

LOGISTIC MANAGEMENT FOR INDUSTRIALIZED BUILDING SYSTEM (IBS)

Masarizan Mohamed & Nur Norhazilan Md Noor

Abstract – The Industrialized Building System (IBS) is a building technique where the construction date can be shortened because IBS components and framework are made from the factory. Nevertheless, the problem lies in implementing IBS by moving materials and structure to the construction site. The IBS ' concerns focus on issues like size and weight restrictions, trajectory constraints as well as lifting equipment and the availability. In addition, the transport process also has its limits, such as the difficulty of getting to the site and transporting large components from the factory to the construction site. The aim of this study is to identify the actual issue and how excellent logistic management can improve the reliability of IBS implementation. The objectives of this research are divided into three different objectives, which are to define the level of acceptance of IBS among respondents, to differentiate any differences in terms of logistical challenges in IBS and to provide support for the implementation of IBS by local government authorities. Few sets of surveys have been distributed to a number of roles in construction companies to identify issues. Later, an analysis will be carried out using the SPSS program to rectify the data and to produce a characteristic pattern between different data variables. The actual scenario and challenges for the implementation of the Industrialized Buildings System (IBS) are still an inappropriate level of construction organizations because of them still in their comfort zone by using late conventional methods. Common construction company, especially private businesses, are not persuaded that IBS can result in significant cost savings, especially with the small building volume. Nevertheless, IBS regarded an effective way to achieve productivity gains and make new entrants more involved in the production and distribution of building materials on-site, just as it is possible to improve overall construction performance with regard to quality, cost efficiency, occupational safety, waste reduction, identification and security.

Keywords – Keywords: Industrialised Building System, Integration, Malaysia, Supply Chain

I. INTRODUCTION

The Vision 2020 addresses Malaysia's society's growth in all aspects of life. This is aimed at creating a united nation in Malaysia with a culture with strong moral principles and ethical values. Therefore, the government of Malaysia has established the National Housing Policy to ensure a better-quality lifestyle for all Malaysian people. This policy is helping Malaysians to have adequate and proper shelter and facilities, particularly those with low incomes. The term for the concept of prefabrication and construction industrialization in Malaysia is the Industrialized Building System (IBS). The concept was developed to break from the

prefabricated systems ' traditional model. IBS was introduced as a method for improving productivity, quality and safety. Nevertheless, in a nutshell, the terms used in the industrialization of construction are described, often interchangeably with other terms and their exact meanings are heavily dependent on the experience and understanding of the consumer, which varies from country to country. The lack of consistent meaning and boundary description and ambiguity led to the biases and incomprehension.

This paper therefore aims to close the gap by analyzing the benefits and drawbacks of IBS implementation in Ipoh, Perak. The outcome will be hoped to improve the implementation of IBS, particularly in rural areas such as Sarawak, East Malaysia, where urbanization rates are still considered low. A qualitative method has been implemented with a case study approach. This paper shows that IBS ' advantages are faster completion of the plant, having cleaner, neater and healthier construction sites, and rising foreign workers. Many benefits, however, do not apply, i.e. high work quality and lower overall construction costs. On the other hand, this paper reveals that the setbacks of IBS in rural areas or any other urban areas in Malaysia do not differ significantly.

Logistics management can be characterized as a supply chain management that is used to satisfy customer requirements by planning and implementing successful transportation and storage of related information, goods and services from the sender to the destination. Proper management of logistics can help companies minimize costs and improve customer service. The process of logistics management begins with the accumulation of raw materials to the final stage of delivery to the destination.

Applying IBS Logistic Management will easily increase the potential for IBS to be fully implemented across the country. logistics management is to satisfy a customer request by a series of points starting with receiving, managing, processing and transporting to their desired destination. The secret to logistics management's success is to provide customer value-adding goods, services and information. The goal is to improve productivity and performance across the entire supply chain network by recognizing any construction problems such as when servicing the consumer, demands emerged when dealing with the quality, quantity and price of the product with the correct and happy customer necessary. This research would logistically incorporate the breakthrough in building.

Control of logistics is a good way to improve productivity and reduce costs. In turn, it will help improve delivery times and meet the demands of the customer. To meet customer requirements, it is necessary to ensure that the products are delivered on time and as soon as possible. Logistic management will also raise business revenue by attracting more companies to deliver great services.

Through participating in comprehensive logistics management for the introduction of IBS, many construction companies will benefit from time and money savings and superior customer service. Management of logistics is extremely important to be effective in the implementation of IBS. It requires careful monitoring of the raw materials supplied on time to any construction area, allowing any construction work without delay.

The aim of this study is to identify the effectiveness of logistic management in IBS at Ipoh, Perak. To achieve the aim, the following objectives are set as:

- i. To identify the level of acceptance of IBS among respondents.
- ii. To differentiate any discrepancy towards the logistic challenges in IBS.
- iii. To propose the support from the local government authorities for IBS implementation.

This research would concentrate on the overall concept of logistic management in order to improve the implementation of IBS across the nation in general and in particular in the study area in Ipoh, Perak. The reason for this is to try best practices and approaches in the application of IBS through the best overall logistics management.

II. PROBLEM STATEMENT

Industrialized Building System (IBS) is a building technique where the construction date can be shortened as IBS components and structure are manufactured from the factory. Therefore, transportation of parts and structure to the site is the issue in IBS. The challenges in handling IBS construction are transportation problems, which address issues related to size and weight limits, route constraints, licensing and lifting equipment availability. When the components enter the building site, additional lift preparation is needed. The lift complexity normally increases as the level of IBS use increases. Consideration of transportation can influence construction plans, site design, the cost of cranes and the quality of the plan itself.

In IBS logistics, the contractor is typically expected to save costs by own transportation and shorter construction time. The producer has their own transport because they want the price of the goods to be taken care of. The big problem between supplier and contractors is always this problem.

In addition, some manufacturer's mentality that always chooses the contractor to order more products than the contractor that orders the item in small quantities because it wants to make a bigger and faster profit. Such mentality of the supplier would make the contractors who will take risks in the time of construction and loss in financial order with small quantities.

However, lack of knowledge and exposure to IBS technology is one of the factors contributing to inadequate structural analysis and prefabricated part design, resulting in incorrect assembly due to installation problems. Lack of industry knowledge of IBS is one of the reasons why IBS take-up is slow.

Then there is a high cost of production. Originally, there is a need for large investment to set up the plant, supply machinery and mould, consideration of engineering in

dealing with the complexities of interfaces and transport process expenses. Adopters also need a significant amount of work to break even on the investment, which means that IBS needs a large production volume to achieve economic viability.

III. LITERATURE REVIEW

Logistics management is simply about providing the right product in the right quantity to the right place at the right moment. There are several logistical challenges in any sector. The most popular is the cost of fuel. Fuel prices are one of the highest costs that lead to 'cutting transport costs.' Higher fuel prices are likely to increase transport costs.

Nonetheless, the biggest problems in the logistics industry are due to weaknesses in the management of the supply chain. There were a lot of parties involved, from suppliers to end users. A possible solution for improved logistics management is to have direct control over the entire network.

IBS's broader view is about reforming conventional thinking, re-engineering human capital growth, creating stronger cooperation and trust, fostering accountability and dignity. There is a consensus, however, that moving towards industrialization of the construction industry is a global initiative and not a local or isolated initiative.

Description and classification need to be developed and incorporated with global knowledge and understanding. It is therefore important to discuss the concept and classification of off-site, prefabrication, off-site design, modern construction techniques, off-site development, off-site manufacturing and pre-assembly. This gives a different viewpoint and enriches one interpretation of the IBS definition as a whole.

Management of the logistics and supply chain (SCM) has a close connection with lean supply (Vrijhoef and Koskela, 1996,1999). All theories of management are key components of lean manufacturing (IC, 2008). Some scholars contend, however, that JIT and lean development are due to the evolution of logistics managements and SCM (Vrijhoef and Koskela, 2000), due to the same change in "theoretical concepts."

Logistic administration is a technical component of the SCM (Vidalakis and Tookey, 2006) and part of a chain mechanism for supplying products, services and related information to meet customer's needs that schedules, implements and tracks productive flows (CLM, 1999 cited in Silva and Cardoso, 1999). In every phase of project from the initial planning and design to the execution and commissioning, the logistics obligation will consist in the planning and coordination of material supply processes (Sobotka et al., 2005).

IV. METHOD

Research methodology is a way to provide researcher direction to achieve the study aim and goals. This chapter presents the chronological methodology of research and discusses the methods used to conduct research in order to achieve the objectives.

The questionnaires were divided into four (4) main sections. The respondents were generally asked about their personal and organizational background in Section A. Subsequently, in Section B, the respondents were asked to state the logistic issue. Next, Section C deals with the factor that affects the effectiveness of IBS and, finally, Section D discusses how to propose the best solution for logistic management.

The data or information collected was presented in the form of a chart. Risk rates are measured and reported on the basis of the questionnaire. Total classification data were collected by evaluating all the issues involved. The form of equation used to sort and classify data is based on quantitative analysis (Mean Index). The Mean Index is a statistical method used to interpret and classify data from questionnaires.

The mathematical process is used to calculate the mean value index for the data from the total respondents and will be used as the average response or result of the total respondents. The calculation will be made using computer software, the equation used to calculate the average index value is shown below (Zulfikri&Rosli, 2002): the data analyzed in the form of the average index of the questionnaire will be divided into 7 groups according to the range of the average index value obtained.

V. FINDINGS

A number of aspects of the research analysis should be considered in order to achieve the research objectives. Logistics management for IBS continues to be a challenge for those who want to operate within their comfort zone, using the conventional method. Once the data is collected and analysed using the questionnaire method, the challenges can be clearly understood

A survey of 55 staff from several construction companies across Ipoh, Perak, was asked on the level of awareness of the implementation of the Industrialized Buildings System (IBS). Each section provides an overview of the context and role of the respondent in their respective fields.

To begin the study, 55 sets of questionnaires were issued to five different roles as a selected respondent in several construction companies. A total of 48 sets of questionnaires were returned with full answers. The percentage was tabulated as below;

TABLE 4.1: QUESTIONNAIRE RESPOND RATE

Position	Distributed	Returned	Respond Rate
Client	19	15	78.9%
Contractor	13	11	92.3%
Designer	9	9	84.6%
Manufacturer	4	3	75.0%
Project Manager	10	10	100.0%
TOTAL	55	48	87.3%.

VI. DISCUSSION

On the basis of the above study and conclusions, it can be summarized that implementing the IBS program in Ipoh, Perak is still at an inappropriate level for most building organizations because most of them are still in their comfort zone by using late conventional methods. Casual, especially private companies, are not persuaded that IBS will lead to significant cost savings, particularly with the small volume of building. There is also no information on financing and cost control in IBS programs. Strategic planning and a lot of ads are required and constantly developed to share knowledge with key players. It, in effect, can contribute to more IBS participants and more organized and comprehensible instructions in terms of requirements, elements and cost control of IBS ventures.

In addition, logistical problems are still the main factor in the failure to implement the IBS over the duration of the process. It's also been a problem for other sectors. From the common issue, such as costing, to the new technology needed within the context of the budget-cautions. Fuel prices are one of the highest costs that lead to 'increasing transport costs.' Higher fuel prices are likely to raise transport costs for all business across the world. With high fuel prices, there is an increasing credit crisis and raising inflationary demands.

The sector is then under strain from rising regulatory requirements, decreasing competition, additional capacity and incremental rises in key cost centers. Despite the need for new technology, it has become an increasing challenge for the logistics industry to stay on top of new developments in business processes. Taking advantage of these new opportunities sounds attractive, but acceptance and onboarding can be daunting.

Customers expect full transparency as to where their supply is at all times. Now, the location of a product is as intertwined as the social network. While the company recognizes and embraces many of the advantages of these innovations, certain questions remain as to how they will compensate for them and who will help implement the changes.

The IBS has been taught in sustainable development countries for a long time. With the aim of making comparable development, our government since 1963 has implemented IBS. Prefabrication of building components has also been used intermittently in mainly affordable housing projects across the country.

The significant support needed by the State for the introduction of IBS is the tax exemption or investment tax allowance. Due to the high capital requirements, players are willing to spend as long as government funding is crucial. Many participants understand the importance and advantages of the IBS. The only major factor that hampered its successful execution were cost effectiveness and the return on investment. Both actors, whether the government or the construction business as a whole, will create the best business line in IBS and share the benefits and changes.

VII. CONCLUSION

To sum up, IBS has seen as an efficient way of achieving productivity gains and rendering the sector more attractive to new entrants in terms of building materials production and on-site distribution precisely as appropriate. To order to move towards industrialization, the Government of Malaysia has promoted the use of the development of the Industrialized Building System (IBS). IBS is a possible tool for improving overall building performance in terms of consistency, cost-effectiveness, occupational safety & health, waste reduction, identity and productivity. This research will help to clarify the logistical challenges of IBS and improve overall preparation, especially in Ipoh, Perak.

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