period of time with quality [3] thus, in attempt to improve efficiency; The Malaysian Construction Industry

Development Board (CIDB) has encouraged the use of Industrialized Building System (IBS) [10], nevertheless, IBS implementation in Malaysia has been haunted by fragmentation issues [10] which relates back with the incessant traditional practices dominating Malaysian IBS practices [3]. This has caused problems to meet the vast housing demand thus highlighting the need for a shift in Malaysian IBS practices to effectively deal with the fragmentation issues. “Joint Effort” is a collaborative endeavour that aims to create an integrated project delivery by including elements of effective teamwork towards achieving a both short-term and long-term outcome that benefits all parties. Being among the core component of Supply Chain Management (SCM), “Joint Effort” initiatives has the potential to overcome fragmentation in IBS practices. While there is evidence of success from “Joint Effort” initiatives (see [4],[5]), the Malaysian industry seem hesitant to uptake this revolutionary approach. In fact, the recent Construction Industry Master Plan (CIMP) 2006 to 2015 was also short of innovative approaches (e.g. [6]) thus, “Joint Effort” has been far from the practice of Malaysian practitioners.

These, therefore, highlight the need for a shift in Malaysian IBS practices to effectively deal with fragmentation issues. Considering that there are numerous parties involved in a project and; that there is a strong tie between organizational culture and performance [7], collaboration of all project parties is vital for project success thus; it is of great concern that should the disjointed conventional practices be continually practiced, that the local construction industry may never get to fully enjoy the great benefits of IBS. With respect of the potential of “Joint Effort” initiatives to overcome fragmentation, there is an urgent need for the Malaysian IBS sector to uptake “Joint Effort” initiatives towards enhancing the performance of

IBS sector and consequently be able to meet the rising housing demands.

## 2. Malaysian construction industry outlook and dilemma

The Malaysian construction industry's development initially started a year before the independence in year 1956 via the inaugural economic plan (1956-1960) and since then, other economic plans has been launched every five (5) years named the Malaysia Plan. The most recent Malaysian Plan is the eleventh edition which runs from the year 2016 to 2015. The Malaysian construction industry plays a significant role in improving the socio-economic scenario of the industry and is among the most important sector in creating a job for the citizens. This is mainly due to the multiplier effect it creates onto other industries thus jobs created are not limited to those of project sites alone but also in other sectors that directly or indirectly do business with it for example factories making construction materials, financial institutional funding construction works, insurance companies insuring projects, transportation companies delivering materials and many more. Construction outputs, on the other hand, contributes to the development of the nation, providing infrastructures, National landmarks, public amenities, etc. thus has led to numerous plans to follow as part of making Malaysia a developed nation by year 2020 such as the Construction Industry Master Plan (CIMP) 2006 to 2015 and the Construction Industry Transformation Programme (CITP) 2016 to 2020. Nevertheless, the vast impact of this sector on the nation's economy has not been translated to a good performance in overall as growth has been rather at a crawl. The average growth has been only at 0.7% from the year 2000 to 2007 and GDP shares being the lowest in the region [8]. The Tenth Malaysia Plan (2010 to 2015) also failed to achieve its "Zero Delay" ambitions which means the target to be a "world-class industry" by 2015 have also been hampered. Mission 2020 which aims at making Malaysia a developed country by the year 2020 is the latest task to be accomplished which means a drastic improvement is needed to make it a reality.

The Malaysian construction industry remains as one of the most problematic sectors in the country; and despite it being among the top-ranked economic sources of the country, its contribution

does not represent the position it stands at [9]. One major problem the nation is facing is the struggle to meet the growing local housing needs [1] which according to [2], approximately five million new units will be needed between the years 1995 to 2020; and old construction method cannot satisfactorily deliver these needs in short period of time with quality [3]. Therefore, in attempt to improve efficiency, the Malaysian Construction Industry Development Board (CIDB) has encouraged the adoption of Industrialized Building System (IBS) [10], an approach proven to save construction cost, time, productivity and quality [11], [12], as well as to deal with the increasing housing demands [13].

## 3. Fragmentation in Malaysian IBS projects

One serious problem of IBS project implementations is the fragmentation issues that have been haunting its implementations. Fragmentation refers to the disjointed and unsynchronized nature in which project teams operates in meaning that they typically work in isolation, with minimal or no proper communications and coordination between them, performing tasks without properly referring to each other thus, leading to problems such as missed information, lacking details, conflicts and so on which eventually lead to further deficiencies such as rework, enormous work variations, budget burst, etc. In the context of a construction project, project team refers not only on the consultant teams hired by the client but also the external parties such as the local authorities, government agencies, financial institutions as well as the client themselves. Without properly recognizing the need for all these parties to coordinate and collaborate throughout the project life-cycle, therefore, leads to fragmentations in the industry and its projects.

Fragmentation remains as the main reason obstructing the uptake of IBS in the Malaysian construction industry [10]. "Fragmentation of the industry has led to problems relating to coordination and integration of project participants" [14] as well as unpleasant relationships (e.g. [15]). Being typically linked to conventional practices [16],[17], fragmentation has been blamed as the main contributor to most of the performance issues faced by the construction

industry [18]. The sequential manner, in which it operates in [10], has led to severe criticism of the traditional approaches [19] and has been linked to numerous disadvantages and inefficiencies [20-31]. Hence, being most dominant method used in the Malaysian IBS project development creates risks for the nations' failure to meet their rising housing demands [3] hence, highlight the need for a shift in Malaysian IBS practices to effectively deal with fragmentations.

#### **4. “Joint Effort” as the way forward**

Conventional practices are no more a recipe for success for projects [32] and Supply Chain Management (SCM) has been highlighted as the way to go forward in many studies [33]. The philosophy which takes a system perspective [34], holding on collaboration as its “key driver” [35], emphasizes particularly on harmonizing the multiple entities involved in a project. [36] defined SCM as “a modern managerial philosophy which stands firmly on the need for continuous integration of two or more project parties from initiation to handover and throughout those phases value shall be achieved via joint initiatives, pooled resources, pain/gain sharing, mutual trust and a long-term perspective on relationship towards the accomplishment of a fixed set of mutual objectives”. It also “enables project participants at all levels to blend in together towards creating a more healthy working environment where elements of respect and trust are nurtured, knowledge and experience are shared and higher transparency is in place, which consequently leads to a more productive and efficient project outcome” [14].

“Joint Effort” stand among the core component of Supply Chain Management (SCM) - evident via to the strong notion held by the philosophy itself on collaboration as being its main driver [35]. “Joint Effort” which can generally be defined as “a collaborative endeavor that aims to create an integrated project delivery by including elements of effective teamwork towards achieving both short-term and long-term outcome that benefits all parties” has the potential to overcome fragmentation in IBS practices by encouraging all projects members to work as a team and make full commitment to projects via utilization of vast joint initiatives that are offered within the SCM revolutionary practice. Team spirit has been well

known to be an important ingredient for any successful endeavor and that it is important to ensure everyone is on the same page when carrying out any given task. Good team effort also creates a sense of ownership on projects which further drive everyone to regard the success of a project as their own accomplishment thus, driving them to perform at their best capacity. Eventually, this leads to the proper execution of every facet planned together right from the beginning of projects. The great importance of “Joint Effort” has led to numerous of its tools been proposed and published worldwide (e.g. [4],[5],[37],[42]. In fact, few tools have also been implemented in construction projects typically on those of developed countries; and proved successful [4],[5]; which makes it a strong point for a developing country like Malaysia to follow suit. With positive outcomes that have been documented, the same optimism could be expected should it successfully be implemented in Malaysian IBS projects.

#### **5. The research route**

This research mainly aims to establish a validated framework to facilitate “Joint Effort” uptake in Malaysian IBS projects. In doing so, this research would need to first examine and identify the critical barriers and critical enablers to “Joint Effort” uptake in Malaysian IBS projects, then to establish the relationships between the two (2) variables towards consequently developing and validating the final research framework.

While poor performances have been affecting many sections of the local construction industry, this research would be focusing only on housing projects since current IBS practices has failed to meet the rising housing demands. Studies will be carried out within the major capital cities in Malaysia namely Kuala Lumpur, Penang and Johor Bahru; and only housing developers with direct involvement with IBS development projects will be targeted. Developers group (which are also the project client) are selected as respondents in this research because past studies (in other countries) by [38-41] recognized client organizations as a good champion for SCM endeavors. Therefore, “Joint Effort”, which is among the core component of SCM, would be best championed by the developer's group.

Towards establishing the final research framework, this study would be undergoing a number of data collection and analysis steps. Firstly, it should be noted that literature to do with the barriers and enablers to “Joint Effort” uptake within Malaysia or anywhere around the world are very limited. In light of the lack of literature, this research would approach this study by first conducting a preliminary interview on a selected number of construction industry experts as well as policy makers within the Malaysian IBS project environment with a minimum of ten (10) years of experience in the construction industry. This is to gain some insight into the real-world scenario of the industry to consequently identify the barriers and enablers to “Joint Effort” uptake in Malaysian IBS projects. Interview outcomes will then be analyzed using “content analysis” to extract out the barriers and enablers that have been pointed out; and then, they will be combined with those obtained from the available literature. This serves to ensure the completeness of the information that is to be inserted in questionnaire forms for survey purposes.

After completing the preparation of survey questionnaire forms, they will be tested/piloted before being sent out to the relevant respondents to establish the critical barriers and critical enablers to “Joint Effort” uptake. Since the Real Estate & Housing Developers’ Association (REHDA) of Malaysia only publishes the list of housing developers registered with them and has no data on who uses IBS and who does not, this research will be using “Snowball Sampling” as means of reaching out to the relevant developers. Snowball sampling has been regarded as the next best method if random sampling cannot be performed [43] and is suitable for hard-to-reach populations [43-45]. According to [46] “Hidden population” has two characteristics: first, no sampling frame exists, so the size and boundaries of population are unknown; and second, there exist strong privacy concerns, because membership involves “stigmatized or illegal behaviour, leading individuals to refuse to cooperate, or give unreliable answers to protect their privacy”; which certainly fits the respondent characteristics in this research. Gathered questionnaires would then be analyzed using the latest version of Statistical Package for Social Sciences (SPSS) towards developing the final research framework; which would then be validated via a series of audio-recorded semi-structured

interviews on a selected number of industry experts.

## 6. Conclusion

The needs for new houses are at a rise in Malaysia however the nation is facing difficulties in meeting these demands. Attempts have been made to shift to Industrialized Building System (IBS), a method linked with many benefits however; IBS practices have been hampered by fragmentation issues, a scenario commonly linked to traditional approaches. Therefore, there is an urgent need to shift current IBS practices to effectively deal with fragmentation towards enhancing the productivity of housing sector; in which it could benefit from the uptake of “Joint Effort”. “Joint Effort” has the potential to overcome fragmentation in IBS practices by encouraging all projects members to work as a team. However, within Malaysia, “Joint Effort” is still at infancy and the local industry seem hesitant to uptake this revolutionary approach. Therefore, this research aims to examine and identify what are the critical barriers and critical enablers to “Joint Effort” uptake in Malaysian IBS projects as well as to investigate the relationship between the critical barriers and critical enablers towards finally developing a validated framework to facilitate “Joint Effort” uptake in Malaysian IBS projects. Data collection will involve a combination of quantitative and qualitative methods while analyses will consist of content analysis for qualitative data and, a series of statistical analysis, regression analysis as well as Structural Equation Modelling (SEM) for quantitative data. The outcome of this research is expected to contribute to the body of knowledge in a few aspects including the proposal of a new validated framework. Beyond that, the new research framework is expected to curb fragmentation in Malaysian IBS practices thus making it more efficient at meeting the rising housing demands. Improved efficiency in IBS practice would also reduce construction cost to provide cheaper houses for Malaysians thus solving the issue of lacking affordability among Malaysian to own a house.

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