

SUSTAINABLE VALUE THROUGH THE IMPLEMENTATION OF STRATEGIC PARTNERING IN INDUSTRIALISED BUILDING SYSTEM (IBS)

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ABSTRACT

The implementation of strategic partnering in the Industrialised Building Systems (IBS) construction approach may be crucial for players in the Malaysian construction industry particularly during economic slowdown. Strategic partnering could also become vital in the IBS construction approach whereby it will ensure players in the industry to assist and supplement each other partners' strength and weaknesses in producing and delivering products of higher quality, in time and within the cost budget. The Malaysian Construction Industry Development Board (CIDB) has highlighted certain barriers in adopting IBS construction approach in Malaysia which include the lack of integration between players in both upstream and downstream sections of the industry. The methodology adopted in the main research is through quantitative approach using structured questionnaires. Initial results have shown that the majority of the contractors agreed that by adopting the partnering approach, they can achieve benefits in their projects.

The aim of this paper is to capture the important factors pertaining to the implementation of strategic partnering in IBS construction approach. The need to promote cooperation, integration and improve player's relationship, both in the upstream and downstream sections of the industry, is highly recommended where, hopefully this move will become a driving force in creating sustainable and successful IBS projects in Malaysia. It is hoped that at the end of the main research, the final outcome could also verify the key success factors in utilising strategic partnering in the IBS construction approach. This paper will also attempt to address the importance of buyers' supply and demand factors in IBS projects in view of sustaining industry player's investment in the long-run.

Keywords: *Strategic Partnering, Industrialised Building System, Sustainable value*

1.0 INTRODUCTION

Industrialised Building System in Malaysia was introduced in the early sixties. In the beginning, this method had been adopted in the construction of low-cost high-rise residential buildings to overcome the increasing demand and short supply of housing for the middle and low income group. Nowadays, IBS projects have moved away from the typical low cost high rise boxed buildings to a more upmarket and high cost prestige projects in Malaysia. This gives an indication that a paradigm shift from the traditional approach to a much modern construction approach is desperately taking place in the Malaysian construction scenario and perhaps, the IBS could be the answer.

The new regulation imposed by the government reaffirmed its commitment by making it compulsory for all new government projects to have at least 70 percent of IBS content in its overall construction approach. This illustrates that the government is now seriously taking into account the need for the construction players in Malaysia to move to new methods of construction using the IBS. The benefits of this method include reducing the construction time, increasing the quality, producing more consistent products, reduced snagging and defects, increasing the sustainability and greater customization options for the design (Goodier et al., 2007).

In order to successfully implement the IBS, this method needs more support from the stakeholders and construction players in the industry. The reason is that this new concept of construction uses a lot of innovative technology and the knowledge of construction is very crucial. Adversarial relationship practice in this method of procurement must always be avoided. The new approach of procurement using strategic partnering may also need to be introduced to all construction players that are involved in the IBS construction approach. Strategic partnering basically are formal cooperative relationships between firms that pool or exchange their resources and share returns from a pooled investment (Teece, 1992). Sharing of knowledge between construction players in the industry is significantly important through the implementation of strategic partnering. Mody (1993) revealed that alliances provide good opportunities for firms to obtain knowledge and know-how that reside within partner organizations, as learning is an important rationale for partnerships.

Shaokai Lu et al.(2007) revealed in their research study that strategic partnering is a suitable approach to be implemented in a new market. As the Industrialised Building System has yet to be fully utilized in Malaysia, the implementation of strategic partnering into the system seems to be the most relevant and suitable approach. The percentage of IBS usage in the Malaysian construction industry is still very low and at the growing stages and the involvement of construction players are minimal (Halil et al.,2009). A study done by Tam et al.(2007) stressed that strategic partnering is one of the best approaches to encourage the use of prefabrication in projects. This concept of construction however, demand the cooperation between various players involved from the client, contractor, consultant, supplier and the manufacturer (Halil et al., 2009). Webster (1992) noted that the ability of many firms to compete on quality and low costs has been significantly enhanced through a system of strategic partnering between suppliers and customers. This shows that the construction industry could become more competitive and yet strong by using strategic partnering in terms of meeting the estimated cost, quality and time.

A report from CIDB (2007) stated that the implementation of the IBS in the Malaysian construction industry has not been successfully implemented. One of the key reasons is caused by the lack of integration between the design and the construction stage. This problem could have been solved if construction players had made a move into adopting the strategic partnering approach. By providing access to resources, enhanced market perceptions and organizational flexibility, strategic partnering enables partnering firms to improve their performance and positions in competitive markets, their stakeholder valuations, product innovations and long term survivability (Dai et al., 2005). Other researchers have also stated that the value of alliances is especially plain to see when

the partnerships involved the exchange of technological assets and skills (Chan, Kensinger, Keown & Martin, 1999; Hagedoorn and Schakenraad, 1990).

2.0 SUSTAINABLE VALUE THROUGH STRATEGIC PARTNERING IN THE IBS CONSTRUCTION APPROACH

Sustainable value can be defined as transforming your business into one that profitably addresses its own unique set of social and or environmental issues. Sustainable value through strategic partnering can be looked at within the four approaches as explained below;

2.1 Sustainable Business Growth

The word sustainable construction can be defined within the context of design concepts, including materials/technology, construction and demolition techniques, whole life-cycle performance and costing, procurement, site planning and management, recycling and waste and energy minimization (Howes et al, 2005). As previously mentioned, in the Industrialised Building System, the need for sustainable construction can be achieved through optimising the design concepts. Implementation of strategic partnering in Industrialised Building System is a good approach for doing business as traditional approach contribute to higher project costs, distrust between parties, duplicated work and minimum interface between construction players. The involvement in these types of business in the construction industry required a good demand of the project using IBS to ensure this construction approach could be sustained for a long-term period. How do we ensure sustainable business growth in the IBS industry? The role of clients is crucial to generate a project using Industrialised Building System construction approach. Based on the UK experience on the implementation of strategic partnering in IBS projects, Kaluaarachi et al. (2007) described the importance of guaranteed long-term demand in IBS projects for the construction players before they can move to the new procurement method using strategic partnering concept.

Halil et al., (2009) have proposed strategic partnering in upstream relationship for the construction players in the Industrialised Building System which included client, developer, main contractor and all supply chain players in the industry. To sustain the system for a long period, this type of business requires knowledge in terms of new technology, design, construction as well as maintenance of the IBS construction approach. The construction players should know the technology trends and market needs for this concept of construction. Collaboration through strategic partnering in the IBS construction approach should be encouraged amongst construction players in the industry. Since each construction player has its own strengths and weaknesses, it is better to collaborate to ensure the product delivered in the IBS is of higher quality, at lower cost and in less time. Sharing knowledge under one organizational roof is better in IBS construction approach to ensure the smooth running of the construction process.

Sharing of Risk, Profit and new Technology

Long-term investment and acquiring new and innovative technique of construction will strengthen the value chain and strategic partnering between organizations. Profit sharing through partnering implementation as indicated by Bennet and Jayes (1998) as a win-win relationship which involved sophisticated strategy and require a willingness to improve the joint performance. They revealed potential savings of 40-50% in both cost and time. Similarly, Barrick (1998) identifies instances of comparable success companies such as Rover, Esso, Sainsbury's and the British Airports Authority (BAA) which reported to have reached saving of 40% on cost and 70% on time. In projects with complicated design and new technology approach such as the IBS, partnering is a useful

procurement method to be implemented (Ronco et al.,1996). Sharing knowledge in technology is also crucial to gain competitive advantages in the market place (Nielson, 1998) especially during this trying time.

Environmental Issue and High Quality Control of Material

According to CIDB (2008), the Malaysian construction industry has a crucial role to play in assisting the efforts of the government to achieve sustainable development, where there should be a balance between economic growth, social expansion and environmental protection. In order to pursue sustainable development, the construction industry itself has to become sustainable. There are many elements to a sustainable construction sector. The economic dimension includes increased profitability and competitiveness. The social dimension covers aspects such as the delivery of buildings and structures that meet the satisfaction of its users as well as providing a great respect and fair treatment for all stakeholders involved. Environmental considerations are also important and include concerns such as protection of natural ecosystems as well as minimization of environmental impacts and consumptions of energy and natural resources. Strengthening the government regulation on the 70% use of the IBS construction approach in government projects aims to encourage an environmental friendly practice in the industry.

With the use of prefabrication in the industry, it can help improve site safety by providing cleaner and tidier site environment, enhancing quality factory production and eliminating site malpractices (Tam,2007). By using this approach of construction, the energy can be more efficiently used with a minimum level of pollution and can minimize the construction waste in the industry. Hendricks and Pitersen (2000) stated that through prefabrication method, all the components using factory production can reduce waste generation and encourage recycling of construction waste, thus leading to environment protection and a more sustainable construction industry.

Social and Economic Aspects

The usage of IBS construction approach in the industry basically gives a social and economic advantage to the client and user in the industry. The significant advantages are on construction time, extended life span of facility and high value materials. By changing the method of construction from traditional to the IBS, it could assist the social and economic aspects such as energy to be more efficiently used with a minimum level of pollution and with a reduction in the usage of foreign workers and value for money in terms of products using the IBS. Jaillon et al. (2008) stated in their research that the use of prefabrication in construction projects demonstrated significant advantages, such as improved quality control, reduction of construction time (20%), construction waste (56%), dust, noise on site and labour requirement on-site (9.5%).

3.0 AN ANALYSIS ON THE IMPLEMENTATION OF STRATEGIC PARTNERING IN INDUSTRIALISED BUILDING SYSTEM

The purpose of this section is to analyse data from Grade 7 contractors regarding the implementation of strategic partnering in IBS construction approach. Many of the literature reviewed described the advantages of strategic partnering which include such issues as it prevents unfair risk and benefits allocation; it seeks to derive win-win solutions among the contracting parties, with value being placed in the long-term relationship, trust and openness; emphasizes on effective dispute resolution, minimizes risks for project delays: over budget; poor quality and safety management can also be reduced and the working process becomes more efficient, redundant work and wastage will also be reduced (Wong et al., 2004). The advantages from the various researchers have shown the benefits of partnering in other countries. However, the Malaysian construction industry is still unclear on the concepts of partnering in their projects. This research seeks to explore the current knowledge of collaboration practice and also to improve the knowledge of the construction players and stakeholders in the industry in terms of implementing partnering practice in a new construction approach such as in the Industrialised Building System.

Material and Methods

A preliminary research survey was conducted within a four (4) month period of November 2008 to Mac 2009 to seek the relevancy of the implementation of strategic partnering and extract the relevant data pertaining to the research. Thirty-one (31) out of 250 (12%) questionnaires were received from respondents during that period. This response rate is deemed adequate for an exploratory survey of this nature in terms of exploring the topic area and investigating its relevancy to the Malaysian Construction industry. A more comprehensive survey will be conducted in future with a large sample group to address the research questions, including interviews with industry experts to further strengthen the methodology and data collected.

Sample and Analysis

The respondents targeted were Grade 7 contractors in the Klang valley area. The contractors were selected based on their experiences in the construction industry.

Results and Discussions

The internal reliability of the instrument (questionnaire) was assessed using Cronbach's Alpha (α). Cronbach's Alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct". Construct is the hypothetical variable being measured (Hatcher, 1994). Alpha's coefficient ranged in value from 0 to 1 and is used to describe the reliability of the instrument for multi-point formatted scales (i.e, 1= strongly agree to 5 = strongly disagree). The higher the value, the more reliable the instrument is.

Generally, the acceptable alpha (α) values considered for a social science research purposes are above 0.65. In this particular study, the reliability of the five (5) questions in Section C of the questionnaire was tested in its entirety with Cronbach's alpha. The alpha's coefficient of 0.862 concluded that the reliability of the instrument was high.

Section A – Company's Background

Figure 1 show a large proportion of the current posts were Directors which is 42.0% of the total number of respondents. Meanwhile, the second largest group of respondents comprised by others (such as Contract Manager, Quantity Surveyor, Assistant Director, Technical Manager, Business Development Manager and Construction Manager) at 29.0%, followed by Project Manager (16%) and the Contract/Procurement Manager constitutes 13.0%. This result shows that almost all respondents were well-educated and have established posts in their company.

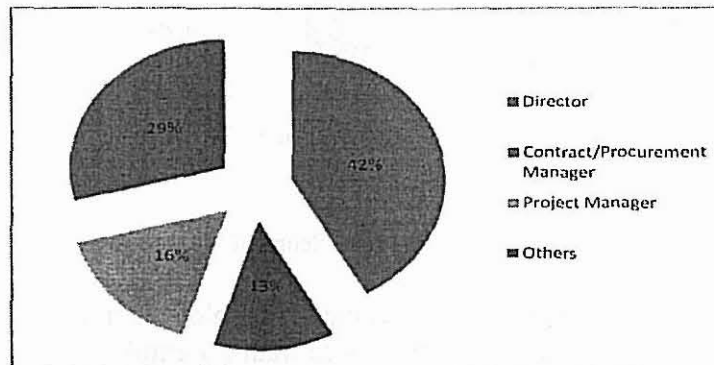


Figure 1: Categories of Current Posts in Organization

Figure 2 illustrates that most of the respondents stated that their company has long established i.e. more than 10 years (71%) compared to 16% which has been established between 5 to 10 years and 13% of the companies has been established for less than 5 years. This figure has shown that the majority of the company are very well established in the construction industry.

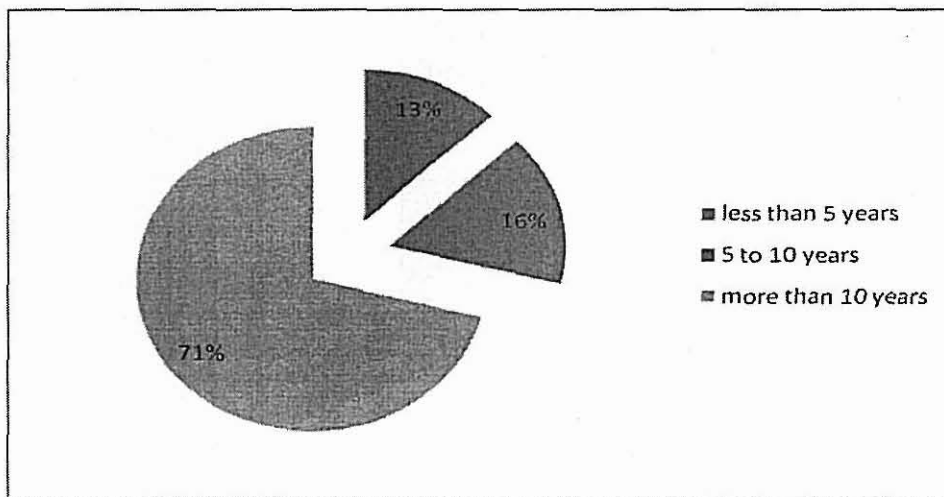


Figure 2: Company's Years of Establishment

Figure 3 reveals that the majority of the company involved in Building Works were made up by 83.9%, followed by Civil Engineering 80.6%, others 22.6% and the involvement in industrial works have shown the lowest percentage at only 9.7%. The rationale behind this trend is that, in developing countries, most of the projects are concentrated on building and civil engineering works compared to industrial works.

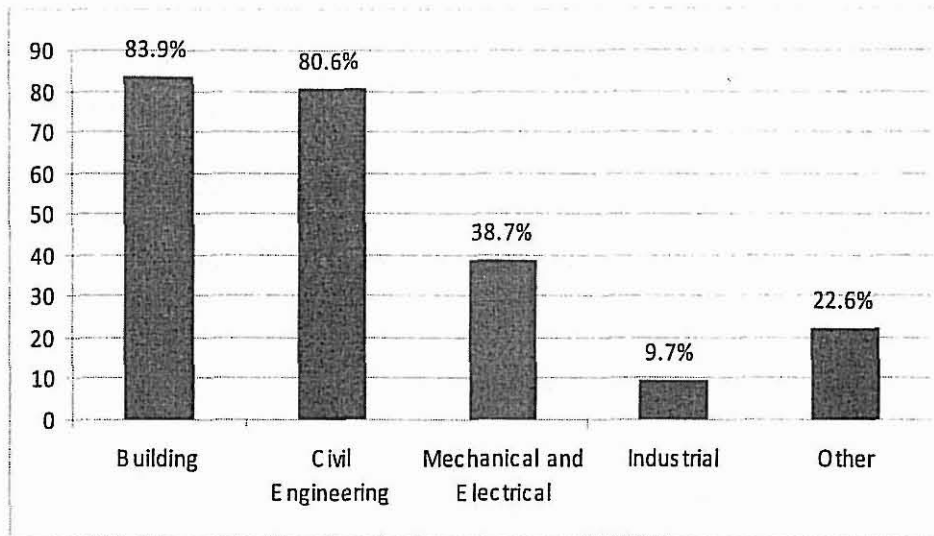


Figure 3: Company's Scope of Work

Figure 4 shows the percentages and the number of employees in the contractor organizations. Most of the companies revealed that they have more than 50 employees (45.2%), 41.9% of them have employees from 10–49 and only 12.9% have fewer than 10 employees in their organization. This result shows that the majority of the respondents are from larger companies and their involvement in the construction project is an indication of a high level of experience in terms of knowledge in construction and procurement.

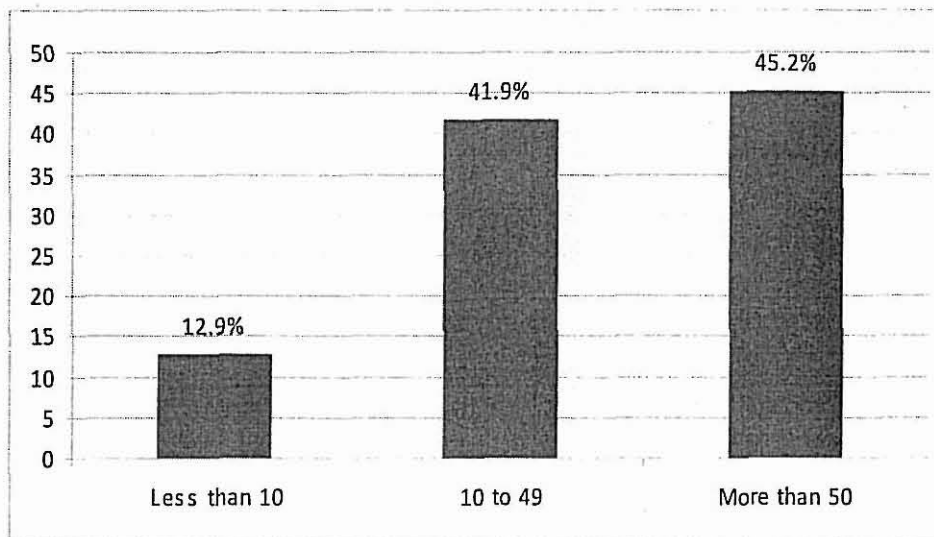


Figure 4: Number of Employees

Information Concerning Collaboration/Partnership

Figure 5 above shows that 77 % (24) had said 'Yes' on the experience with collaboration or partnership agreement. Only 23 % (7) respondents said 'No'. This result also indicated that the majority of Malaysian contractors have some form of experienced in collaboration or partnership.

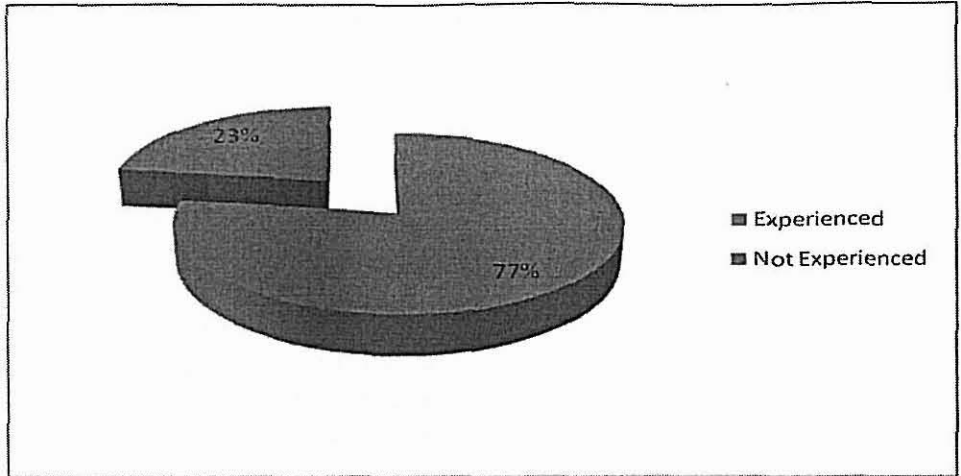


Figure 5: Experience in Collaboration

Figure 6 above illustrates the highest percentages of involvement of collaboration amongst contractors in Malaysia which are joint-ventures 61.3%, partnership and strategic partnering are sharing the same value at 29%. Joint –ventures has the higher percentage because most of the JV projects are involved in infrastructure works where Malaysian contractors need to share technology with others companies to ensure that they can fulfil the requirements of clients. Basically this type of procurement may be popular because separate companies are formed with new partners as shareholders. The other reason may be because of a mutual interest of two contracting parties in sharing and spreading the risks associated with large, complex or long-term contract, which could have dire consequences if all does not go as planned (Cheatham, 2004). Partnering and strategic partnering shares the same percentage maybe because contractors have less knowledge to embark on partnering and there is no enforcement policy from the government.

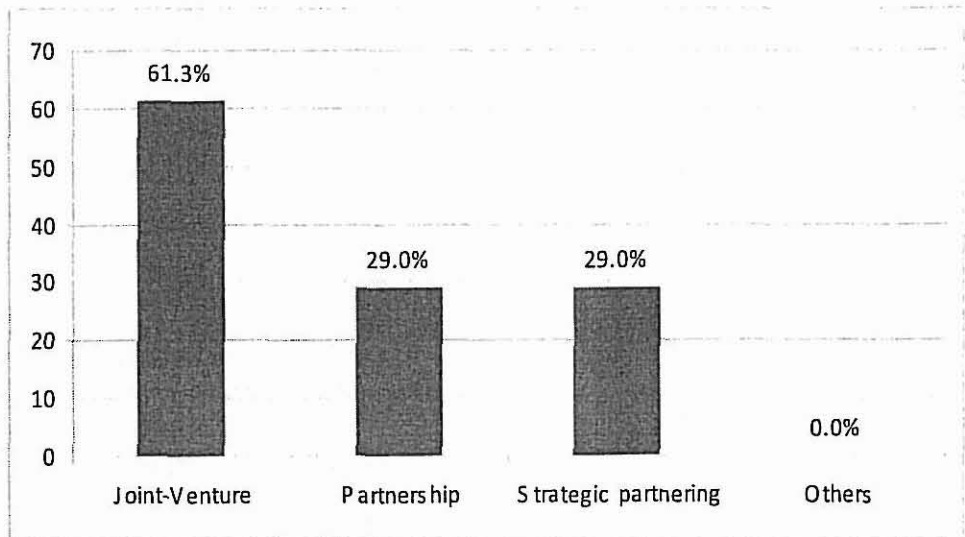


Figure 6: Form of Collaboration

4.0 CONSTRUCTION METHOD AND LOCATION OF THE COLLABORATION/ PARTNERSHIP

Construction Method

Table 1 above shows that in collaboration or partnership, most of the construction methods used are conventional method (87.1%) , followed by the combination method between conventional and IBS (48.4%) and fewer in Industrialized Building System with percentage of 35.5% and other methods of construction at 3.2% only. The above results indicate that most of the projects were using the conventional method because since there was no enforcement by the government on the construction players to adopt other construction methods such as the Industrialised Building System. The combination of conventional construction method and IBS shows the second largest percentage which means that the government had introduced the use of IBS but the knowledge of technology in using this method was still at an early stage amongst construction players. Therefore, there was a need for a combination of construction methods before they can fully adopt the IBS construction approach. The full used of the IBS indicates the lowest percentage and this may be the result of a non enforcement by the government to make it compulsory to the use of IBS method in projects. The other reasons could be that there was no expertise in this new technology, foreign labour was still very cheap and the cost to invest in the IBS is much higher compared to the traditional method.

Table 1: Construction Method and Type of Collaboration

CONSTRUCTION METHOD	Percentage (%)
Conventional construction method	87.1
Conventional construction method + IBS	48.4
Industrialized Building System	35.5
Others	3.2
TYPE OF THE COLLABORATION/ PARTNERSHIP AGREEMENT	
Local	87.1
International	22.6

Types of the Collaboration/Partnership

Most of the collaboration/partnership is concentrated in the local area with a percentage of 97.1% and International involvement is only 22.6%. This result indicates that the majority of the contractors have been concentrating on doing collaboration within the local region rather than at international level. The reason may be because Joint Ventures have shown the highest percentage in terms of the method of collaboration and this could only mean that the construction players in Malaysia still require the expertise from abroad to participate or involved in their projects. The other reason could be that in a developing country like Malaysia, the technical and management knowledge amongst construction players still require some form of professional assistance in order to deliver certain type of projects. International level shows a lower percentage indicating that only a handful of contractors in Malaysia having the capabilities in terms of technological knowledge and expertise, with good financial portfolio and a good management approach to invest and participate in construction projects abroad.

Reason for Collaboration/Partnership

Table 2 above shows that most of the respondents (67.7%) believe that sharing resources in terms of technical, equipment and financial are the reasons for their involvement in collaboration. The second reason for collaboration or partnership is during the implementation of unfamiliar technological approach at 51.6%, risk and profit sharing 41.9%, adopting new management techniques 38.7% while for other purposes is only 6.5%. This result indicates that sharing of resources (technical, equipment and financial) is a primary feature for the construction players to be involved in collaboration/partnership. However, this result also reveals that the need for strong financing and sufficient funds amongst partners is the most important criteria to evaluate before they embark on a collaboration or partnership. The other reason for collaboration is basically when implementing new and unfamiliar technological approach. The IBS construction approach demand a lot of knowledge and expertise in terms of innovation in the construction process; this factor is also relevant to industry players who are not familiar with the IBS to consider merging with experienced contractors through a partnering approach. The other factor is risk and profit sharing amongst partners could be shared in a collaboration or partnership. Lastly, adopting a new management technique in collaboration or partnership is also crucial for new knowledge strategy and market investment for construction players in the industry especially when the competition is tough during this economic recession.

Table 2: Reason for Collaboration/Partnership

REASON FOR COLLABORATION/PARTNERSHIP	Percentage (%)
Sharing of resources (technical, equipment & financial)	67.7
Implementing new and unfamiliar technological approach	51.6
Risk and profit sharing	41.9
Adopting new management techniques	38.7
Others	6.5

5.0 INFORMATION CONCERNING IMPLEMENTATION OF STRATEGIC PARTNERING IN THE MALAYSIAN CONSTRUCTION INDUSTRY

Table 3 shows that the higher percentage of 48.4% for strategic partnership relationship with client, sub-contractor, supplier and consultant. Meanwhile, percentages for relationships with manufacturer are 25.8%, 32.3% and 22.6% respectively . This result indicates that upstream and downstream relationship between client, sub-contractor, consultant and supplier are very important to the construction players in the industry. It also shows that if the construction players are to embark on partnering in their projects it required a close connection between upstream and downstream relationship. In IBS projects, to embark on strategic partnering concept is significantly important because this method of construction requires just in time delivery of material on site and a good relationship between upstream and downstream. Without this, the IBS projects are unable to be delivered on time, cost and quality.

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a good relationship between upstream and downstream. Without this, the IBS projects are unable to be delivered on time, cost and quality.

Table 3: Strategic Partnering Relationship

STRATEGIC PARTNERSHIP RELATIONSHIP	Percentage (%)
Client	48.4
Sub-Contractor	48.4
Supplier	48.4
Manufacturer	25.8
Consultant	48.4
Labour Sub-Contractor	22.6
Specialist Installer	32.3

Benefit of Using Partnering

Based on Table 4, a majority of the respondents (80.0%) agreed that strategic partnering will benefit the players in the Malaysian construction industry. Only 20.0% said they were unsure with the strategic partnering approach in the construction industry. This statement shows that a majority of the contractors agree to adopt the partnering approach although they are unsure how to implement the right partnering approach. This result is also supported by Wong et al. (2004) who stated that some of the benefits of construction partnering are to prevent unfair risk and benefits allocation, where partnering seeks to derive win-win solutions amongst the contracting parties. Partnering also emphasizes on effective dispute resolution and when the working process becomes more efficient, redundant work and wastages will also be reduced.

Table 4: Opinion on Strategic Partnering

BENEFIT	Percentage (%)
<i>Yes</i>	80.0
<i>Unsure</i>	20.0
<i>Total</i>	100.0

6.0 CONCLUSION

Partnering requires a change in mindsets at all levels within the partnering organization. Effective mechanisms should be put in place to ensure that everyone understands the joint goals and knows their part in the overall process. It is important to establish certain Key Performance Index (KPI) for every project to ensure continuous improvement. The final survey results have shown that the implementation of strategic partnering in construction industry is in desperate need of a full support from the government as well as the commitment from the construction players.

Changing from an adversarial relationship to strategic partnering in Industrialised Building System (IBS) is crucial for construction players in the industry. The reason is to ensure that the final products in Industrialised Building System (IBS) are produced at a higher quality, on cost and time.

In strategic partnering, clients are the most crucial element in terms of creating projects using Industrialised Building System so as to ensure the contractor's investment in the IBS can be sustained for a long period of time. A continuous demand by the end users for IBS products may also prove to be important as far as the financial aspects and selling of IBS products are concerned.

Finally, the results from the survey have shown that the majority of the contractors do agree in the partnering approach as they can see the benefits in terms of sharing of resources (technical, equipment and financial), implementing new and unfamiliar technological approach, risk and profit sharing and adopting new management techniques. The results also indicated that upstream and downstream relationship between client, sub-contractor, consultant and supplier are very important to the construction players in the industry. It also shows that if the construction players are to embark on partnering in their projects, it required a close connection between upstream and downstream relationship. However, it remains to be seen how successful partnering initiative will become in the Malaysia construction industry.

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