

**“INDUSTRIALIZED BUILDING SYSTEM”;
SHIFT OF MASSIVE RELIANCE ON FOREIGN
WORKERS TO GREATER AUTOMATION**

BY

LOKE SUEK YIN

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DECLARATION BY THE CANDIDATE

I (Loke Suek Yin, I16010611) confirm that the work in this report is my own work and the appropriate credit has been given where references have been made to the work of other researchers.



Student Name : Loke Suek Yin

Student ID : I16010611

Date : 11th November 2020

ABSTRACT

Industrialized Building System (IBS) is a modern method of construction which utilizing advanced technology to save the labour workforce and boost the productivity of works. In light of Malaysian construction industry massively reliance on the foreign workers, it is not only affected construction industry, but also induced negative impacts to social and economy. Hereby, the purpose of this research is to study the shifting of massive reliance on foreign construction workers to greater automation through adoption of IBS in Malaysian construction projects. This research intends to study the factors of reliance on the foreign construction workers, identify the attributes of IBS in saving foreign labours workforce and investigate the effectiveness of IBS in reducing the foreign workers. Questionnaire forms were delegated to G7 IBS contractors registered under CIDB to facilitate the data collection. The data was analysed by using descriptive analysis such as mode, frequency and percentage. Relative Importance Index (RII) is also used to analyse the Likert scale questions to rank the importance of the data being collected. The results of the study show that IBS is efficiently reduce the numbers of worker on site up to 40% and successfully shifting the reliance on foreign workers from high level to low level. Pushing the adoption of IBS among construction players is significant to shift the reliance on foreign workers towards greater automation as well as transform Malaysian construction industry into new revolution.

Keywords: Industrialized Building System (IBS), foreign workers, massive reliance, automation, construction industry

TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
LIST OF FIGURES	v
LIST OF TABLES	vi
LIST OF APPENDICES	vii
CHAPTER 1: INTRODUCTION	
1.1 Introduction/ Research Background	1
1.2 Problem Statement	2
1.3 Aim	3
1.4 Objectives & Research Questions	3
1.5 Significant of Study	4
1.6 Scope & Limitation of Study	5
1.7 Chapters Outline	6
1.7.1 Chapter 1: Introduction	6
1.7.2 Chapter 2: Literature Review	6
1.7.3 Chapter 3: Research Methodology	6
1.7.4 Chapter 4: Data Analysis & Discussion of Findings	7
1.7.5 Chapter 5: Conclusion & Recommendation	7
CHAPTER 2: LITERATURE REVIEW	
2.1 Industrialized Building System (IBS)	8
2.1.1 Definition of IBS	8
2.1.2 Classification of IBS	8
2.2 Labour Workforce in Construction Industry	10
2.3 Reliance on Foreign Construction Workers	11
2.3.1 Causes Lead to Influx of Foreign Workers	11
2.3.2 Factors of Reliance on Foreign Construction Workers	12
2.3.3 Problems Arise from Foreign Workers in Construction Industry	13
2.4 Adoption Level of IBS by Contractor	14
2.5 Challenges Faced by Contractors in Implementing IBS	15
2.6 Effects of IBS Adoption towards Foreign Labour Workforce	16

CHAPTER 3: RESEARCH METHODOLOGY

3.1	Introduction	18
3.2	Research Flow	19
3.3	Method of Research	21
3.4	Method of Analysis	22

CHAPTER 4: DATA ANALYSIS & DISCUSSION OF FINDINGS

4.1	Rate of Respondent	24
4.2	Personal Detail of Respondents	24
4.3	Reliance on Foreign Construction Workers	26
4.4	Adoption of Industrialized Building System	33
4.5	Effects of IBS towards Foreign Labour Workforce	39

CHAPTER 5: CONCLUSION & RECOMMENDATIONS

5.1	Introduction	45
5.2	Conclusion	45
5.3	Recommendations	46
	References	47

LIST OF FIGURES

Figure 2.1	Five Degree of Industrialization	16
Figure 3.1	Research Flow Chart	19
Figure 4.1	Designation of Respondents	24
Figure 4.2	Years of Working Experience of the Respondents	25
Figure 4.3	Participation in IBS Projects by the Respondents	25
Figure 4.4	Numbers of Project have been Participated by the Respondents	25
Figure 4.5	Composition of Foreign Labour Workforce in Conventional Construction Project	26
Figure 4.6	Level of Reliance on Foreign Workers in Conventional Construction Project	26
Figure 4.7	Data Collected on Factors of Massive Reliance on Foreign Construction Workers	27
Figure 4.8	Data Collected on Problems Arise from Foreign Workers in Construction Industry	29
Figure 4.9	Adoption level of IBS in Malaysian Construction Industry	33
Figure 4.10	Data Collected on Challenges in Adoption of IBS Encountered by Contractors	34
Figure 4.11	Data Collected on Factors Drive to Adoption of IBS	36
Figure 4.12	Percentage of Foreign Workers Reduced by Adopting IBS	39
Figure 4.13	Level of Reliance on Foreign Workers in IBS Project	39
Figure 4.14	Data Collected on Attributes of IBS in Shifting Massive Reliance on Foreign Workers towards Greater	40
Figure 4.15	Data Collected on Factors Lead to Reduction of Foreign Construction Workers through Adoption of IBS	42
Figure 4.16	Level of Significance to Push Adoption of IBS in Malaysian Construction Industry	44

LIST OF TABLES

Table 2.1	Classification of IBS	8
Table 3.1	Relationship between RII and Likert Scale	23
Table 4.1	Frequency Table for Factors of Massive Reliance on Foreign Construction Workers	27
Table 4.2	Factors of Massive Reliance on Foreign Construction Workers	28
Table 4.3	Frequency Table for Problems Arise from Foreign Workers in Construction Industry	30
Table 4.4	Problems Arise from Foreign Workers in Construction Industry	31
Table 4.5	Frequency Table for Challenges in Adoption of IBS Encountered by Contractors	34
Table 4.6	Challenges in Adoption of IBS Encountered by Contractors	35
Table 4.7	Frequency Table for Factors Drive to Adoption of IBS by Contractors	37
Table 4.8	Factors Drive to Adoption of IBS by Contractors	37
Table 4.9	Frequency Table for Attributes of IBS in Shifting Massive Reliance in Foreign Workers towards Greater Automation	40
Table 4.10	Attributes of IBS in Shifting Massive Reliance on Foreign Workers towards Greater Automation	41
Table 4.11	Frequency Table for Factors Lead to Reduction of Foreign Construction Workers through Adoption of IBS	42
Table 4.12	Factors Lead to Reduction of Foreign Construction Workers through Adoption of IBS	43

LIST OF APPENDICES

Appendix A	Research Work Programme	50
Appendix B	Questionnaire	51

CHAPTER 1

INTRODUCTION

1.1 Introduction/ Research Background

The Malaysian construction industry is considered as a stalwart economical key to generate wealth and lead to a well-developed country from aspects of social economic, infrastructure and buildings. The rapid economy development has been accelerating the speed of urbanisation and escalating the numbers of mega construction projects as well as infrastructure project (Del Carpio *et al.*, 2015). The construction industry in Malaysia is yet labour intensive due to dependence of construction players on traditional construction methods. Hence, it generates higher rate of employment opportunities to the population.

The overwhelming of employment opportunities has become an attraction for foreign workers to migrant in Malaysia (JAMADI, 2012). The influx of foreign construction workers happened because of the labour scarcity in the local labour market. The supply of construction workers does not compatible with the demand as the numbers of project keep on increasing. Since labour is the backbone for fluency execution of construction projects, foreign workers seen as the solution to fill the gap of insufficient labours. Moreover, the reluctance of locals to engage in 3Ds' (Dangerous, Dirty and Difficult) jobs causes massive reliance on the foreign construction workers.

The issue of massive reliance on foreign workers in construction industry is emerging into a critical stage whereby the scarcity of foreign workers will bring tremendous impact on development progress (Yee, Hamid and Zahari, 2017). Therefore, the Malaysian construction industry has to look into this crucial matter in depth and then find an innovation and sustainable solution to battle against reliance on foreign workers. Hereby, Industrialized Building System (IBS) is gaining popularity among the practitioners and construction players as a solution to shift reliance on foreign workers to greater automation (Din *et al.*, 2012; Kamaruddin *et al.*, 2013; Hanafi and Nah, 2015).

Viewing at the alarming issue, this paper addressed the massive reliance on foreign construction workers as well as highlighted the effectiveness of IBS to reduce the reliance on them. In simplified, IBS provides new outlook to construction industry which embraces new and modern technology to substitute foreign labour workforce with equipment and machineries (Kamaruddin *et al.*, 2013). Besides, IBS also improves the quality, productivity and enhance the working environment (Abd Rahman and Omar, 2006). Therefore, adoption of IBS is the best way to transform foreign labour intensive to greater automation and mechanization meanwhile leading to a competitive construction industry in Malaysia (Hanafi and Nah, 2015).

1.2 Problem Statement

The issue of influx of foreign workers in construction sector is now alarming in Malaysia, especially during the outbreak of Covid-19 by 2020 (New Straits Times, 2020). Amidst of harsh economy situation during nationwide Movement Control Order (MCO), the government announced an economic stimuli package cost RM250 billion (Bernama, 2020). However, there is lack of legal and fiscal provisions to protect millions of foreign workers. Therefore, this is a time for government to relook foreign worker policy following the pandemic issue to restrict the policy and improve governance structure.

Moving to economic aspect, the vision of Malaysia is moving to high income and well-developed nation. The prerequisite to achieve this aspiration is through progression to “high productivity and high income” workforce (Ang, Murugasu and Wei, 2018; Kok, 2018). However, the massive dependency on unskilled low-cost foreign workers became an obstacle to move up the economic ladder nor achieve the goal of knowledge-based economy powered by skilled labours (Hisyam, 2016). Nevertheless, the issue of over-reliance on foreign workers has been highlighted in the 11th Malaysian plan since 2015 which targeted to restrict the employment of foreign workers below 15% of total workforce by 2020 (Michelle, 2015).

By year 2020, the issue of foreign workers remains unsolved whereby the construction industry in Malaysia is still massively dependency on foreign workers as the shortage of the labours becomes apparent in conjunction with the freeze on the foreign labour workforce (Allison Lai & Rashvinjeet S.Bedi, 2020). Eyeing the issue of foreign workers, embracing technology and mechanisation such as Industrialized Building System (IBS) is the best option to grapple with local labour scarcity (Abd Rahman and Omar, 2006; Din *et al.*, 2012; Kamaruddin *et al.*, 2013). Hereby, the purpose of this paper is to study the shifting of reliance on foreign construction workers towards greater automation through IBS in goals of creating a productive, effective and professionalism image of construction.

1.3 Aim

The aim of this research is to study the shifting of massive reliance on foreign construction workers to greater automation through the adoption of Industrialized Building System (IBS) in construction project Malaysia.

1.4 Objectives & Research Questions

To accomplish the aim, the specific objectives are established for this research are as following:

1. To study the factors of reliance on foreign construction workers
2. To identify the attributes of Industrialized Building System (IBS) aid in saving foreign labour workforce
3. To investigate the effectiveness of Industrialized Building System (IBS) in reducing the foreign workers based on contractor perception

Following are the research questions raised on this study in relation to the objectives:

1. What are the factors that cause construction industry Malaysia rely on foreign workers massively?
2. How Industrialized Building System contribute to save foreign labour workforce in construction project?
3. How many percentages of foreign construction workers can be reduced by implementing the Industrialized Building System?

1.5 Significant of Study

This research addressed the factors of massive reliance on foreign construction workers and the negative impacts resulted from it in goals of raising the cognizance of over-reliance on foreign workers among the construction players. Additionally, this research highlighted the attributes of Industrialized Building System (IBS) in saving foreign labour workforce to show that IBS is a solution to shift reliance on foreign construction workers to greater automation. Significantly, the research examined the effectiveness of IBS to reduce the numbers of foreign construction workers in construction project based on contractor perception.

The industry wide endeavour is essential to combat with the massive reliance on foreign construction workers including the effort of designer, developer, contractor and even the manufacturer. The tremendous demand on the foreign workers is dragging the improvement of the construction industry in moving towards advanced technology empowered by skilled labours. Therefore, this paper exhibited the significant of IBS in changing the nature of the current construction industry which reliant massively on the unskilled low-cost foreign workers who work with depressing wages, harsh working condition and unattractive career path.

Over-reliance on foreign workers may cause the development of construction project in Malaysia being controlled by the foreign labour workforce. This research enables the construction players especially the contractors able to acknowledge the usefulness of Industrialized Building System in solving foreign workers as well as evaluate the value of applying IBS in construction project. Even though the initial investment in IBS is costly which stagnate the adoption of IBS, but the research demonstrated that it is worth to implement as it is a sustainable and innovative solution to support the long-term construction growth without relying on the foreign workers.

Lastly, challenges faced by the contractors in implementing IBS and misconception of contractors on the IBS are the vitals factor that hinder the adoption of IBS in construction project Malaysia. Even though there are challenges in the initiative to embark on IBS, but there are also ways to settle those challenges in line with the policies, guidelines and incentive set up by government and Construction Industry Development Board (CIDB). By exploring these factors in further, the construction players will have insights on the general idea, concept and the benefits of IBS to encourage them to adopt IBS as a solution to the massive reliance on foreign workers.

1.6 Scope & Limitation of Study

The scope of the study is encompassed on G7 registered Industrialized Building System (IBS) contractors to examine the effectiveness of IBS to reduce the reliance on foreign workers by shifting to greater automation. The adoption of IBS as a solution to battle with the issue of massive reliance on foreign workers required endeavour from a complex construction team comprised of developer, designer, contractor and also the manufacturer. The effort for transforming the construction industry from foreign labour intensive to technology advanced unable to stand alone with the involvement of contractor only. Hence, the limitation of study is only contractors are involved in the research without the integration of all project delivery teams.

The IBS is a modern and trending construction technique which reduces the workload on site by transferring the production of building components from construction site to manufacturing industry and also substituting the workforce required on site with the machinery and computerised system. The construction players shall technically be knowledgeable in designing the IBS building, manufacturing prefabricated building components and installing them on site. Subsequently, the participation of all construction players is essential in implementing IBS. Therefore, the data collection from the designers and manufacturers are vital to ensure the completeness of the study on the capability of IBS to mitigate the problem of massive reliance on foreign workers.

Due to the time constraint, the research methodology is only designated to collect data from the G7 IBS contractors. This research is only limited to illustrate the perception of the contractors on the effectiveness of IBS to reduce reliance on foreign workers as well as their acceptance and satisfaction with the adoption of IBS as a solution to save foreign labour workforce. Therefore, the further studies may include the viewpoints from various parties in construction to ensure all the relevant information are taking into account to produce a comprehensive research report. As a result, it can demonstrate proficiency of IBS as a solution to massive reliance on foreign construction workers more precisely.

1.7 Chapters Outline

This section consists of several chapters to showcase the research that have been conducted to study on the Industrialized Building System (IBS) as a solution to shift massive reliance on foreign construction workers to greater automation. An outline of the contents for each chapter is presented below.

1.7.1 Chapter 1: Introduction

This chapter introduces the research background by pointing out the issue of massive reliance on foreign construction workers and highlighting IBS as a solution to cater with the issue by shifting construction industry towards greater automation. Besides, the chapter also represents problem statement, aim and objectives that have been established for the research. The significant of study as well as scope and limitation of study are explained in this chapter.

1.7.2 Chapter 2: Literature Review

This chapter provides an overview on the secondary findings based on the literatures. It elaborates on the IBS to provide understanding on this modern construction approach as well as reviews the labour workforce in construction industry to identify the involvement of foreign workers in construction project. Next, it demonstrates the reason of influx of foreigners, factors of massive dependency on them in construction sector and the problems arising from it. Subsequently, this chapter explores the adoption level of IBS, identifies the challenges faced by contractor in implementing IBS as well as studies the effects of IBS towards foreign labour workforce.

1.7.3 Chapter 3: Research Methodology

This chapter discusses the definition and justification of the research method. A research flow for this study is described and displayed in a flow chart diagram to visualise the entire research process. This chapter also explains the method used to conduct the research and the method to analyse the findings.