

IMPROVING TEAM INTEGRATION IN MALAYSIAN IBS CONSTRUCTION PROJECTS: A PARTNERING APPROACH

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ABSTRACT

Due to the combination of problems and issues that arose using traditional construction methods, such as fragmentation, time delay, wastages, lack of sustainability etc, the Malaysian Government proposed a new solution through industrialisation technology called Industrialised Building System (IBS). Although IBS was introduced over 40 years ago, with well-documented benefits and strong support from the Government, the pace of implementation and usage of IBS is still slow and below Government targets. Investigation by some researchers identified that one of the main barriers of IBS implementation in the Malaysian construction industry is related to poor integration and communication among stakeholders involved during the design stage. A number of reports challenged the construction industry to create a fully integrated process capable of delivering predictable results to clients through processes and team integration. Responding to the challenge, this research hopes to answer this problem and help towards the betterment of the IBS Malaysian construction industry using a partnering approach. The partnering approach is being advocated by many literatures as the solution to the many problems in the construction industry. Therefore, this paper will review the need of integrated team practice, define the concepts of partnering within scope of construction project, is followed by a discussion of the application of partnering in Malaysian IBS projects. It based on the thorough review of the relevant literature within the scope of partnering and Industrialised Building System (IBS). In the end, this paper suggests for the enhancement is needed in term of the level of integration and communication within the construction team and processes for the future research.

Keywords: Industrialised Building System (IBS), Integration, Teamwork, Integrated Practice.

INTRODUCTION

Partnering in construction industry has been loosely practiced by most construction firms. Naturally a firm in construction industry will be familiar with other construction firms operating in the same area, and would probably have worked together in past construction projects. However, recent developments in the last decade had indicated and documented its many advantages. Construction partnering has been implemented successfully in the UK, USA, Australia and Japan. These countries have been made the main point of reference due to their success in establishing suitable procedures for the selection of subcontractors in public sector contracts (Naoum, 2003). Literatures in construction partnering has preached its many benefits, mostly in terms of improved relationship, improved communication, better productivity, reduction in disputes amongst project participants and improving sustainable development in construction process (Nawi et al., 2009; Chan et al, 2006). This strategy has started to gain recognition since the publication of Latham and Egan reports, proposing the strategy as an antidote to the industry's many diseases. As a developing country, Malaysian also looking this approach as a part of the effective approach in order to enhance the implementation of a new or modern method of construction (CIDB, 2010).

In an attempt to develop a sustainable development in construction process, the Malaysian government has taken the initiative of implementing a new or modern construction method called Industrialised Building System (IBS). IBS (known as offsite manufacturing in UK construction industry) is a construction technique in which components are manufactured in mass production under a controlled environment (on or off site), transported, positioned and assembled into a structure with minimal additional site works (CIDB, 2003). Similarly, Hassim et al (2009) stated that this industrialization process is essentially an organizational process-continuity of production implying a steady flow of demand; standardization; integration of the different stages of the whole production process; a high degree of organization of work; mechanization to place human labor wherever possible; research and organized experimentation integrated with production. The benefits which could be gained from the implementation of this system help to speed up the construction process, decreasing cost, labor and wastages on site, and minimizing the effect of risk (Nawi et al., 2011a; Hassim 2009; Kamar et al 2009; Thanoon et al, 2003 and IBS roadmap, 2003).

Although IBS has been introduced for over 40 years, with well-documented benefits and strong support from the government, however the pace of implementation and usage of IBS is still slow and below the government target. Investigation by some researchers identified that one of the main barriers of IBS implementation in the Malaysian construction industry is related to poor integration and communication among stakeholders involved during the design stage (Kamar et al., 2009; Chung, 2006; Haron et al., 2005; and Thanoon et al., 2003). This barrier relates to the problem of fragmentation that has been well criticized by previous authors thus

contributed to the issues of delays, increased lead times, increased costs and late supply of materials (Blacud et al., 2009; Abadi, 2005; Masterman, 2002; Love and Sohal, 2002; Dainty et al, 2001; Kamara et al., 2000; Ofori, 2000; Egan, 1998; and Anumba et al, 1997).

Notably, these problems are similar to those associated with the traditional construction process (conventional methods) with which IBS is based upon. For example, in dealing with various parties, miscommunication and misinterpretation are bound to happen, which contributes to adversarial relationships. Adversarial relationships are not only detrimental to the participating firms, but also will significantly affect the end product as well as the possibilities of innovation in a construction project (Abdul Nifa and Ahmed, 2010).

Therefore, it could be proposed that learning from the improvements made to address the practice of traditional construction process could invariably solve the problems related to the lack of integration in IBS projects. Accordingly, such framework, tools or strategies used to form or enhance integration teams (especially for design and construction process) in the traditional construction process could be borrowed and applied to improve processes and team integration in IBS projects. As highlighted by CIDB (2009), improving procurement systems and supply chains is the key to achieving IBS success in the Malaysian construction industry.

This paper will discuss on how the partnering approach can play a role in order to overcome the problem of lack of integration and communication in IBS Malaysian construction industry.

METHODOLOGY

This conceptual paper is primarily based on the thorough review of the relevant literature within the scope of partnering and Industrialised Building System (IBS). Wisconsin (2008) identified that a literature review is a “critical analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.” This is precisely what this paper intends to present. The process involved a comprehensive literature review of secondary source of data including reports, tools and guidelines that particularly related to the issues of Industrialised Building System (IBS) and partnering in the construction industry. All the data and information gathered directly from libraries, books, articles and other printed materials searched in the international and national journals, proceeding and bulletin. All the documentations have been reviewed rigorously in order to identify the factors that influence the effectiveness of implementation partnering in Malaysian IBS projects. Examples of the findings of the literatures are shown in the Table 1 below. This

literature review is very important and helpful in the process of developing for the theoretical sections of the actual research.

Table 1
Factors that influence of effective partnering

Factor	Source
Collaboration and cooperation	Bayliss et al. (2004), Eriksson et. al. (2007), and Nystrom, (2008)
Commitment	Evanschitzky et. al. (2006), Yeung et. al. (2007), and Jones & Kaluarachchi (2007)
Communion	Black et. al., 2000; Cheung et. al., 2003; Wong & Cheung 2004
Policies	Manley et. al., 2007; Eriksson et al., 2008

THE NEED FOR AN INTEGRATED PRACTICE

As highlighted before, many industry-led reports (Bourn, 2001; Egan, 1998; Egan, 2002; Latham, 1994; Strategic Forum for Construction, 2003) have all called on the industry to change from its traditional modus operandi and perform better through increased collaboration. Recent follow-up reports such as the UKCG (2009) and Egan (2002), challenged the construction industry to create a fully integrated service capable of delivering predictable results to clients through processes and team integration. Implementation of integrated practice approach can create a lot of benefits such as; could bring together various skills and knowledge, and removes the traditional barriers towards an effective and efficiency delivery of the project (Baiden et al., 2006; Achieving Excellence in Construction, 2003; Akintoye, 1994; Fleming and Koppelman, 1996). Many researchers (Peace 2008; Eriksson et. al. 2007; Khalfan and McDermott 2006) have proved that partnering as a part of an integrated practice using a multi party contract (more than two parties selected) has a major impact on the state of the industry to improve team integration in current construction project delivery. Studies by Anumba et al., (2002); and Love & Gunasekaran (1998) also discussed that partnering arrangements have been used to integrate the project delivery team in the traditional construction industry practice.

DEFINITION OF PARTNERING

Generally, partnering is based on a long term commitment or framework agreement, between two or more organisations to achieve common project objectives (Bowron, 2002). Crowley and Karim (1995) had identified that partnering is typically defined in one of two ways. Firstly, by its attributes such as trust, shared vision, and long term commitment; or secondly by the process where partnering continues to be seen as a verb, such as developing a mission statement, agreeing on goals and conducting partnering workshops. This format of defining the term partnering in the construction industry can be seen up to the present moment. Lu and Yan (2006) whom defined construction partnering as a working relationship between stakeholders based on respect, trust, teamwork, commitment and shared goals; which clearly falls into the first category of partnering definition. Whereas on similar note, the definition provided by Naoum (2003) perfectly fits into the second category. Naoum (2003) defines partnering as a concept which provides a framework for the establishment of mutual objectives among the building team with an attempt to reach an agreed dispute resolution procedure as well as encouraging the principle of continuous improvement.

Within the context of this paper, the definition provided by Bennett and Jayes (1998) shall be adopted. They had defined partnering as *a set of strategic actions which embody the mutual objectives of a number of firms, which are achieved by cooperative decision making aimed at using feedback to continuously improve joint performance*. This is mainly due to the fact that it has described partnering as an intentional act to achieve certain objectives, and also because it incorporates the use of feedback to improve the performance of parties involved. The term strategic refers to a certain time expectations, which in this case it refers to the long term relations between parties who are prepared to work together over long periods of time (Peace 2008). By this stage, the parties involved are in tune with each other's expertise and knowledge, could possibly share similar working cultures which will result in maximizing the effectiveness of each other's business. The following Table 2 includes some of the definition of partnering in construction industry from existing literatures.

Table 2
Definitions of partnering in the construction industry (Nifa & Ahmed, 2010)

Source	Definition
Barlow (2000)	A bundle of business processes designed to enhance collaborations between organizations.
Bayliss et al. (2004)	A method to improve working relationships and project performance in terms of quality, cost and time.
Beach et al. (2005)	A generic term for a variety of formal and less formal arrangements that embrace a range of practices designed to promote a greater collaboration and involve differing time frames.
Bennett and Jayes (1998)	A set of strategic actions which embody the mutual objectives of a number of firms. These are achieved by cooperative decision making aimed at using feedback to continuously improve joint performance.
Cheung et al. (2003)	An approach to manage construction projects, which is regarded as an important management tool to improve quality and programme, to reduce confrontations between parties, thus enabling an open and non-adversarial contracting environment.
Eriksson et al. (2008)	A method that aims to increase cooperation and integration between the actors by building trust and commitment whilst decreasing disputes.
Bresnen and Marshall (2000)	A broad concept that covered a wide spectrum of attitudes, behaviour, values, tools, techniques and practices.
Gjagola and Sheedy (2002)	The essence of good business practices. Its roots are founded in the tenets of trust, mutual respect and integrity. It achieves its goals and objectives through open communication, mutual risk taking and profit sharing.
Thomas (2005)	An integrated team-working approach to achieve better value for all partners by reducing duplication and waste of resources, based on mutual objectives, a robust approach to issue resolution and a proactive approach to measurable continuous improvement.
Kwan and Ofori (2001)	An approach that is based on the principles of trust, mutual respect and cooperation towards the achievement of a common goal.
Matthews et al. (2000)	The proactive approach to the management of business relationships, not a technique which establishes rules, regulations, documentations and procedures.
Naoum (2003)	A concept which provides a framework for the establishment of mutual objectives among the building team with an attempt to reach an agreed dispute resolution procedure as well as encouraging the principle of continuous improvement.
Ngowi (2007)	A form of alliance between parties that are not in direct competition with one another.
Reading Construction Forum (1995)	A management approach used by two or more organizations to achieve specific objectives by maximising the effectiveness of each participant's resources. The approach is based on mutual objectives, an agreed method of problem resolution and an active search for continuous measurable improvements.
Sorell (2003)	A method that greatly reduces the transaction costs of tendering and drawing up contracts. These are replaced by performance measurement and improvement targets for quality, timeliness and costs.
Swan and Khalifa (2007)	Partnering at its most basic level is a non-adversarial approach to procuring and engaging in construction projects.
Lu and Yan (2006)	A working relationship between stakeholders based on respect, trust, teamwork, commitment and shared goals.

FACTORS THAT INFLUENCE PARTNERING

There are massive amount of literature on construction partnering, and most have attempted to identify the critical factors for effective and successful partnering. For the purpose of this paper, the following factors most commonly cited will be discussed in this section. The discussion will focus on how these factors assist the partnering approach in realizing partnering benefits.

Collaboration and cooperation

In order to overcome the problem of adverse relationships in construction industry, partnering is advocated as the best solution which will enhance collaboration and cooperation for better relationships (Bayliss et al, 2004; Nystrom, 2008). Collaborative working and cooperation among construction parties can create a much more pleasant environment when working towards completing a project. This pleasant working environment is much more conducive to increased knowledge sharing, continuous learning and possibly ideas for innovation (Eriksson et. al. 2007; Stewart and Fenn 2006; Khalfan and McDermott 2006). Another important result from collaborative working that needs to be considered is how disputes can be handled in a timely manner, with the aid of partnering and initial setting of mutual objectives at the beginning of any partnering relationships (Drexler and Larson 2000; Bresnen and Marshall 2000). This is particularly critical as disputes can be easily caused when there are various parties with unique abilities working on a construction project which may influence differing opinions and solutions that could in turn affect their personal agenda.

Commitment

Evanschitzky et. al. (2006) had indicated commitment reflects the clients' self-evaluation of the consumption context and the active decision to engage in a long-term relationship with a firm. Within the context of construction industry, long-term commitment to partnering can be the extent of the willingness of one party to maintain the current partnered relationship with other parties based upon the favourable outcomes. One of the common problems with firms initially venturing into partnering relationships is that the drive and main reason for partnering may be forgotten along the course of project. This is where commitment is critical for the success of partnering, regardless of whether it is top management commitment (Bisschoff and Benade 2008) or project participants' commitment in implementing the partnering relationship and staying with the same ideology throughout the entire project. Long-term commitment is necessary for successful partnering relationships (Cheng et. al. 2000; Chan et. al. 2004; Yeung et. al. 2007; and Jones and Kaluarachchi 2007).

Communication

Several studies conducted on construction partnering have concluded communication as one of its critical success factors (Black et. al. 2000; Cheung et. al. 2003; Wong and Cheung 2004; Chan et. al. 2006 and Anderson et. al. 2006) as communication is crucial in facilitating the flow of information and sharing of knowledge throughout the project. Open and timely communication provides the basis of a sound partnering practice, and can potentially avoid issues such as dispute and mistrust among

contracting parties in a project. Open communication between partners is one of the foundations of successful partnering, along with mutual risk taking and profit sharing (Glagola and Sheedy, 2002). Effective means of communication across the whole partnership has been highlighted as one of the prerequisites for performance improvements in the industry. It is also imperative that effective communication and transfer of information could result in an efficient industry which can cater to the needs of its clients (Wang et. al., 2009).

Tools

Tools are an essential element of partnering as they provide the necessary reinforcement throughout the partnering relationship. Whilst moving towards a culture of complete trust and mutual commitments, it is still necessary to install some checks to avoid abuse and misuse of such relationship (Palaneeswaran et. al. 2003). This is where partnering tools becomes indispensable. Some partnering relationships may develop their own specific tool better suited to monitor their partnering initiative and interests. The following Table 3 lists the examples of partnering tools that has been mentioned in partnering literatures.

Table 3
Partnering tools in the construction industry (Nifa & Ahmed, 2010)

Source	Type of partnering tools
Cheung et. al. (2003)	Partnering Temperature Index (PTI)
Bayliss et. al. (2003)	Monthly review meetings and incentivisation agreement
Yiu and Cheung (2007)	Construction mediator tactics for use in construction alliances
Li et. al. (2001)	Co-operative benchmarking
Kaluarachchi and Jones (2007)	Training for partnering
Anderson et. al. (2006)	Partnering workshop, regular meetings and project specific online rating system.

The importance of partnering tools to maintain the spirit of partnering throughout the partnering process is widely accepted. However, there seems to be little mention about effective tools to sustain partnering efforts in existing literatures. This could be due to partnering still in its infancy within the construction industry and the most appropriate tool for partnering is still undefined at present.

Policies

The construction industry is normally bounded by governmental policies and regulations. Governmental policies and regulations may affect the industry's receptiveness towards partnering. The importance of policies in achieving successful

partnering can be reflected in the findings of a study conducted by Eriksson et al (2008) among Swedish construction clients. They had established that in countries which industry norms of partnering exist there may be also a need to increase understanding of how to interpret policies and implement partnering. For instance, in the UK partnering gain its popularity with support from governmental policies and recommendation. The UK government started to promote partnering through PFI in their public sector projects. Manley et. al. (2007) in their study had noted how the construction industry is watching and waiting to see if the government is genuine in its endorsement of partnering. Policies will ensure certain idealism is passed on, which in turn will create awareness among construction industry players and provide enough interest for them to initiate the partnering approach in their own subsequent projects. However, it should be noted that the current partnering literature seems to be lacking especially how some governmental policies can act as enablers or barriers to the industry's acceptance of partnering approaches.

Procurement

Partnering advocates more flexible procurement systems which may not only benefit the client of a better solution and quality end product, but also adds constructability to the project design and less cost-related disputes. With a different way of procurement, conventional tendering cost and contract documents cost can be reduced. Sorell (2003) found that through flexible partnering procurement, previous tendering costs were replaced by performance measurement and improvement targets for quality, timeliness and costs. Win-win relational contracting approaches such as alliancing and partnering could act as channels for clients and contractors to achieve excellence by providing quality with greater value (Palaneeswaran et. al. 2003). Straub (2007) confirms this by indicating that a long term partnership form promises more benefits inhered in new procurement approaches than price and performance agreements. The industry needs a revamping whereby long term view of value is the main outcome of all construction projects. A radical change for a more flexible procurement methods to deliver value added product and improved performance is necessary for change.

Trust

The degree of trust affects the success of a partnering relationship. A positive atmosphere based on trust between all parties involved is required to engage in a partnering relationship (Crespin-Mazet and Ghauri 2006). It entails to what extent the partners are willing to share their knowledge and resources (Yiu and Cheung 2007); and in some cases possibly sensitive information that may jeopardize an organization's competitiveness in the industry, but essential to the partnering success. The issue of trust in partnering has been widely researched, and is commonly cited as one of the most important critical success factors to successful

partnering (Kwan and Ofori 2000; Drexler and Larson 2000; Olsson and Epsling 2004; Beach et. al. 2005; and Chan et. al. 2006). Trust-based relationships are concluded by Lazar (2000) to be critical to maximising positive economic outcomes from partnering and may be necessary to keep the owner/contractor relationship from deteriorating. The element of trust in partnering enhances working relationships and could solve some issues that may arise with collaborative working. With the aid of trust; disputes, misjudgements and unanticipated needs can be effectively managed and dealt with in a way that can benefit all parties involved (Matthews et. al. 2000; and Olsson and Epsling 2004).

Culture

Within the construction industry itself, culture is considered to be about the characteristics of the industry, approaches to construction, competence of craftsmen and people who work in the industry and the strategies, goals and values of the organizations within which they work (Ankrah et al, 2009). In partnering projects, different organizations have to work together and adjust to one another's culture in working. Culture also governs the way partners affects one another, which is also why Ngowi and Pienaar (2005) concluded that sharing culture by partners in an alliance made it easier for them to trust each other and allow them to progress further to building the alliance faster. Furthermore, Fletcher and Fang (2006) had implied that key personnel in construction firms need to understand the impact of culture on the relationships they create and the network they form. Other literatures on partnering in construction (Crespin-Mazet and Ghauri, 2006; Ngowi and Pienaar, 2005) have noted culture as a enabling factor in partnering. However there seems to be lacking of emphasis on culture of any sort in developing framework for partnering as mentioned in Abdul Nifa and Ahmed (2009).

THE APPLICATION OF PARTNERING FOR IBS PROJECTS

As an innovative management approach in the construction industry, partnering has been recommended as a basis for IBS project stakeholders to reorient themselves towards a 'win-win' environment. This approach has the potential to enhance problem solving and to improve knowledge of the IBS process by fostering synergistic teamwork among participants. In addition, implementation of this approach also can enhance a good relationship between a contractor and an owner or a designer in IBS projects (Nawi et al., 2011b). This relationship will, indirectly, engage the IBS contractor to become involve at the early design stage and allows the contractor to contribute construction knowledge, skill and experience to design. However, adoption of the partnering concept in IBS projects needs considerable attention. For example, partnering seems to have been largely restricted to client-contractor linkages (upstream relationship), as opposed to developing strategic

alliances through the entire construction supply chain (Dainty *et al.*, 2001). The subordinate of the downstream relationship such as the subcontractor position within the hierarchy will, inevitably, create inter organisation conflict (i.e. contractual responsibility problem) later in the project. Accordingly, relationships between main-contractor and subcontractors tend to be strained and adversarial (Latham, 1994). Therefore, co-operative relationships between upstream (client, main contractor etc.) and downstream (subcontractor/specialty contractor) organisations must be developed effectively for a fully IBS integrated project delivery team in partnering. Otherwise, based on current circumstances, partnering might be difficult to apply to Malaysian IBS projects.

CONCLUSION

Although IBS has a solution towards improving construction sustainability, the implementation of this system faced a lot of barriers such as the lack of integration among stakeholders during design stage in project life cycle. Literature review conducted has revealed that partnering has been identified as one of the appropriate approaches that can provide an effective framework for integrating the construction parties in order to overcome that problem. As highlighted before, this approach has the potential to foster synergistic teamwork among IBS project participants by creating a superior relationship which is indirectly will engage the IBS contractor to become involve at the early design stage and allows the contractor to contribute construction knowledge, skill and experience to design. This paper has also highlighted the key factors of partnering in order to improve the chance of partnering success which in turn will improve the integration of design and construction activities in the Malaysian construction industry. Notably, some factors of partnering such as communication, collaboration culture and trust are more important than others in developing successful construction team integration within the IBS projects, as these factors directly affect the human entities within the construction projects. However, tangible examples of fully team integration in IBS projects in Malaysia are very limited at present. In view of that, this type paper provides an avenue for future research in enhancing the level of integration and communication within the construction team and processes; should the full potential of IBS concept for the industry and its clients is to be realized. Future research should highlight the implementation of partnering in IBS projects and focus on how partnering aids communication and coordination among stakeholders throughout the project design stage in the Malaysian construction industry.

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