CHALLENGES OR CONSTRAINTS IN THE IMPLEMENTATION OF INDUSTRIALISED BUILDING SYSTEM FOR PROJECTS UNDER JABATAN KERJA RAYA NEGERI PERAK

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DEDICATION

This thesis is specially dedicated to my beloved parents Shafie Bin Mohd Yusof & Noor Aini Bt. Abu Bakar and for my lovely wife and son Norhasimah Binti Mohd Khazini, Muhammad Naufal Khalish, Muhammad Nufail Khair & Muhammad Niyaz Khalaf. My lecturer Assoc. Prof. Norhazilan Bin Md. Noor, my brothers and sisters, my friend and to all muslims.

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ABSTRACT

For many years, the issues of delay in Jabatan Kerja Raya (JKR) projects especially those projects that involve the implementation of IBS as a method of construction have been phenomenal. Its impacts were so significant that it tends give bad impression on the JKR performance and reputation as government technical agency. Construction delays due to the implementation of IBS can be minimized once their challenges or constraints are identified. The methodologies used in this study were by using literature review and distribution of questionnaires survey. Data have been collected from the relevant parties which directly involved in those projects under JKR Negeri Perak that are using IBS as a method of construction. The results that being obtained from this study was the generation of the list for the most important challenges or constraints in the implementation of IBS that being faced by the relevant parties such as the need of skilled craftsmen in a factory, non existance of special managers to manage IBS projects, shortages of storage space at site, high cost to employ skilled workers, weak communication between projects' operator and others. The study also has identified the list of suggested method in order to overcome those challenges or constraints through various scope of management. It is hope that the findings from this study will be able to provide important guidelines for JKR to be well prepared at the early stage of the construction and thus will minimize the possibility of IBS construction being delayed in the future.

ABSTRAK

Sejak sekian lama, isu kelewatan dalam perlaksanaan projek di Jabatan Kerja Raya (JKR) agak ketara khususnya bagi projek yang menggunakan kaedah IBS sebagai kaedah pembinaan. Kelewatan projek disiapkan mengikut jadual telah memberikan kesan negatif terhadap reputasi JKR sebagai agensi teknikal kerajaan. Kelewatan dalam pembinaan projek yang melibatkan penggunaan IBS dapat dikurangkan jika punca-puncanya dapat dikenalpasti. Methodologi yang digunakan dalam kajian ini adalah menggunakan kajian literatur dan edaran borang soal selidik. Data dikumpulkan daripada kalangan pihak yang terlibat secara lansung dalam projek-projek di bawah seliaan JKR Negeri Perak yang menggunakan kaedah IBS sebagai kaedah pembinaan. Hasil dari kajian ini telah mengenalpasti senarai cabaran utama dalam perlaksanaan IBS yang telah dihadapi oleh pihak yang terlibat contohnya seperti kekurangan tukang yang berkemahiran di kilang, ketidakwujudan pengurus khas kuntuk menguruskan projek berkaitan IBS, kekangan ruang penyimpanan di tapak pembinaan, kos yang tinggi untuk menggaji pekerja berkemahiran, komunikasi yang lemah antara operator projek dan sebagainya. Kajian ini juga telah mengenalpasti kaedah yang sesuai dalam menangani cabaran yang telah dikenalpasti melalui pelbagai skop pengurusan. Adalah diharapkan kajian ini dapat memberi garis panduan penting bagi JKR untuk melakukan persediaan di peringkat awal pembinaan dan seterusnya akan mengurangkan kebarangkalian berlakunya kelewatan dalam pembinaan menggunakan kaedah IBS di masa hadapan.

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LIST OF ABBREVIATIONS

CIDB	-	Construction Industry Development Board
JKR	-	Jabatan Kerja Raya
IBS	-	Industrialised Building System
PMO	-	Project Management Office
SPSS	-	Statistical Package r Social Science
RII	-	Relative Importance Index

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In an effort to move away from labour intensive, Construction Industry Development Board (CIDB) has initiated to industrialise the industry with Industrialised Building System (IBS). The initiative is part of producing and delivering high quality product, value for money ad to stay competitive. IBS system is categorized in general into five categories such as precast concrete system, steel formwork system, steel farming system, prefabricated timber framing systems and blockwork system. These categories are based on the industries current condition in Malaysia as stated by CIDB. The Malaysia government, involved through its agency, CIDB has been persistently pushing the construction industry to utilise of the IBS method of construction since the year 2003 (Mydin, M. et al, 2014). Thereon, the fabrication of building components has been intermittently utilised in mainly government and private project across the country.

Academics all over the world have identified different advantages of using IBS and it has become a driving force for players in the building industry to consider whether or not to use IBS (Pan et al, 2007a).It has proven its timely completion of the construction, high-quality buildings and saving costs through standardization, spécialization and mass production using the IBS construction method (CIDB, 2003a; Thanoo et al, 2003). This implies that IBS can be established by identifying a method for building components, either on or off-site, delivered or assembled into a site framework with minimal site work in a large-scale production.

Part of the expected advantages of IBS construction are quality and construction productivity, reduction of unskilled work and reliance on manual

workers abroad, decreased waste, decreases in building material capacity, faster work time, increased cleanliness of the environment and building sites, decreased health and safety risk, proper coordination and improved management.

Although there are numerous promotions of IBS adoption, yet still those industry stakeholders becoming sceptical about the usage of IBS since issues such as technical difficulties, design conflicts and skill shortages during the construction phase becoming the barriers (Jabar I. et al, 2013). Hwang et al. (2013) concluded that site security, job efficiency on site and cooperation between different parties are core obstacles or shortcomings in the realization of IBS impacting the timeline for construction projects, thereby leading to delays in development on in terms of operation.

1.2 Background of Study

Delays are one of the biggest problems construction industry faced either using traditional or IBS as a method of construction. Saleh et al (2009) stated that delays can lead to many negative effects such as lawsuits between owners and contractors, increased costs, loss of productivity and revenue and contract. It can be considered as a common problem in construction projects since involving the project slipping over its planned schedule.

Delays can have a major impact on construction industries, causing higher cost, bad reputation, litigation, legal proceedings and the worst scenario is the complete abandonment of projects. Futhermore, when the construction efficiency is below par, the consumer finnaly appears dissatisfied (Kara et al., 2004). Therefore, the identification of challenges or constraints that can contribute to the delay are essential in order to minimize and thus avoid the delays as well as associated costs.

1.3 Problem Statement

Delays during the construction stage has becoming a phenomenon currently in most of JKR projects. Those delays mean that the construction works cannot complete within the period as being agreed upon in contract document. Various factors and triggers beyond the control of the contrator or consumer that lead to delays.

There are 52 projects handled by JKR Negeri Perak with total cost of RM 99,910,102.75 based on JKR project database module which is, known as Sistem Kawal Selia dan Lapor (SKALA). From the list of the projects, 12 projects are involving the use of IBS where all of those projects are currently under construction and out of those 12 projects, 5 of them are facing delays, which thus contribute to 42% of the project under construction (Figure 1.1). Based on the data being obtained from the Office of Project Monitoring (PMO) of JKR Negeri Perak, 42 % of the project in the Eleventh Malaysia Plan that being supervised by JKR Negeri Perak were complete behind the required timeline.

In addition to intense cooperation between the stakeholders, JKR Negeri Perak takes a broad approach to resolve these delay issues, including extension of time, imposing penalty and termination of contractors. While JKR Negeri Perak has been using many great attempts and techniques to resolved delayed problems, many concerns about the delay problems, especially in the JKR projects involving the use of the IBS as a construction method, are still obtained from clients.

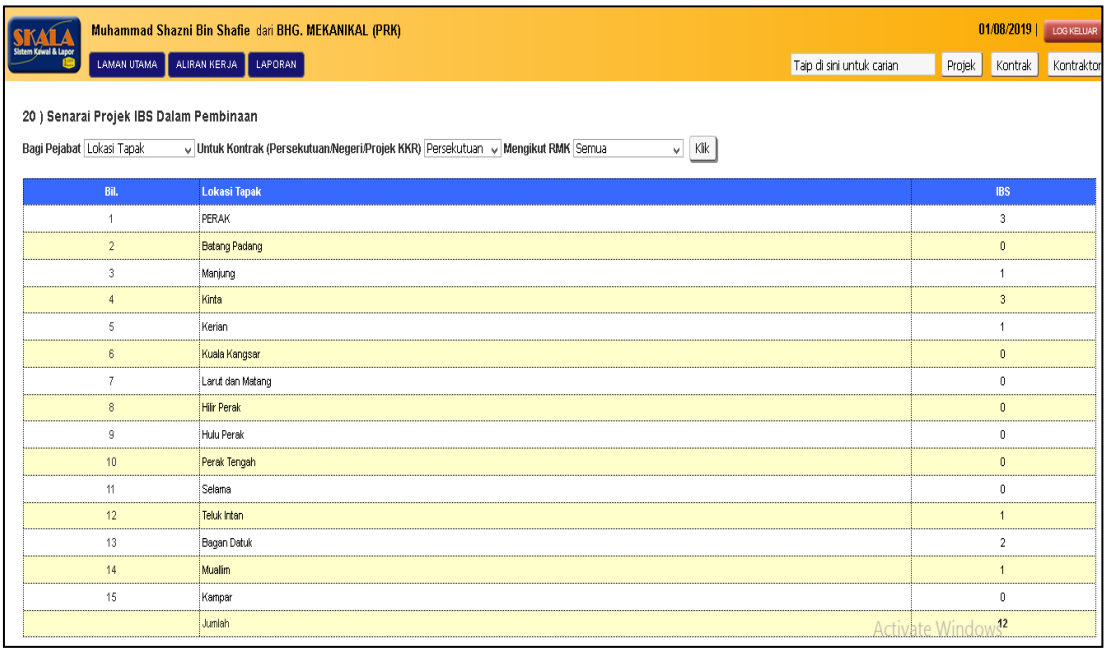
Therefore, there is a need to determine the main challenges or constraints in the implementation of IBS that can cause delay issues in those JKR projects and propose suggestions and recommendations to overcome them.

1) Kontrak Dalam Pembinaan Dan Lewat (Kemajuan Fizikal)

Bagi Pejabat Lokasi Tapak Untuk Kontrak (Persekutuan/Negeri/Projek KKR) Persekutuan Mengikut RMK Semua Klik

		Peringkat Pembinaan								
		Dalam Tempoh Kontrak Semasa				Dalam Tamat Tempoh Belum Siap				
Bil.	Lokasi Tapak	Telah Milik Tapak Dan Tiada Kemajuan Fizikal	Kontrak Awal Dan Ikut Jadual (a)	Lewat Kurang 20% Dan Lewat Kurang 60hari (b)	Lewat Lebih 20% Atau Lewat Lebih 60hari (c)	Telah Tamat Tempoh Belum Siap Kurang 61hari Dan Lewat Kurang 20% (d1)	Telah Tamat Tempoh Belum Siap Lebih 60hari Dan Lewat Kurang 20% (d2)	Telah Tamat Tempoh Belum Siap Dan Lewat Lebih 20% (e)	Kontrak Dalam Pembinaan (f)	Kontrak Lewat Lebih 20% Atau Kontrak Lewat Lebih 60hari ((c+d2+e)/f)*100
1	PERAK	1	3	3	4	0	0	0	11	36.36
2	Batang Padang	1	0	1	0	0	0	0	2	0.00
3	Manjung	0	1	1	0	1	1	1	5	40.00
4	Kinta	0	6	1	2	0	0	0	9	22.22
5	Kerian	0	2	1	1	0	0	0	4	25.00
6	Kuala Kangsar	0	0	1	0	1	1	3	6	66.67
7	Larut dan Matang	0	1	1	0	0	0	0	2	0.00
8	Hilir Perak	0	1	0	0	0	0	0	1	0.00
9	Hulu Perak	0	1	2	0	0	0	0	3	0.00
10	Perak Tengah	0	3	1	0	0	0	0	4	0.00
11	Selama	0	0	0	0	0	0	0	0	0.00
12	Teluk Intan	0	0	1	0	0	0	0	1	0.00
13	Bagan Datuk	0	1	1	0	0	0	0	2	0.00
14	Muallim	2	0	0	0	0	0	0	2	0.00
15	Kampar	0	0	0	0	0	0	0	0	0.00
	Jumlah	4	19	14	7	2	2	4	52	25.00

Figure 1.1 Summary of report on Building Project Delay in JKR Negeri Perak (SKALA, 2019)



Bil.	Lokasi Tapak	IBS
1	PERAK	3
2	Batang Padang	0
3	Manjung	1
4	Kinta	3
5	Kerian	1
6	Kuala Kangsar	0
7	Larut dan Matang	0
8	Hilir Perak	0
9	Hulu Perak	0
10	Perak Tengah	0
11	Selama	0
12	Teluk Intan	1
13	Bagan Datuk	2
14	Muallim	1
15	Kampar	0
	Jumlah	12

Figure 1.2 Summary of report on Building Project Delay in JKR Negeri Perak (SKALA, 2019) (Cont)

1.4 Aims and Objective

The aim of this study is to determine the main challenges or constraints in the implementation of IBS that can cause delay issues for the projects being handled by JKR Negeri Perak and ways to solve them. The following objectives have been outlined as stated below:

i To identify the possible challenges or constraints that involves in the implementation of IBS which can contribute to the delays for projects under JKR Negeri Perak.

ii To priorities challenges or constraints by using Relative Importance Index (RII) Method.

iii To propose suggestions and recommendations to overcome those challenges or constraints in the implementation of IBS.

1.5 Scope and Limitations of Study

This study will be focusing only to building projects that being handled by JKR Negeri Perak. Data that will be used to perform analysis can be obtained through comprehensive literature review and questionnaire survey. The concept of the survey is based on the objective to obtain input from the relevant respondents. Questionnnaires will be provided to the person from various background either within the JKR staff itself, designer, manufacturer or service provider and contractor that involved directly with building projects under JKR Negeri Perak in order to get the accurate data.

1.6 Significance of Study

i JKR Negeri Perak

It will provide the valuable information in addressing the challenges or constraints in the implementation of IBS that contribute to the project delays and method to overcome it. Hence, the organization will gain benefits from this study.

ii JKR Staff

It will provide the relevant data that can help the JKR personnel to be well prepared especially those who involve directly in monitoring the projects that are using IBS as the method of construction so that they can take necessary actions to overcome the challenges at the early stage of the construction.

1.7 Research Methodology

Research methodology can be defined as a study context for the analysis carried on which the findings are gathered, analyzed and interpreted. Hence, the research methodology of this study can be outlined as stated in Figure 1.2.

There are three phases involves in research methodology. The objective, scope and the literature review are included in Phase 1. The questionnaire design process and a questionnaire survey will be performed on Phase 2 to collect analytical data. Last but not least, Phase 3 consist of developing suggestions and recommendations to overcome the challenges that can cause delays by validation from the respondent and sending the final submission.

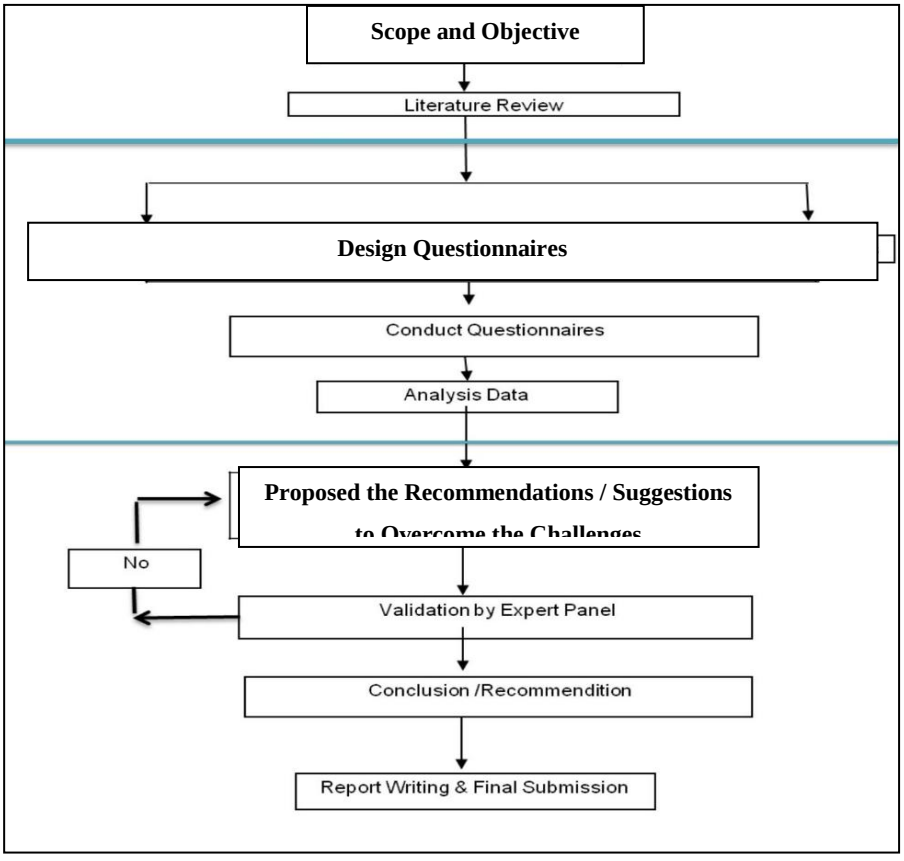


Figure 1.3 Research Methodology Schematic

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