PERCEPTIONS ON IMPACT OF BELT AND ROAD INITIATIVE TO THE MALAYSIAN CONSTRUCTION INDUSTRY

WONG PIK JIUN

A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Science (Hons.) Quantity Surveying

Lee Kong Chian Faculty of Engineering and Science
Universiti Tunku Abdul Rahman

April 2019

DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

Signature : _____

Name : Wong Pik Jiun

ID No. : 14UEB03354

Date : 8 April 2019

APPROVAL FOR SUBMISSION

I certify that this project report entitled **"PERCEPTIONS ON IMPACT OF BELT AND ROAD INITIATIVE TO THE MALAYSIAN CONSTRUCTION INDUSTRY"** was prepared by **WONG PIK JIUN** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science (Hons.) Quantity Surveying at Universiti Tunku Abdul Rahman.

Approved by,

Signature	:	
Supervisor	:	Dr. Chia Fah Choy
Date	:	8 April 2019

ACKNOWLEDGEMENTS

First and foremost, I would like to express my deepest appreciation and gratitude to my research supervisor, Dr. Chia Fah Choy, for his invaluable advice, constructive guidance and enormous patience throughout the development of the research. His timely advice, scientific approach and meticulous scrutiny have assisted me for accomplishing this research work.

In addition, I would also like to genuinely thank my beloved parents and family who had helped and given me encouragement throughout this research. Their financial and moral supports are much appreciated. I wish to acknowledge the contribution of my friends at Universiti Tunku Abdul Rahman, who gave me constructive advices and criticisms throughout the research.

This research was made possible by numerous construction practitioners from different companies. It is a pleasure to express my sincere gratitude to all of them who participated in my research. It was an insightful interaction with each of them.

ABSTRACT

China's Belt and Road Initiative (BRI) is an ambitious plan introduced in the mid of 2013. The idea of BRI is to improve connectivity, social facilities and living standards as well as create more business opportunities. However, there have been some concerns regarding the concept of BRI. The local construction personnel are questioning on how Malaysian construction industry can be benefitted from this initiative. This research aims to explore the perceptions on impact of Belt and Road Initiative in the Malaysian construction industry from the construction personnel of both countries. The published literature has indicated that the construction investment from a foreign countries will bring along both the benefits and risks to the country. This is a qualitative study and research strategy adopted is semi-structured interviews. The interview guide included questions about the experience of working with Chinese contractors as well as the opportunities, threats and prospects of BRI. A total of twelve interviews was conducted with Malaysian and Chinese respondents. The qualitative analytical procedure adopted in this research was five-phased cycle. It involved in-depth qualitative analysis of interview transcripts by dissembling of the content recorded in the transcript and reassembling with relevant themes of this study. The key findings in this research were grouped into seven themes, which were local material priority, use of machinery, knowledge transfer, working culture, quality control, competition strategy and demand of human resource. The findings uncovered that most of the differences in perceptions of the Malaysian interviewees were due to lack of working experience with the Chinese contractors. This research is expected to develop a better understanding about BRI from the clarification of Malaysian and Chinese construction practitioners.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS / ABBREVIATIONS

AIIB	Asian Infrastructure Development Bank
BRI	Belt and Road Initiative
CCCC	China Communications Construction Co Ltd
CCCC	China Communications Construction Company
CRCC	China Railway Construction Corp Ltd
ECER SEZ	ECER Special Economic Zone
ECER	East Coast Economic Region
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GE14	14th General Election Malaysia
HSR	East Coast Rail Link
HSR	KL-Singapore High-speed Rail
LKIM	Fisheries Development Authority of Malaysia
MCKIP	Malaysia-China Kuantan Industrial Park
MoUs	Memorandum of Understandings
MPP	Multi-Product Pipeline
MRT	Mass Rapid Transit
MSR	21st-Century Maritime Silk Road
OBOR	One Belt One Road
SREB	Silk Road Economic Belt
TSGP	Trans-Sabah Gas Pipeline

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter outlines the introduction of this research. Section 1.2 introduces the background of research and Section 1.3 elaborates the problem statement. Section 1.4 to Section 1.8 describe the research aim, research objectives, research method as well as scope and limitation of the study. Section 1.8 ends the chapter with outline of the chapters in this research.

1.2 Research Background

The China's Belt and Road Initiative (BRI) for regional development proposed by President Xi Jinping has attracted worldwide attention. The initiative is China's biggest international economic ambition, which intends to stimulate the growth of economic development in the vast regions of Asia, Europe and Africa (Huang, 2016). BRI is also known as an open and inclusive model of political, cultural exchange and cooperative economic (Liu and Dunford, 2016). BRI has established an action plan with five tasks to be accomplished, including policy coordination, financial integration (which links to the establishment of new development bank and internationalisation of reminbi), unimpeded trade (balancing trade flows, improving customs cooperation and protecting the rights of investors), facility connectivity (infrastructure, communication, logistics and energy infrastructure) and people-to-people bond (such as tourism and student exchange) (Summers, 2016). If successful, BRI will generate significant opportunities to the world economy.

However, the society starts to question this: Is the engagement of Chinese contractors in Malaysia a boon or bane? Since the launching of BRI, the Chinese firms increase their footprints in the Malaysian construction industry. These firms carry out mega infrastructure projects as well as residential projects in Malaysia. It becomes one of the critical issues among the local contractors and developers. Huam, Thoo and Dan (2018) perceived that such an optimistic prognosis of BRI could be a wishful thinking. Moreover, the general public and foreign media have raised numerous concerns about the issues surrounding the BRI, such as geo-economic issues, cultural conflicts and conflict of interests (Feng and Liang, 2018). According to Xavier (2018), BRI

negatively influences the countries along the belt and road corridor in different ways, such as environmental pollution, political controversies, cultural difference and loss of sovereignty. Besides, Summers (2016) pointed out that the infrastructure development and socioeconomic connectivity between China and its neighbours become a strategy to boost Chinese expansion.

1.3 Problem Statement

There are many studies related to the perceptions on impact of BRI. Sachdeva (2018) have specifically investigated the Indian perceptions on the Chinese BRI. García-Herrero and Xu (2019) discovered that there is no significant difference in the perception on BRI among 130 countries and regions. Moreover, Junchi (2017) identified the reasons of difference in perceptions of China and its partners, where lack of mutual understanding is the main reason. Furthermore, Pendrakowska (2018) unveiled the perspective from Poland on BRI that they view BRI as a potential capital injection source that can vastly increase the development of regional infrastructure. So far there is a lack of solid investigation about the perceptions of Malaysian on the impact of BRI to the local construction industry. Therefore, what are the perceptions of local construction practitioners on the China's BRI? How the Chinese contractors clarify with their working experiences in Malaysia? What is the difference between the views of local construction practitioners and Chinese contractors on China's BRI? The answers of these research questions are wished to be uncovered.

1.4 Research Aim

The research seeks to explore the perceptions on the impact of Belt and Road Initiative launched by China to the construction industry in Malaysia.

1.5 Research Objectives

The research has three objectives:

(i) to explore the perceptions and concerns of local construction practitioners on the China's Belt and Road Initiative; and

(ii) to seek the clarification of Chinese contractors on their experiences and encounters working in Malaysia; and

(iii) to compare the different views of two parties to develop a new understanding of the impact of China's Belt and Road Initiative to Malaysian construction industry.

1.6 Research Method

This study adopts qualitative approach. Semi-structured interviews are carried out to explore the perceptions and concerns of local construction practitioners on China's BRI to the Malaysian construction industry and also the clarification from the China counterparts. The qualitative analytical procedure adopted is five-phased cycle, which involves compiling, dissembling, reassembling, interpreting and concluding.

1.7 Scope and Limitation of the Study

The scope of this study is limited to the construction companies located in Klang Valley, Malaysia, where most of the local construction firms and Chinese construction firms located. The potential respondents in this research are Chinese contractors from China and the local construction practitioners, who are consultant, contractor, quantity surveyor, building material supplier, project manager and project supervisor.

1.8 Chapter Outline

This research consists five chapters, which are Introduction, Literature Review, Research Methodology, Results and Discussions as well as Conclusions and Recommendations. Chapter 1 covers the introduction of this research. The background of BRI and problem statement of the research are illustrated. Besides, this chapter points out the aim and objectives of this research. Moreover, the research methodology used is briefly introduced. The restraints in this research are highlighted as well. This chapter is ended with the chapter outline.

Chapter 2 critically reviews the published information about impact of BRI and international construction. First of all, the overview of BRI and its implementation in Malaysia are explained. Both opportunities and threats associated with international are uncovered. The opportunities include technology transfer, creation of work opportunities, lower project cost and procurement of local resources. Meanwhile, the threats are inability to compete with foreign contractors and cultural differences. A theoretical framework is proposed to support the theories of the past studies. Lastly, the previous studies are summarized.

Chapter 3 describes the research methodology adopted in this study, which is qualitative approach. Semi-structured interviews are conducted to collect qualitative data. The details of interview guide are unveiled. The sampling technique used are volunteer sampling, including self-selection sampling and snowball sampling. The procedures of data collection are listed accordingly. The analysis method used in this research is five-phased cycle, which comprises of compiling, dissembling, reassembling, interpreting and concluding. Lastly, the research flow is illustrated.

Chapter 4 reports the results and analysis of the interviews. There are seven themes and 17 sub-themes identified in the analysis process. The themes are local material priority, use of machinery, knowledge transfer, working culture, quality control, competition strategy and demand of human resources. The findings are discussed and compared with literature review. Lastly, the findings are summarized in an appropriate diagram.

Chapter 5 concludes the research findings and shows that research objectives are fulfilled. There are three contributions revealed in this chapter. Besides, the limitations and recommendations of this research are unveiled.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter describes on the review of literature that summarizes the studies about implementation of BRI as well as impact of international construction. Section 2.2 and Section 2.3 briefly introduce the definition of BRI and implementation of BRI in Malaysia. Section 2.4 critically reviews the perceptions on the opportunities and threats associated with international construction. Section 2.5 proposes a theoretical framework in this research. Lastly, the past studies are summarized in Section 2.6.

2.2 Belt and Road Initiative

Belt and Road Initiative (BRI), formerly known as One Belt One Road (OBOR), is an ambitious programme that enhances the regional connectivity and collaboration in the manner of trans-continental. The initiative aims to connect regions through roads, railways, ports, airports and facilities for energy, telecommunications, education and healthcare. BRI involves more than 65 countries and potentially affects at least 62 % of global population, leverages approximately 35 % of the world's trade and more than 31 % of the world's gross domestic product (GDP) (LehmanBrown, 2017).

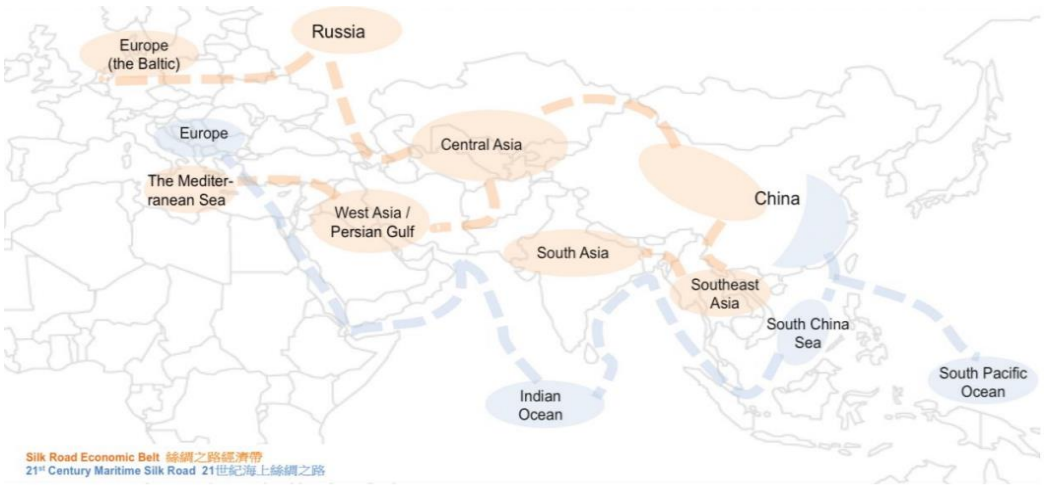

Figure 2.1: Geographic Coverage of Silk Road Economic Belt (SREB) and the 21st-Century Maritime Silk Road (MSR)

(Source: Fung Business Intelligence Centre, 2015)

BRI is the combination of two development proposals, which are the Silk Road Economic Belt (SREB) and the 21st-Century Maritime Silk Road (MSR). The Belt has three routes and the Road has two routes as shown in Figure 2.1. SREB emphasizes on connecting China to Europe through Central Asia and Russia (the Baltic), linking China with Southeast Asia, South Asia and the Indian Ocean and bringing together China with the Persian Gulf and the Mediterranean Sea through Central Asia and West Asia (Summers, 2016). Meanwhile, MSR utilizes Chinese coastal ports to join China with the South Pacific Ocean through the South China Sea and connect China to Europe through the South China Sea and Indian Ocean (Summers, 2016).

President Xi Jinping introduces BRI to develop both "hard" and "soft" connectivity between China and the regions of Asia, Europe and Africa through transnational transportation infrastructure, increased investment and regional political cooperation. Through BRI, the growth of underdeveloped hinterland in China can be incited by creating corridors to facilitate access to foreign markets and increase the turnover of goods transported from China to Europe and adjacent regions through Central Asia (Silin, et al., 2017). BRI focuses on five main goals, which are policy coordination, financial integration, trade and investment enhancement, infrastructure connectivity and people-to-people bond (Summers, 2016).

2.3 Implementation of Belt and Road Initiative in Malaysia

Malaysian and Chinese companies have signed agreements and yielded nine Memorandum of Understandings (MoUs) in May 2017, including the agreement between Malaysia's Transport Ministry and China in infrastructure development like railways and ports. It represents that more local companies have started on this path towards the implementation of BRI. The key BRI developments in Malaysia before the 14th General Election Malaysia (GE14) are shown in Table 2.1. According to Najib Razak, the former Malaysian prime minister, BRI provides abundant of advantages to Malaysia in term of better connectivity, business opportunities, infrastructure developments, social facilities and improved living standards (Lau, 2017).

Table 2.1: Key BRI Developments

No	Project Type	Project Name	Contract Amount	Progress
1	Railway	East Coast Rail Link (ECRL)	RM 55 billion	Cancelled
2	Pipelines	Multi-Product Pipeline (MPP)	RM 5.35 billion	Cancelled
3	Pipelines	Trans-Sabah Gas Pipeline (TSGP)	RM 4.06 billion	Cancelled
4	Railway	KL-Singapore High-speed Rail (HSR)	RM 72 billion	Postponed
5	Railway	Gemas-Johor Bahru Rail	RM 8.9 billion	On Going
6	Township	Melaka Gateway	RM 43 billion	On Going
7	Port Infrastructure	Malaysia-China Kuantan Industrial Park, Pahang (MCKIP)	RM 5.6 billion	On Going
8	University	Xiamen University Malaysia	RM 1.3 billion	On Going
9	Township	Iskandar Malaysia, Johor	RM 383 billion	On Going
10	Shipping hub	Kuala Linggi International Port (KLIP)	RM 12.5 billion	On Going

(Source: Malay Mail, 2017; HKTDC Research, 2017; Teoh, 2018; New Deep Water Terminal, 2016; Bahari, 2016)

The new Pakatan Harapan government takes over the country after GE14. Mahathir Mohamad, the seventh Malaysian prime minister, have defeated Najib Razak, who approved expensive BRI infrastructure projects. Consequently, ECRL, MPP, TGSP and HSR are cancelled or postponed due to huge project cost and lack of transparency in negotiations by the former government (Ooi, 2019). The similar backlash is not limited to Malaysia only, other countries like Pakistan, Maldives and Kenya are starting to worry about these issues as well.

2.4 International Construction

Economic globalization has created an interdependent market and provides new opportunities to the construction firms to conduct international business. The developing countries need to undertake more construction projects that are beyond the capability of their industries for better socio-economic development (Ofori, 2000). Hence, the developing nations require more construction activities to be imported. Besides, specialized contractors from industrialized countries are essential to build new infrastructure and buildings in a developing country (Gunhan and Arditi, 2005).

According to Engineering News-Record (2018), global contractors have largely increased their involvement and contracting revenue up to 3.1 % in the international construction market, from $ 468.12 billion in 2016 to $ 482.40 billion in 2017. Based on National Bureau of Statistics of China (2018), Chinese contractors achieve $ 265 billion of overseas contract value in 2017, with 6.9 % of annual growth rate. They have international business across Asia (52.3 %), Africa (30.4 %), Europe (5.5 %), Latin America (7.7 %), North America (1.4 %) and Ocean and Pacific Islands (2.7 %) (National Bureau of Statistics of China 2018). Citing China Communications Construction Company (CCCC) as an example, their new contracting value is amounting to RMB 890,873 million in 2018, which contributes a 1.1 % of increase from RMB 881, 006 million in 2017 (China Communications Construction Company, 2018). However, both opportunities and threats of globalization exist in the international construction industry (Ofori, 2000).

2.4.1 Perceptions on Opportunities of International Construction

Different perceptions on the opportunities associated with global construction industry are elaborated. The opportunities highlighted include technology transfer, creation of work opportunities, lower project cost and procurement of local resources.

(a) Technology Transfer

Construction technology is essential in every construction project. The transfer of construction technologies from the industrialized nations is viewed as a mechanism to enhance the construction industry of developing countries. It usually happens when the local and foreign companies collaborate to gain mutual benefits through joint ventures, which is commonly known as the effective technology transfer vehicle.

Ofori, Leong and Pin (2002) pointed out that the foreign counterparts contribute to the development of local contractors through technology transfer. Weerasinghe and Ekanayake (2013) discovered that the involvement of foreign construction companies benefits the local construction companies through international technology transfer. Omar, et al. (2019) noted that the technology is transferred can be viewed in the Mass Rapid Transit (MRT).

Nevertheless, how is the technology transferred into the local firms? There are some studies that observe the limitation of technology transfer. Ofori, Leong and Pin (2002) also found that the technology could not be utilized and improved in a short

timeframe. Instead, the technologies must be integrated and local contractors must possess necessary knowledge to ensure the complete technology transfer. In addition, the involvement of foreign contractors to manage the project to share the technology will make the local companies as expensive as the foreign companies, because the local industry practitioners need a necessary learning period.

Ofori (1992) defined some challenges in technologies transfer, including unwillingness to transfer to potential competitors, lack of understanding what is actually transferred and implication of time and cost to transfer on a project. Omar, Takim and Nawawi (2008) highlighted that the obstacles of international technology transfer include political believe, language, policies, culture, and needs and expectations of the construction firms. Mselle (2014) identified the absence of six enabling factors for technology transfer in Tanzania construction industry, such as research fund for construction industry, establishment of formal arrangement for technology transfer, capacity building of local organisations, good partnership between research centre and construction industry and research culture among the construction professionals.

The transfer of technology from China has taken place in Malaysia. For instance, Mahizan, who is a train expert, has learned more about the locomotives and know-how about the trains. Besides, Wan Azhim Syammel, who is assistant engineer, clarified that the specialists from China are very friendly and willing to share their technology to the local practitioners (Xinhua, 2018). However, numerous Malaysians are suspicious about the commitment of Chinese contractors to technology transfer. Citing Nurul Izzah, a Malaysian politician as an example, she raised doubts that Malaysians would acquire new knowledge through technology transfer from the China firms (Tan and Achariam, 2017). As a result, it is unknown whether the technology has been transfer to the local construction industry.

(b) Creation of Work Opportunities

International construction provides employment opportunities to the local construction industry. Ofori (2000) suggested that investment from foreign countries will increase the demand in the construction market. Consequently, it leads to more job opportunities available for the local construction firms. Due to BRI, the development of infrastructure in Malaysia has been improved tremendously. As a result, the demand for Malaysia's engineering, construction and infrastructure-related industry is huge.

The potential industries that are beneficial from the development include roads, railroads as well as their related logistics and manufacturing industry (Ohashi, 2018). Not only Malaysia, Chinese-based construction companies also have an enormous job opportunities in the abovementioned development. Besides, the demand for project managers in construction industry is high as international construction industry booms. Based on Project Management Institute (2017), the expansion in project-oriented sectors is expected to create approximately 10 million of new jobs by 2027 in the construction industry of 11 analysed countries, such as China, India and Japan.

Due to some mega projects are cancelled as highlighted in Section 2.2, it directly influences the employment rate in the local construction industry. Due to the cancellation of ECRL, more than 2,000 workers will be affected (Ong, 2018). Syefura Othman, who is a Malaysian politician, alerted that the government shall pay extra attention to these affected local workers' welfare. Meanwhile, Rina Harun, the Minister of Rural and Regional Development, defended that there are abundant of job opportunities still could be offered without the railway project (The Straits Times, 2018). In her point of view, jobs can be created in many other ways instead of solely depends on the railway projects.

(c) Lower Project Cost

Lower cost of construction project can be achieved in the international construction market. Woodward and Humphreys (2003) specifically investigated the project elements that must be considered in international construction project to produce accurate estimate and minimize the project cost, such as project design, bulk materials, engineered equipment, construction labour, construction equipment, construction management staffing, schedule, et cetera. Delaney and Mohan (2016) mentioned that open and fair competitions will lead to lower project cost, which is obviously the owner's advantage. Therefore, the competition among the foreign construction companies can reduce the project cost in developing countries, like Malaysia (Ofori, 2000).

Chinese contractors have abundant supply of cheap labour and skilled workers, which lead to lower project cost (Ofori and Zhao, 2006). Under the Porter's diamond theory, Liu, Zhang and Feng (2017) discovered that the wages of workers from China is much cheaper as compared to that from America, because China has large population and consequently has unlimited supply of human resources. In addition, the

Chinese workers have high degree of adaptability to work in different working environments. For instance, Chinese engineers, managers and workers are able to live on site with simple accommodation, which can save the project expenses. Furthermore, China-based firms offer lower price of building materials and equipment. For example, the price of aggregate from China is cheaper due to mass production of products in their factories. These factors lead to cheaper bid from Chinese contractors and contribute to their success in international construction industry.

In contrast, the competitive nature of bidding process might cause cost overrun in a construction project due to inaccurate estimate from the scope of work (PlanGrid, 2017). Besides, Lei, et al. (2017) found that it is challenging for the Chinese contractors to achieve significant lower project cost when adopting foreign technical standards. Moreover, some of the BRI projects are more expensive as compared to other similar type of projects. For instance, the cost of ECRL is justified to be unreasonable and hence reduce its sustainability. After considering various influencing factors, namely train technology, terrain and length of rail, it is puzzling that a 10 % of increase in rail length to approximately 600 kilometres can cause a drastic hike in building cost, as compared to overseas train projects such as Padma Railway in Bangladesh and Phase 2A of Mombasa to Malaba in Kenya (Lim, 2018).

(d) Procurement of Local Resources

The optimal usage of local resources in the international construction projects, including materials and equipment, is essential to stimulate the growth of the local industry. Meanwhile, Gruneberg and Ive (2000) suggested several reasons of importing foreign materials and services. Firstly, building materials may be imported because renewable or non-renewable raw materials are unobtainable due to geographical reasons. Secondly, importing foreign materials may due to temporary shortage of specific material when the market demand increases unexpectedly. Thirdly, cheaper price and lower quality are the factors of importing construction materials and services as well.

According to Gunhan and Arditi (2005), most of the international construction firm procure the materials and equipment from the local market. Also, while the key management personnel are from foreign firm, majority of the operational staff are hired locally. However, there are concerns that the Chinese contractors will bring their own materials and equipment, instead of utilizing the local resources. Zhao and Shen

(2008) unveiled that the Chinese contractors choose the materials and equipment from China due to lower price as compared with that in Western countries. Based on Datuk Seri Che Khalib, who is a group managing director of MMC Corporation Berhad, it makes commercial sense to team up with Chinese firms if it provides more advantages. For instance, he believed that the alliance between MMC Corporation Berhad and Chinese firm for the construction of bridge project that links Port of Tanjung Pelepas (PTP) and Tanjung Bin is strategic due to the latter's lower construction cost and equipment. Therefore, the use of materials and equipment from China has led to the competitive bid price by Chinese contractors.

Mahathir Mohamad stated that Malaysia does not receives any benefit as the Chinese contractors import their material from China (New Straits Times, 2018). BRI becomes a strategy for China to reduce their overcapacity in the raw materials' industry, such as coal and steel (Islam, 2019). It also turns out to be the opportunities for the Chinese firms, particularly the Chinese equipment manufacturers, to increase the exports to BRI countries and undertake infrastructure-related projects (Baker McKenzie, 2017). To deal with this concern, Ministry of International Trade and Industry (MITI) of Malaysia shall coordinate the investment from China to make sure that local resources are procured (Huam, Thoo and Dan, 2018).

2.4.2 Perceptions on Threats of International Construction

The threats of international construction are illustrated with different perspectives in the following sections. The threats highlighted are inability to compete with foreign contractors and cultural difference.

(a) Inability to Compete with Foreign Contractors

The presence of foreign competitors is a potential threat to the local industry practitioners. Foo Chek Lee, who is a managing director of Pembinaan Mitrajaya Sdn. Bhd., concurred that the local contractors and developers are facing strong competition with the Chinese contractors (Tan and Fong, 2017). The local industry players concern that the Chinese construction firms are likely to remain dominant in the sophisticated project in Malaysian construction industry. Most of the mega infrastructure projects are awarded to the Chinese firms instead of local contractors. For example, the RM 8 billion Gemas-Johor Bahru electrified double-track rail project is awarded to China Railway Construction Corp Ltd (CRCC), China Communications Construction Co Ltd

(CCCC) and China Railway Engineering Corporation. Consequently, the local contractors loss the opportunities to possess the experience and expertise on major projects in Malaysia. Moreover, Yunus (2017) aware that the local contractors will risk becoming sub-contractors for the major projects in Malaysia whereas the Chinese contractors will be the main contractor, unless they increase their competitiveness.

On the other hand, some view the competition in the construction industry in different way. Ye, Lu and Jiang (2009) suggested that a moderate level of competition in the international construction market is necessary. Little or no competition will negatively affects the efficiency and effectiveness of deployment of construction resources, but over-competition will lead to market failure. Therefore, a competition could be healthy, which can motive people to pay more effort to achieve higher level of performance. Although moderate level of competition is beneficial, it is undeniable that many construction firms are struggling against foreign rivals in the domestic market (Ye, Lu and Jiang, 2009). The factors of incompetence to compete with foreign contractors are shortage of financial resources, lack of technical expertise and high productivity of foreign contractors.

(i) Shortage of Financial Resources

Insufficient fund to participate in the sponsorship of international construction project is a disadvantage to the local project owners. It is common that project owners are lack of capital or ability to balance the financial resources against the demand of construction (Gunhan and Arditi, 2005). Besides, local contractors also face financial difficulties in the overseas projects when they have insufficient fund to undertake the construction activities, such as payment for materials, equipment and salary of labours. In order to stimulate the domestic economy, the foreign investment becomes a necessity to improve the growth of local construction industry.

BRI provides tremendous investment for the infrastructure development in the developing countries, like Malaysia. The major financiers of BRI include Chinese policy banks, Silk Road Fund and Asian Infrastructure Development Bank (AIIB) (Baker McKenzie, 2017). For instance, AIIB has funded gas pipelines project in Azerbaijan and road projects in India. According to Ofori (2006), the success of Chinese construction firms in international construction business is due to strong government support and access to funding support from state-owned banks. In fact, the Chinese contractors are supported by the Chinese government through cheaper

funding from China financiers and Export-Import Bank of China, which leads to aggressive involvement in international construction projects. Also, Dr Irwan Serigar, the former Secretary General of Treasury, Ministry of Finance, highlighted that the financing terms of China is more favourable due to lower interest rate in the international market associated with 20 years of repayment period (Channel NewsAsia, 2016). These explains the reason behind the attractive financing scheme provided by the Chinese contractors.

Contrary to allegations that the Chinese fund contribute to the growth of industry, an analysis from Centre for Strategic and International Studies (CSIS) discovered that infrastructure projects that were funded by China had largely favoured the Chinese contractors (Hillman, 2019). As a result, the real beneficiary of these financing is unclear between Malaysia and China. In addition, Fuziah Salleh, a Member of Parliament for Kuantan, expressed her worries that the sovereignty of Malaysia will be sold (New Straits Times, 2018).

(ii) Lack of Technical Capability

Ofori (2000) identified that the lack of technical capability in delivering the international projects is a threat to the local construction firm. Technical expertise required in the international construction includes integration of new and complex technologies as well as strategic application of communication and information technology (Ofori, 2006). Besides competitive bids, most of the developers also will consider the contractor's technical expertise in undertaking sophisticated projects.

According to the Chief Executive Officer and Managing Director of IJM Corporation Berhad, Dato' Soam Heng Choon, the local contractors are lack of capacity to undertake mega projects, such as construction of suspension bridges (Tan and Fong, 2017). Besides, the local contractors, particularly from small and medium-sized enterprises (SMEs) might not be able to fit into the scheme to undertake the billion-dollar infrastructure projects. Therefore, the contractors who are specialized in private-sector condominium projects will be more influenced, because they have insufficient project management expertise and execution track record for infrastructure projects. Meanwhile, the Chinese construction personnel can provide technical expertise to support the local construction team, such as chief supervising engineers, resident engineers and construction supervising team leaders. According to Sourabh Gupta, a senior research associate at the Washington-based Institute for China-

America Studies, the construction practitioners from China have the expertise and skills in undertaking the infrastructure projects (Xinhua, 2018). The CEO of China International Capital Corporation Limited (CICC) US Securities, Zhang Lanlan stated that the profound experience of Chinese contractors in construction and infrastructure development successfully helped the other nations (Xinhua, 2015).

International firms are likely to dominate the market for sophisticated projects with their technical and managerial expertise (Ofori, Leong and Pin, 2002). As many developing countries need new infrastructure, it opens new opportunities to the Chinese contractors to export their expertise. The Chinese contractors have abundant of experience in infrastructure development, which can help the other developing countries to stimulate the development of infrastructure, like Malaysia (Huang, 2016). Besides, the Chinese construction practitioners also incorporate their own technical experience and contribute to the international economic architecture (Huang, 2016).

(iii) High Productivity of Foreign Contractors

Foreign contractors can perform at a high level of productivity. The reason behind this is due to the efficiency and effectiveness of foreign contractors are much higher than that of local industry players. The Chinese contractors can undertake the construction work with fast speed, which cannot be achieved by most of the local firms (Leong, 2017). For instance, the construction work of a railway in Longyan City is completed at an incredible speed, which is less than nine hours with around 1,500 labours (People's Daily, 2018). However, why Chinese contractors can carry out speedy construction? According to Calver (2018), Chinese contractors use mega-machineries to build railways at a considerable speed. For example, "Iron Monster" is a prominent machine that is capable of carrying, lifting and placing the track sections and linking the pillars by heavy stone blocks (Calver, 2018). This huge machinery can move at five kilometres per hour, which is much faster than conventional methods. Moreover, Park, et al. (2017) discovered that China's high productivity level is due to comprehensively managed workloads by the China-based construction firms. With these strengths of Chinese firms, the local construction firms are at a disadvantage.

(b) Cultural Differences

Anthropologists view culture in many different ways. Culture is defined as "that complex whole which consists of belief, knowledge, morals, laws, art, customs and

any habits and capabilities acquired by an individual". It is inevitable that international construction businesses involve people and organisations to deliver their service in different cultural environment. The difference between culture of local firm and foreign firm is a common difficulty faced in the international construction market.

However, Chan (2018) claimed that BRI can facilitate cultural exchange among the societies along the route. The international transactions involve interactions between people from different cultural background, which naturally enhance the cultural understanding between them. With BRI, the countries can develop better understanding about each other's cultures, thus establish their cultural identities and enhance mutual trust, which leads to growing economic development in the nations (Hongxiu, 2018).

Culture also influences a person's language and behaviour (Kuo and Lai, 2006). Xu (2008) highlighted the various types of cultural obstacles of Chinese to well-spoken English. Many of the graduates from China face the communication difficulties in English, especially in writing and speaking. The main cultural factor behind this issue is due to the Chinese collectivism and the Western individualism, which causes perplexing conflict between them (Xu, 2008). The Chinese are used to translate from their native language without considering the importance of knowledge about correct usage, communication style and colloquial expressions, which leads to the occurrence of awkward discourse.

It is well noted that the common language used in undertaking international construction projects is English, including the Chinese-funded projects. However, the Chinese contractors usually have worse speaking skills with English compared to those who work with Western contractors due to cultural difference. According to Zhao and Shen (2008), the Chinese contractors spend more resources on the preparation and translation of project documents, such as technical specifications and tendering documents. For instance, 5 % of overheads is spent on appointing resources to overcome the language disadvantage (Zhao and Shen, 2008). Therefore, the language disadvantage significantly affect the effectiveness and communications in doing construction business across national boundaries.

2.5 Proposed Theoretical Framework for BRI

In a nutshell, the reviewed literature can be summarized into the theoretical framework as illustrated in Figure 2.2. It is proposed that the perceptions on opportunities and threats of international construction affect the perceptions on impact of BRI in Malaysian construction industry.

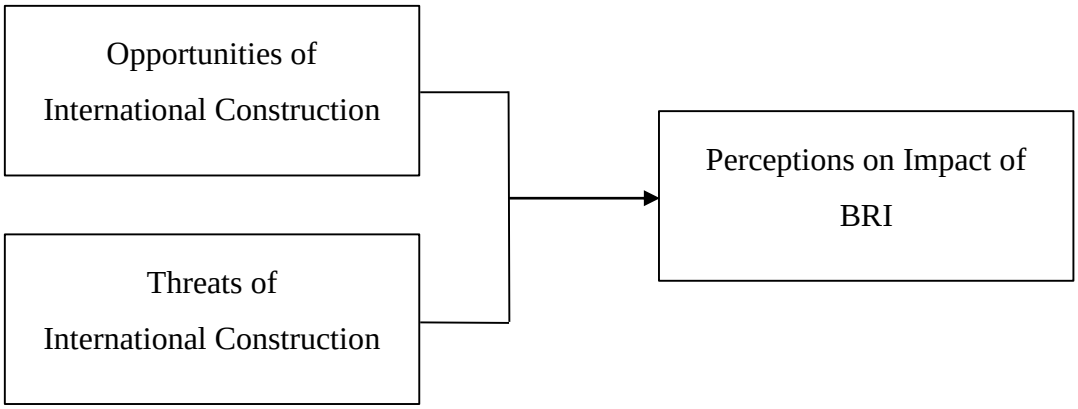

Figure 2.2: Theoretical Framework for Belt and Road Initiative

2.6 Summary of Past Studies

Generally, the BRI implementation are elaborated with appropriate examples of BRI projects in Malaysia. Moreover, the perceptions on international construction's opportunities and threats are reviewed based on past studies. Table 2.2 summarizes the past studies on perceptions of international construction.

Table 2.2: List of Opportunities and Threats of International Construction based on Past Studies

Perceptions on International Construction	**Previous Study**																
	Delaney and Mohan (2016)	Gunhan and Arditi (2005)	Huam, Thoo and Dan (2018)	Huang (2016)	Kuo and Lai (2006)	Lei, et al. (2017)	Lim (2018)	Mselle (2014)	Ofori and Zhao (2006)	Ofori, (2000)	Ofori, Leong and Pin (2002)	Ohashi (2018)	Summers (2016)	Xu (2008)	Ye, Lu and Jiang (2009)	Zhao and Shen (2008)
Opportunities																
Technology transfer		✓		✓				✓		✓	✓	✓			✓	✓
Increased employment opportunities			✓				✓			✓						
Lower project cost	✓					✓	✓		✓	✓	✓				✓	
Procurement of local resources			✓						✓		✓					
Threats																
Inability to Compete with Foreign Contractors	✓	✓		✓		✓	✓		✓	✓	✓	✓		✓	✓	✓
Cultural difference		✓	✓	✓	✓							✓	✓		✓	✓

Note: Previous studies are ranked by alphabetical order

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodology to conduct the research. Section 3.2 elaborates the research design adopted. The structure of this chapter is followed by research instrument and sampling method in Section 3.3 and Section 3.4 respectively. Besides, the data collection procedures and analysis method are explained in Section 3.5 and Section 3.6 respectively. Lastly, a research flow is illustrated under Section 3.7.

3.2 Research Design

The philosophical underpinning of this study was interpretive paradigm, as it focused on the understanding of the phenomenon being studied from the subjective experiences of individuals (Saunders, Lewis and Thornhill, 2016). This study was an exploratory study. The purpose of exploratory research was to discover what is occurring and gain in-depth understanding about perceptions on impact of BRI in local construction industry by asking open-ended questions (Saunders, Lewis and Thornhill, 2016).

The methodological choice of this study was qualitative. Qualitative research developed a conceptual framework and theoretical contribution by studying the respondents' meanings and the relationship between them through various data collection techniques and analytical procedures (Saunders, Lewis and Thornhill, 2016). Unlike the quantitative research, the data collection was non-standardised to enable alteration during the interactive and naturalistic research process. Besides gaining access to participants physically, the access to their data must be obtained cognitively by building rapport.

This research used single data collection technique, known as mono method qualitative study, which was semi-structured interviews associated with qualitative analytical procedure, namely five-phased cycle (Saunders, Lewis and Thornhill, 2016). The procedures in five-phased cycle included compiling, disassembling, reassembling, interpreting and concluding (Yin, 2011). Template Analysis was adopted during the reassembling phase. The open-ended questions asked in the interviews allowed the respondents to express their point of view on the impact of BRI to the local construction industry. It provided a better understanding of the particular subject,

which was unlikely to be achieved by the numbered data obtained through statistical procedures in quantitative research.

3.3 Research Instrument

An interview guide was prepared to guide the question order in the semi-structured interviews (Cooper and Schindler, 2014). The interview guide sample was attached in Appendix A. The list of themes with nine key questions was included in the interview guide as shown in Table 3.1, which their use might be different in various interviews.

Table 3.1: Details in Interview Guide

Potential Questions	Themes
"*Have you deal with China-based contractors before*?"	Experience of working with Chinese contractors
"*How China-based contractors execute the construction work in Malaysia?*"	Approach of Chinese contractors in Malaysian construction business
"In your opinion, how China-based contractors different with Malaysian contractors in carrying out the construction work?"	
"What is your opinion on the impacts of BRI/ presence of China-based contractors in Malaysia?"	Opportunity of Belt and Road Initiative
"Does the Belt and Road Initiative negatively affect you and your company? Why?"	Threat of Belt and Road Initiative
"What are the impacts and challenges to your company as well as the construction projects after the termination of BRI projects?"	
"How your company copes with the challenges? (If any)"	
"What is your comment on Malaysian government's termination of the construction contracts with China-based contractor in Malaysia?"	
"Will you collaborate with China-based contractors when there is an opportunity in the future? Why?"	Prospect of Belt and Road Initiative

The themes were identified from the reviewed literature and nine potential questions were listed to answer the research questions. The order of questions might be vary from interview to interview depending on the flow of conversation. Furthermore, it was inevitable to ask additional questions to explore the research question and objectives. The data was captured by audio-recording the conversation and note taking. The semi-structured interview was flexible to change when there was new data collected and new insights occurred. The subsequent stage of the research relied on the quality of contributions from the respondents in the interview.

3.4 Sampling Method

The sampling technique practised in this research project was non-probability sampling. Non-probability sampling was appropriate because the probability of cases selected from the population was unknown. As this was an exploratory study, the data collected from interviews involved repeated sampling and analysis of data until data saturation was reached (Sekaran and Bougie, 2009). It was impossible to predict when the data was saturated, so there was no specific number of subjects to be sampled at the beginning of the study. Hence, the sample size depended on the heterogeneity of the population (Sekaran and Bougie, 2009).

The sampling technique used in this research project was volunteer sampling. Volunteer sampling involved two techniques, which were self-selection sampling and snowball sampling. Firstly, self-selection sampling involved publicising the need for research and followed by collecting data from the one who responded. The invitation of interview was posted on appropriate online newsgroups and discussion groups as well as e-mails to former colleagues and friends. Secondly, snowball sampling helped to identify further potential respondents, who then identified further respondents.

3.5 Data Collection Procedures

The data collection procedures in this research included setting the boundaries for the study, gathering information through semi-structured interviews and establishing the protocol for recording the information. Firstly, the site and participant were purposefully selected. The discussion about the research topic included four aspects, which were the setting (where the research conducted), the actors (who interviewed), the events (what the actors interviewed did) and the process (the evolving nature of events took place by the actors within the setting) (Creswell, 2009).

The semi-structured interviews were conducted by face-to-face, telephone and online interview, such as through social media application or e-mail internet interview, depended on the respondents' preference. The reason of selecting this data collection type was to allow respondents to provide historical information and the line of questioning can be controlled. The average duration of interviews was range from 10 to 45 minutes. As mentioned in Section 3.3, open-ended questions were asked to elicit the opinions and views from the respondents. Before the interview began, a written consent form was signed by the respondents to confirm their agreement to participate in this study. The transcription of the interview content was verified by the respondents prior to subsequent stage of the study. The overall duration of data collection was six weeks.

3.6 Analysis Method

As mentioned in Section 3.2, the analysis method used in this research was five-phased cycle. Firstly, the data was compiled into a formal database and the original data was carefully organised. The transcriptions of the interview contents were completed. Then, disassembling phase broke down the compiled data collected from the interview into smaller fragments by In Vivo code, a formal coding method which extracted directly from what the respondent himself said and was placed in quotation marks (Saldaña, 2009). The disassembling process was repeated as part of trial-and-error process of testing codes.

Next, reassembling phase involved Template Analysis, which was a type of thematic analysis. It was adopted to reassemble the dissembled data in an appropriate manner and place them under suitable themes and sub-themes to show the hierarchical list of themes. The codes were created by the development of In Vivo codes. The cycle was followed by interpreting, which used the reassembled results to narrate the opinions of the interviewees and make comparison of different views between them. The final phase was concluding, which was related to the interpretation of results by arraying them in appropriate graphics.

3.7 Research Flow

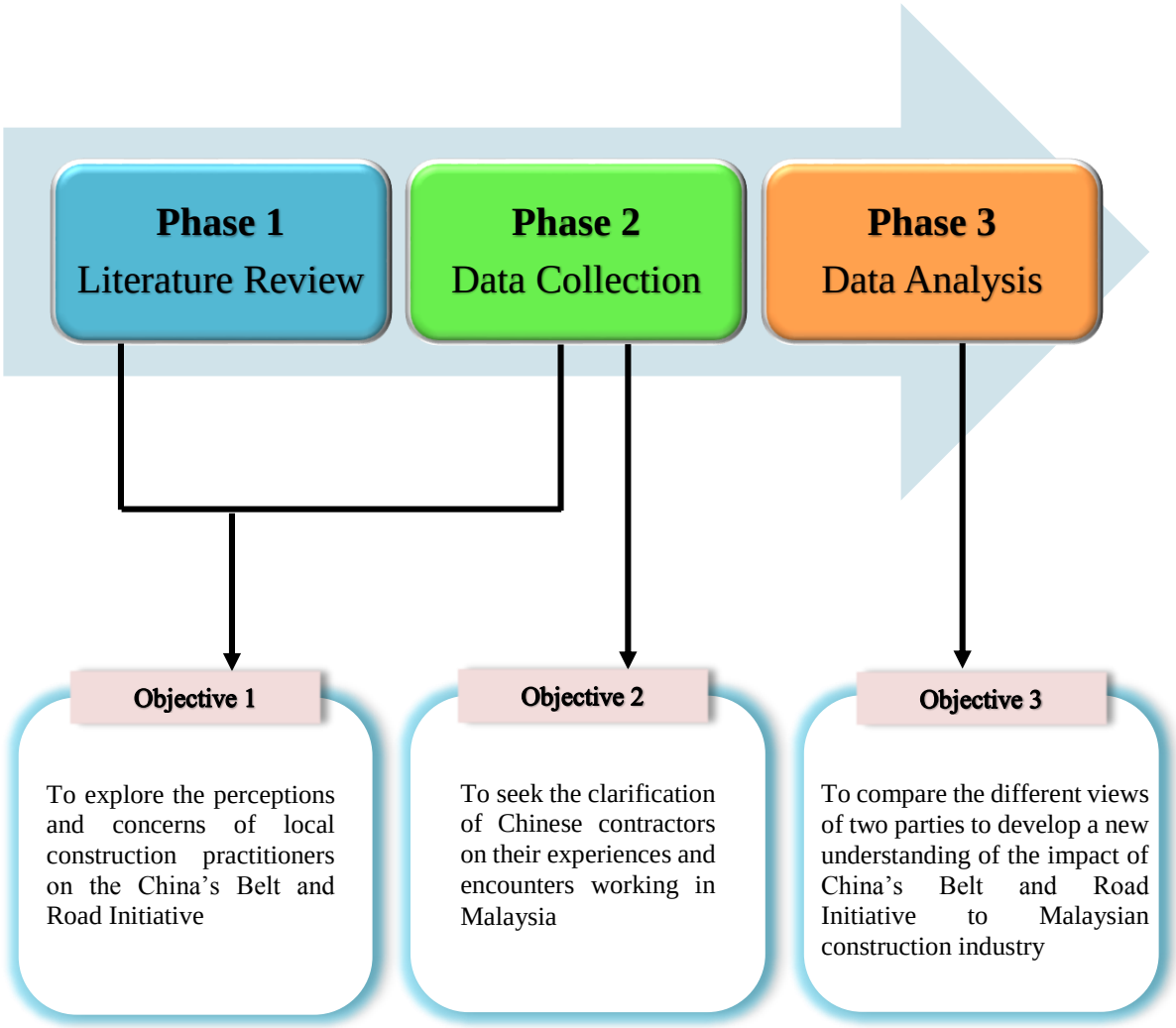

Figure 3.1: Research Flow

The research flow was illustrated in Figure 3.1. This study was divided into three phases. Firstly, previous theories about BRI implementation and perceptions on opportunities and threats of international construction were reviewed critically. Secondly, data collection method was introduced. Then, the study was continued with data analysis and discussion from the results obtained in the interviews. These phases aim to achieve the research objectives as stated in Section 1.5.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter includes Section 4.2 to report the results of the semi-structure interviews conducted and Section 4.3 to analyse the interviews transcripts. The contents of the transcripts are dissembled and the results are inferred for generalisation. The discussion on the different opinions of construction practitioners from Malaysia and China are illustrated. Lastly, the summary of findings is illustrated in Section 4.4.

4.2 Results of Interviews

There are twelve interviews conducted, nine of them are employees of Malaysian construction firms while the other three are working with Chinese construction firms. Table 4.1 summarizes the position, nature of business and country of origin of the twelve interviewees.

Table 4.1: Interviewee Profile

Interview	Position	Year of Experience	Origin	Working Experience with China
A	Quantity surveyor	2 – 5 years	Malaysia	Yes
B	Electrical engineer	Above 10 years	Malaysia	No
C	Contractor	2 – 5 years	Malaysia	Yes
D	Construction manager	Above 10 years	Malaysia	No
E	Sub-contractor	2 – 5 years	Malaysia	Yes
F	Supplier	Above 10 years	Malaysia	Yes
G	Quantity surveyor	Above 10 years	Malaysia	Yes
H	Resident engineer	Above 10 years	Malaysia	Yes
I	Resident engineer	Above 10 years	Malaysia	Yes
J	Contractor	2 – 5 years	China	N/A
K	Contractor	5 – 10 years	China	N/A
L	Structural Engineer	2 – 5 years	China	N/A

The transcriptions of the interview contents are prepared in the compiling phase. The sample of interview transcript is attached in Appendix B. The interview transcripts are then dissembled by In Vivo codes. The selected quotes are then re-examined and reassembled according to the themes. The recombination of data is

facilitated by using tabular arrangement and attached in Appendix C. Table 4.2 shows the seven themes and 17 sub-themes identified.

Table 4.2: Themes and Sub-themes of Interview Transcripts Analysed

Theme	Sub-theme
Local material priority	Cost of material
	Quality of material
	Use of local material
	Use of foreign material
Use of machineries	Capacity and capability
	Foreign machineries priority
Knowledge transfer	Technology transfer
	Attitude of learning
	Willingness to share
Working culture	Working attitude
	Communication barrier
	Expertise and experience
Quality control	Quality of work
	Supervision of work
Competition strategy	Strong financial background
	Perceptions on competitiveness
Demand of human resource	Employment opportunities

4.2.1 Local Material Priority

Interviewee B and D, who are Malaysian contractors accused that the Chinese contractors import the materials from China to execute the construction work rather than using the local material. However, a contradict statement is made by Interviewee K, a Chinese contractor:

> *"If we could find the local material and facilities, we will prioritize using the local one. Because* [it] *can save a lot of time compared to import from China."*

The view of interviewee K is supported by Interviewee F, a local respondent:

> *"... for the raw material for foundation and concrete, they get from local* [market]*, because they do not bring these from their country. Normally the cost*

of producing raw material is cheaper in local [market], *because we have the same machineries as they used. It would be expensive due to the transport cost."*

Another Chinese contractor, interviewee J elaborated that:

"China's [material] *cost is lower, because China has more factories. Our materials are very competitive, because there are many factories to produce the materials."*

In addition, a Malaysian respondent, interviewee H explained that "*the speed of delivery of material*" is another reason that Chinese contractors export domestic material to Malaysia instead of tapping into local resources. He added that most of the China-based construction companies are involved in the mega projects, so they need massive amount of materials to complete the project by the completion date as stipulated in the contract document. He noted:

"For example, the MRT station, the pile is imported from China, because only China provide the material within the short time range."

Besides, he added another factor:

"Last time I do the underground station and Merdeka Station, the ceiling is [imported] *from China. They have special shape, which only can be done by China."*

Interviewee K, a Chinese interviewee clarified that local materials are more preferable, but import from China does happen if the local materials are insufficient, such as limited size of tie rods, in which it leads to the possibility of work delay and the inability to complete the project by the deadline set by the client. He said:

"The production of this kind of material is lesser in Malaysia. We need a large amount of this material, so we will prioritize the supplier that is suitable in the market."

Interviewee B, a Malaysian respondent, suggested that a project negotiation is necessary to identify the level of priority of materials from both countries to avoid any conflict regarding the material utilization.

4.2.2 Use of Machinery

All Malaysian interviewees agreed that the machineries from China have more advanced technology and with greater capacity. Cited an example by interviewee H, the gantry crane from China can lift the girder up to 120 tonnes while that from Malaysia can lift up to 40 tonnes only. One Chinese contractor, interviewee K responded that:

> *"So far, our company has well-developed skill on the technology."*

He explained that:

> *"Considering the contract duration with the China-based contractors, client will request a completion date, then we will estimate the duration,* [and arrange] *some special equipment, we might have no choice but need to import from China or other countries."*

4.2.3 Knowledge Transfer

Two interviewees from Malaysia, interviewee D and F, complained that the Malaysian staff are unable to learn anything as the Chinese bring their own labours and do the work on their own. Interviewee I, a Malaysian interviewee concurred that:

> *"They ask the local contractors to involve in their project, but they are using workers from China, like engineers. Of course, we invest in other countries also,* [such as] *in India and Indonesia,* [but] *we bring our expert for management only. But China is different, they bring their workers all the way from China. So how our country to share their technology?"*

In contrast to allegation from interviewee D and F, interviewee H commented differently that the Malaysian construction practitioners learn something new from China. He explained on how they can learn the new technology:

"They learn new things, because whatever machineries or equipment that they want to bring to Malaysia, they need to do submission to relevant department, department of safety and machinery department for example. Normally the document is prepared by the local people. They translate, whatsoever, the method. So for the major work, we need to present to Lembaga Lebuhraya, the authority, about their technology and so on."

He also illustrated that the Chinese share their knowledge and expose the current technology by conducting presentation, factory visit and even during the conversation in the middle of the meals. A Chinese respondent, interviewee J agreed to the statement:

"When we explain our proposal during the presentation, they will learn [from us]. *Of course, the relevant person in charge will know about it. I think this will help a lot."*

Interviewee C, who is a local contractor, claimed that the Malaysian may lose out not because of the China-based contractors, but their attitude of learning and self-improving. Another local sub-contractor, interviewee E said:

"Try to work with different contractors, to learn people's culture, way of working, efficiency, et cetera.''

4.2.4 Working Culture

Interviewee H, who is a local supplier, remarked that China-based firms will complete the project instead of abandon the project. Another Malaysian respondent, interviewee F supported the comment:

"We have never experienced before that the China-based contractors do not meet the timeline. China-based companies have expertise to design everything according to the schedule. For example, you may have design failure, so you may need to redesign and recalculate all the cost. Most of the projects by China-based companies meet the timeline."

Besides, he mentioned that the Chinese contractors are working hard to complete the projects. His opinion is agreed by all interviewees from both Malaysian and China. The Chinese respondent, interviewee L explained that:

> *"I think the biggest difference is the lifestyle, it will cause the difference in efficiency of work of all construction players."*

He added:

> *"We have lesser holidays as compared to local contractors. We still work when the local people are enjoying their holidays. Our working time is longer too. I work seven days a week, but we have annual leave as well. Our standard working hour is from 7.30a.m. to 6.30p.m., sometimes we work overtime too."*

A local contractor, interviewee C said:

> *"They are strict on safety matters like rules and regulations, unlike Malaysia's standard. They wear proper uniform on site and office. They have their own discipline."*

He noted that he will report to the Department of Safety and Healthy (DOSH) when the Chinese safety managers do not follow the safety rules in Malaysia. Interviewee I, a local resident engineer complained:

> *"They want to simplify all the work. For example, if they found our drawing is difficult, they are trying to change on site, the drawing is not changed. For example, when they find it difficult to tie the rebar, they do not follow our construction method. They have a proposal, but it is hard for us, we need to review and it takes time up to three weeks."*

One local quantity surveyor, interviewee G said:

> *"They speak in English, but not very fluent. They hire translator. For example, the project manager is not good in English, so he hires local translator to help*

him. We sometimes speak in Mandarin. There is a Malay project manager, [but] *we sometimes still speak in Mandarin. When the Chinese do not understand us, for their convenience, we use English and Mandarin in the meeting."*

Interviewee J and L, who are Chinese respondents, stated that they face difficulty in communicating with local people when they first work in Malaysia. They said that their communication with the locals is getting better and smoother as for now. Another Chinese respondent, interviewee K mentioned that the Chinese staff will communicate with some words and gestures. He further explained that:

"Basically it is not an issue. Before the staff from China come to Malaysia, a training for English will be organised for them. But as a management team, we will encourage our staff to learn English. So we have training in English. I think we can understand each other through some phrases and gestures."

4.2.5 Quality Control

Interviewee D, who does not have working experience with Chinese contractors noted:

"I heard that their quality of work is poorer. Because they are fast, causing the poorer quality of work, such as plastering, this is from what I heard."

Another Malaysian respondent, interviewee E said:

"If you refer to the quality issue, for the project that I cooperated, to me the quality is not very good. The project that he did is not very good actually. Maybe it is due to convenience, causing a lot of defects."

Interviewee I, also a local respondent, supported the allegations that the Chinese produce poorer quality of work. Interviewee K, the Chinese contractor defended that Chinese contractors prioritize time while Malaysian contractors focus on quality. He noted:

"Quality, actually is more or less the same. It is only the matter of time. We have a standard for us to achieve to proceed the work. So quality is not an issue."

4.2.6 Competition Strategy

Six out of nine local interviewees claimed that *"stronger financial resources"* is the factor of increased competitiveness in the local construction industry. Interviewee I, who is a local respondent noted:

"...it influences the competitiveness of local construction players, because the Chinese can offer low tender cost, but the local people cannot make it."

A local construction manager, interviewee D said:

"Although they suffer loss, they still can carry out the work. The most important thing to them is to get the project."

The statement is supported by a Malaysian sub-contractor, Interviewee E by saying that:

"They normally come here with a large amount of fund and purposely get the projects and start to work. Maybe, their attractive point is they can hold payments up to six months. For example, after I claim this month, I can claim the first month's payment after six months."

Interviewee K, a Chinese respondent, stated:

"If fund is needed, China can invest."

4.2.7 Demand of Human Resource

Interviewee K, who is a Chinese contractor, stated that he prioritizes to hire the suitable local staff if they fit their requirement. He also highlighted that the job opportunities depend on the company who successfully bid the tender. He said:

"We have different packages and will sub to other construction companies. In this case, we will follow a standard procedure and conduct tendering. If Malaysian construction company win the tender, of course the local workers are more. So it depends on which company win the tender."

Interviewee F, who is a local supply illustrated:

"Yes, it will become competitive, but the local company will gain the benefit. Our government will not give the job directly to China. They will have a local company that will gain the tender, then they give the job to China-based company."

This is supported by interviewee A, who is another local respondent:

"I mean the local contractor might not have the experience and capital to take up such a big project. If the Chinese become the main contractor, the local contractors will have the opportunity to involve as well."

Interviewee J, a Chinese respondent, perceived that one should expose to competition in order to develop a country. He added:

"If they do not compete their products with other countries, they will not improve… A clean competition. You wouldn't improve if you're just earning money every day without competition. It depends on how you think about it."

4.3 Discussion

This section interprets the interview transcripts reassembled in Section 4.2. It summarizes the similarities and differences of the interviewees' perceptions on BRI.

4.3.1 Local Material Priority

The non-usage of local materials to be used in the construction projects in Malaysia is a major concern (Zhao and Shen, 2008). The interview finds out that Chinese contractors are not avoiding using of the local materials, as mentioned by interviewee F and K. They are using the local materials, such as raw material for concrete. The

literature highlights the reasons of importing foreign materials (Gruneberg and Ive, 2000). It is confirmed by interviewee F and K. They clarified that they import materials from China because of cheaper material cost due to the massive production in China and the speed of delivery. As the Chinese construction companies usually involve in mega projects, they require a bulk quantity of construction material to be delivered on time in to complete the project by deadline. Moreover, interviewee H and K defended that the Chinese firms will select the material from China when the material is not commonly found or even unavailable in the local market, such as material or product with unique specification or design.

It is also interesting to find that the Malaysian respondents claimed that Chinese contractors who do not support the use of local materials are those with no working experience with Chinese contractors, such as interviewee B and D. However, Malaysian contractors with actual working experience with Chinese contractors indeed support the explanation by the Chinese contractors.

4.3.2 Use of Machinery

According to Calver (2018), the Chinese contractors use mega-machineries to complete huge infrastructure projects. All Malaysian interviewees agreed that Chinese contractors need to use machineries from China, because local machineries are lack of capacity and capability to undertake to mega projects. Meanwhile, the machineries from China has greater capacity and capability of the machineries, such as bridge girder erection machine and gantry crane. Furthermore, interviewee H and K made clear that Chinese contractors need to import their machineries to complete their contract obligations by the stipulated completion date, which cannot be achieved by using local machineries. In regard of these, Malaysian interviewees conceded that the usage of foreign machineries is necessary.

4.3.3 Knowledge Transfer

As had been found in several studies (Ofori, Leong and Pin, 2002; Weerasinghe and Ekanayake, 2013; Omar, et al., 2019), majority of the respondents agreed that they have learnt from China. In fact, the Malaysian interviewees C, E, G and H, who have working experience with Chinese contractors, are grateful that the Chinese contractors are helpful as they are willing to share their valuable experiences and expertise as well as introduce the current technology to them. However, interviewee D, F and I

contradicted that the latest technology is not transferred completely as the actual work is done by the Chinese staff. Consequently, the local construction players are very dependent on the Chinese contractors to operate the advanced machineries with the latest technical knowledge.

There was a general consensus from the Malaysian respondents that local construction players should not solely and heavily rely on the transfer of technology through the sharing of knowledge by the Chinese contractors, but the willingness to learn from China is important as well. From the interviews, the results unveil that the Malaysian respondents are looking forward to collaborate with China-based companies to gain more knowledge. In spite of all, the Malaysian construction practitioners are satisfied to work with the Chinese contractors as technology transfer, both direct and indirect, is considered to have taken place.

4.3.4 Working Culture

The interviews uncover the professionalism of the Chinese contractors that they have never failed to complete a construction project, as mentioned by interviewee H. Furthermore, the local interviewees reached the consensus that the Chinese contractors are unlikely to delay the construction works due to their high efficiency of work. The priority of Chinese contractors in the construction projects is the speed of construction. Besides, it was noted by interviewee D, G and H, that Chinese contractors are hardworking and efficient. As the Chinese contractors are perceived as workaholic, the Chinese respondents, who are interviewee K and L, clarified that it could be due to different lifestyles, lesser holidays and longer working hours. The procurement of work by Malaysian and Chinese contractors are slightly different. Interviewee C noted that the China-based construction firms are very strict on their rules and regulation throughout the construction process. Despite that, it is surprising to find that the Chinese contractors will sometimes disobey the instructions on site. Consequently, safety issue becomes a major concern, as stated by interviewee H. Therefore, the local construction players have to spend more time to deal with this issue.

The commonly mentioned problem in dealing with Chinese contractors is the language disadvantage (Xu, 2008). Confirming the reviewed literature, there was a general consensus by the local interviewees that communication with the Chinese construction practitioners has caused inconvenience due to different languages spoken, particularly the local respondents who do not understand or speak Mandarin. However,

this was further argued by the Chinese respondents that communicating with the Malaysian workers is not an issue as they learned and improved the language.

In a nutshell, this interview discovers that the Chinese contractors have higher efficiency than local contractors and both parties have distinct idea on the communication issue and procurement of work. On top of that, both countries have different working cultures and lead to different outcomes of the projects from the aspects of time, cost and quality.

4.3.5 Quality Control

The local interviewees acknowledged that Chinese contractors produce poorer quality of work compared to local contractors. Due to their focus on the speed of delivering the project, there will be many defects, as stated by interviewee E. Meanwhile, the Chinese interviewee explained that they prioritize time while Malaysian contractors prioritize quality. The Chinese contractors still achieve the specific standard of quality. However, there is no constructive evidence from the local interviewees to prove the aforementioned quality of work by Chinese contractors. Therefore, future research is recommended to further investigate this issue.

4.3.6 Competition Strategy

As mentioned in the literature (Ofori and Zhao, 2006; Zhang and Feng, 2017), the offer in construction contract from Chinese contractors is more attractive to the local developers as compared to that from local contractors, such as lower contract price and longer period of honouring certificate. These explain why many local developers prefer Chinese construction companies. According to local respondents, interviewee D and I, the Chinese contractors can complete the projects even though they suffer loss in the project. Consequently, six out of nine local interviewees complained that China's financial resources have intensified the competitiveness among local contractors. Meanwhile, the Chinese respondents refused to clarify the reason behind this issue. Therefore, it could be explained as the strategy of Chinese contractors to enter the Malaysian construction market.

4.3.7 Demand of Human Resource

Confirming the literature, the local interviewee A and F expressed that the Chinese investment creates employment opportunities in local construction industry, which

provides more exposure to the industry players and boosts the nation's economy. In addition, interviewee A believed that the local construction players have additional job opportunities because working with Chinese contractors enables them to participate in the major projects in Malaysia. Interviewee K, a Chinese contractor noted that they sub-let most of their work to local industry players, which means the difference lies in management only. The interview also discovers that the Chinese firms prioritize the local staff if they fit their requirements, as affirmed by interviewee K.

Generally, the interviewees from both countries concluded that the local construction practitioners should "think out of the box" and perceive positively towards the improved competitiveness in the local construction industry. It was recommended by interviewee B that negotiations can be taken place before the commencement of construction work to avoid any conflict of interests. The Chinese respondents view competition as a motivation to improve themselves, rather than loss of job opportunities.

4.4 Summary of Findings

In a nutshell, the similarities and differences in perceptions of the interviewees from both countries are illustrated in Figure 4.1. It worth to note that the analysis found that most of the differences perceived by the Malaysian interviewees are perceived by those who has no real life working experience with the Chinese contractor.

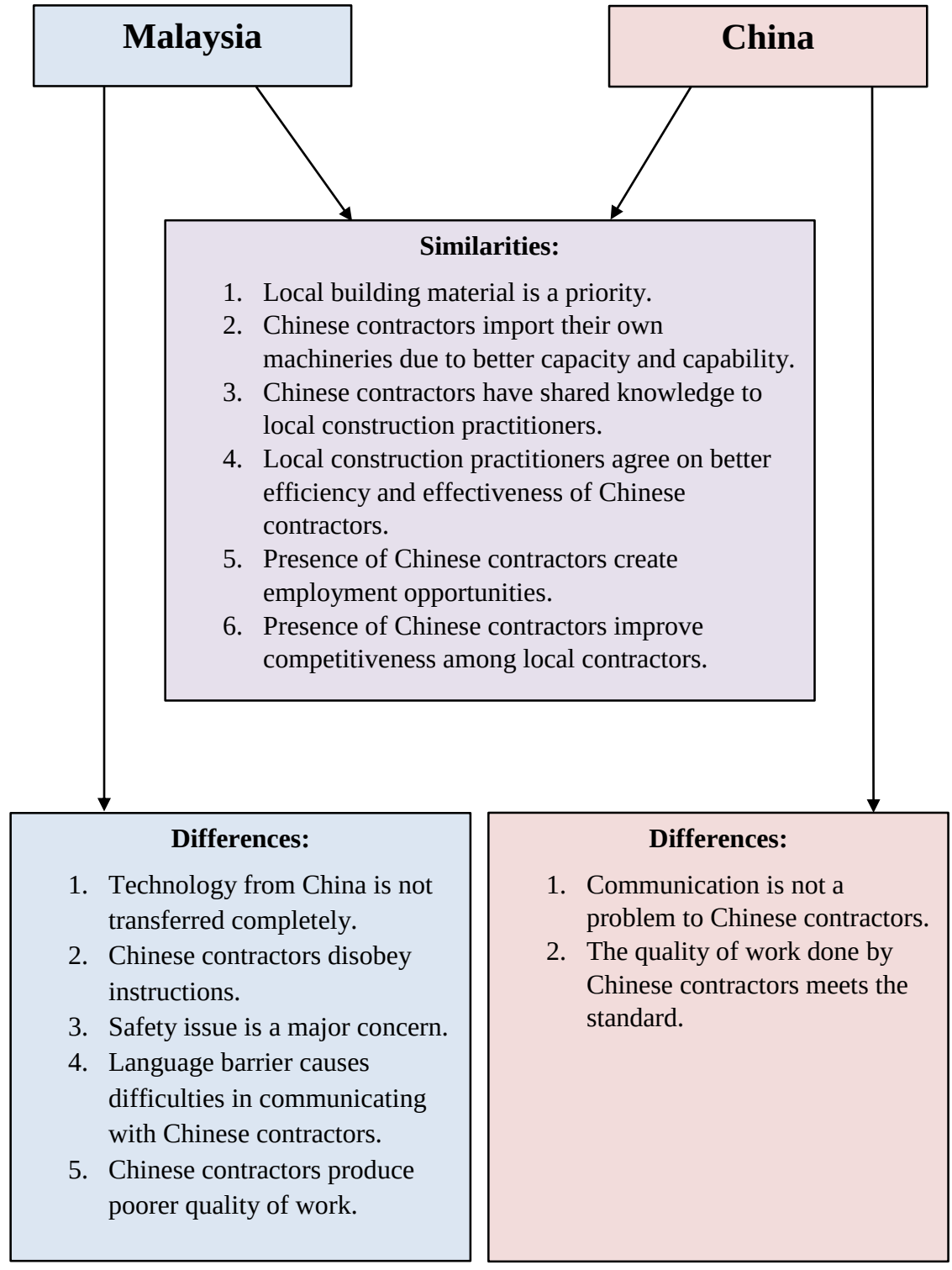

Figure 4.1: Similarities and Differences in Perceptions of Malaysian and Chinese interviewees

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes the overall findings in this study. The research objectives are fulfilled and justified by the research findings as described in Section 5.2. The contribution of this research study is explained in Section 5.3. Lastly, Section 5.4 and Section 5.5 illustrate the research limitations and research recommendations.

5.2 Research Findings

This study has identified the contradict perceptions between the local construction practitioners and the Chinese contractors on BRI. The local contractors perceived the Chinese contractors import their own materials, machineries and human resources as well as unlikely to transfer their advanced technology. However, there are differences among the local practitioners according to their exposure and experiences working with Chinese contractors. The local industry players who have working experiences with the Chinese contractors contradicted that the Chinese contractors usually utilize local materials and hire or sub-let the work packages to local construction practitioners. The use of machineries from China is essential because local machineries are incapable in undertaking the mega infrastructure projects. Moreover, they clarified that Chinese contractors are willing to share their knowledge. Besides, the local construction players reached the consensus that Chinese contractors are more efficient and have shared their knowledge to the local practitioners. Some of the local industry players perceived that presence of Chinese contractors improve competitiveness in the local construction industry and leads to reduced job opportunities. Meanwhile, the open-minded local interviewees viewed competition differently and contradicted that involvement of Chinese contractors in mega projects will increase job opportunities.

According to the clarification from Chinese contractors, they perceived that local materials, machineries and human resources are the priority of Chinese contractors. They agreed that Chinese contractors have better efficiency of work due to lesser holidays and longer working hours than Malaysian. Furthermore, the Chinese contractors highlighted various methods to transfer technology to the local construction practitioners, such as visiting factory and conducting presentation.

Moreover, they clarified that communicating with Malaysian construction players is not an issue, because they have attended training before working in Malaysia. Furthermore, they made clear that the quality of work meets the standard as required.

This study discovers that the difference in perceptions of Malaysian construction players is due to lack of working experience with Chinese contractors. Therefore, "Working Experience with Chinese contractors" is the explored moderating variable that have significant effect on the perceptions on impact of BRI to Malaysian construction industry. The relationships between perceptions on international construction and BRI are illustrated in Figure 5.1. In conclusion, the research aim and objectives listed in the Introduction chapter are fulfilled.

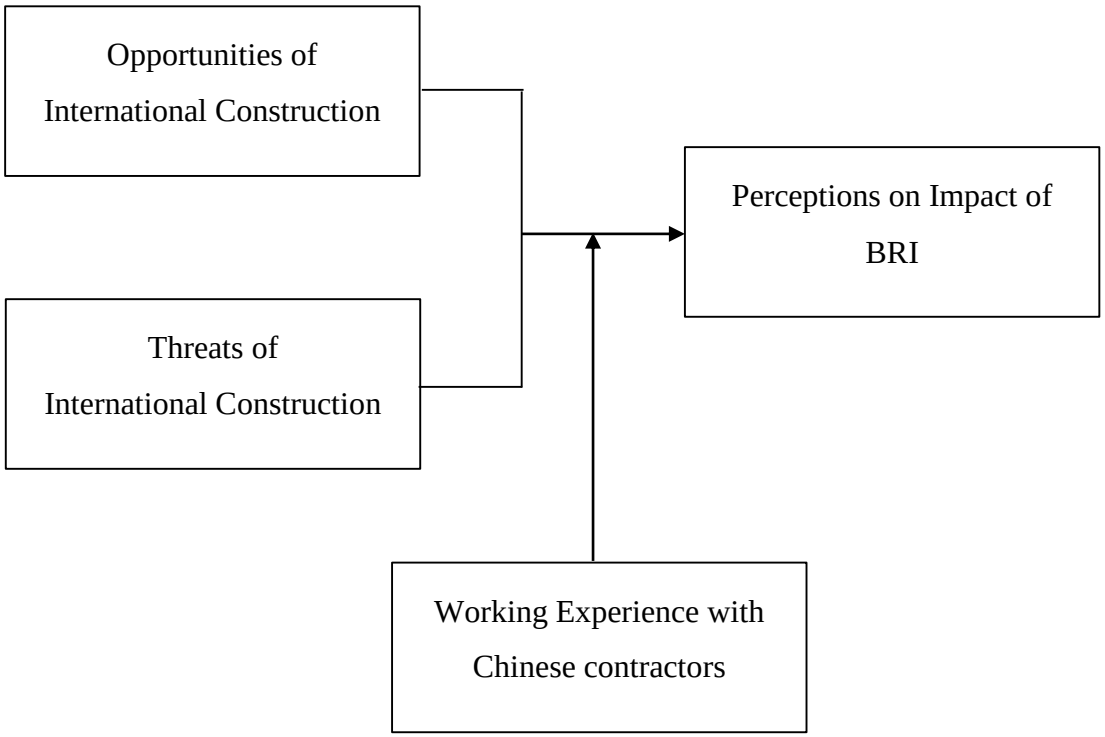

Figure 5.1: Relationships between Perceptions on International Construction and BRI

5.3 Contributions of Research Study

This study has three contributions. Firstly, this research is an exploratory study that specifically investigate the perceptions of local construction players to BRI. Therefore, it helps to develop better understanding about BRI from the clarification of both Chinese respondents and local respondents who have working experience with the Chinese contractors. Secondly, the useful findings of this study help to raise the

awareness of Chinese construction players to develop possible course of action to clarify the opportunities associated with BRI implementation. Lastly, this study is beneficial for the local construction players who wish to improve their strength to undertake international projects. Malaysians can have better understanding about the business strategy of the international construction companies in this improving competitive industry.

5.4 Research Limitations

Out of twelve interviews, this study involves three Chinese interviewees only, which means the ratio of Malaysian respondents to Chinese respondents is 3:1. It would be better if future research achieve a balance of weightage in the number of respondents from both countries. Moreover, this research focuses on exploring the perceptions on BRI impact to the Malaysian construction industry. It will be good if future research adopt quantitative approach to infer the results from this study for generalisation. Lastly, this study does not focus on perceptions based on the nature of construction business. It would be interesting to investigate the perceptions on BRI impact by comparing different opinions from various natures of construction business, such as consultancy, contractor, construction building material supplier and developer.

5.5 Research Recommendations

To avoid any misperceptions of BRI, both Malaysian and Chinese construction players are encouraged to communicate more effectively to enhance mutual understanding and clarify any misunderstanding between them. In order to deal with the improved competitiveness in local construction industry, the local construction players shall upgrade their technical expertise in undertaking mega projects. They must be willing to learn diligently from the Chinese contractors as the latter have higher technical capabilities and advanced technologies. As reviewed in this study, the Chinese investment translates to improved infrastructure development in Malaysia. Hence, Malaysians should “think out of the box” and anticipate the potential economic opportunities derived from BRI in the future. This study also finds out that the local construction players are looking forward to collaborate with Chinese contractors. Therefore, the local construction players are recommended to take an optimistic approach and think positively regarding the presence of Chinese contractors in the local construction industry.

REFERENCES

Abdul-Rahman, H., Takim, R. and Min, W.S., 2009. Financial-related causes contributing to project delays. *Journal of Retail & Leisure Property*, 8(3), pp.225-238.

Adler, N. J. and Gundersen, A., 2007. *International dimensions of organizational behavior*. 5th ed. United States of America: Case Western Reserve University.

Bahari, B., 2016. RM12.5 billion Kuala Linggi International Port (KLIP) development launched. *New Straits Times Online,* [online] 1 Nov. Available at: <https://www.nst.com.my/news/2016/11/185144/rm125-billion-kuala-linggi-international-port-klip-development-launched> [Accessed 11 January 2019].

Baker McKenzie, 2017. *Belt & Road: Opportunity & Risk.* [online] Available at: <https://www.bakermckenzie.com/-/media/files/insight/publications/2017/10/belt-road/baker_mckenzie_belt_road_report_2017.pdf> [Accessed 31 March 2019].

Calver, T., 2018. The mega-machines helping China link the world. *BBC News Online,* [online] 20 Jul. Available at: <https://www.bbc.com/news/world-asia-china-41206772> [Accessed 4 April 2019].

Chan, M. H. T., 2018. The Belt and Road Initiative–the New Silk Road: a research agenda. *Journal of Contemporary East Asia Studies*, 7(2), pp.104-123.

Channel NewsAsia, 2016. China set to build, finance Malaysia's East Coast Rail Line project. *Channel NewsAsia Online,* [online] 31 Oct. Available at: <https://www.channelnewsasia.com/news/asia/china-set-to-build-finance-malaysia-s-east-coast-rail-line-proje-7766916> [Accessed 20 March 2019].

Cheng, L.K., 2016. Three questions on China's "Belt and Road Initiative". *China Economic Review*, 40, pp.309-313.

Cooper, D. R. and Schindler, P. S., 2014. *Business Research Methods*. 12th ed. New York: McGraw-Hill/Irwin.

Creswell, J. W., 2009. *Research design: Qualitative, quantitative and mixed methods approaches*. 3rd ed. California: Sage Publications.

Delaney, J. E. and Mohan, S., 2016. *The Effect of the Level of Competition on Construction Bid Quality.* [online] Available at: <https://www.cmaanet.org/sites/default/files/2018-04/effect-level-competition.pdf> [Accessed 3 March 2019].

Engineering News-Record, 2018. *ENR 2018 Top 250 Global Contractors 1-100.* [online] Available at: <https://www.enr.com/toplists/2018-Top-250-Global-Contractors-1> [Accessed 15 February 2019].

Feng, D.H. and Liang, H., 2018. Understanding the Issues Surrounding the Belt and Road Initiative (BRI). *China and the World: Ancient and Modern Silk Road*, 1(3), pp.1-9.

Fung Business Intelligence Centre, 2015. *The Silk Road Economic Belt and the 21st Century Maritime Silk Road.* [online] Available at: <https://www.fbicgroup.com/sites/default/files/The%20Silk%20Road%20Economic%20Belt%20and%2021st%20Century%20Maritime%20Silk%20Road%20MAY%2015.pdf> [Accessed 10 January 2019].

García-Herrero, A. and Xu, J., 2019. *Countries' perceptions of China's Belt and Road Initiative: A big data analysis* [online] Available at: <http://bruegel.org/wp-content/uploads/2019/02/WP-2019-01final.pdf> [Accessed 3 April 2019].

Gruneberg, S. and Ive, G.J., 2000. *The economics of the modern construction firm*. London: Macmillan Press.

Gunhan, S. and Arditi, D., 2005. Factors affecting international construction. *Journal of construction engineering and management*, 131(3), pp.273-282.

Hillman, J. E., 2019. *Influence and Infrastructure*. [online] Available at: <http://csis-prod.s3.amazonaws.com/s3fs-public/publication/190122_Hillman_Influen...ceandInfrastructure.pdf> [Accessed 31 March 2019].

HKTDC Research, 2017. *Prospects for the Malaysia-China Kuantan Industrial Park and Kuantan Port.* [online] Available at: <https://hkmb.hktdc.com/en/1X0AA0CO/hktdc-research/Prospects-for-the-Malaysia-China-Kuantan-Industrial-Park-and-Kuantan-Port> [Accessed 11 January 2019].

Hongxiu, L., 2018. Public Diplomacy in the Belt and Road Initiative within the New Media: Theories and Practices. *Athens Journal of Mass Media and Communications*, 4(3), pp.219-236.

Huam, H.T., Thoo, A.C. and Dan, J.C., 2018. Does the Belt and Road Initiative in the East Coast of Peninsular Malaysia Create Win-win Partnership with China?. *Journal of Arts & Social Sciences*. 1(2), pp.98-105.

Huang, Y., 2016. Understanding China's Belt & Road initiative: motivation, framework and assessment. *China Economic Review*, 40, pp.314-321.

Islam, M., 2019. *Year of the Pig: Can China's Belt and Road Initiative save the world from a mud fight?*. [online] Available at: <https://www.eulerhermes.com/en_global/economic-research/insights/Year-of-the-pig-Can-China-s-Belt-and-Road-Initiative-save-the-world-from-a-mud-fight.html> [Accessed 31 March 2019].

Junchi, M., 2017. The challenge of different perceptions on the Belt and Road Initiative. *Croatian International Relations Review*, 23(78), pp.149-168.

Konings, J., 2018. *Trade impacts of the Belt and Road Initiative* [online] Available at: <https://think.ing.com/uploads/reports/Tradebelt_final2.pdf> [Accessed 1 April 2019].

Kuo, M. M. and Lai, C. C., 2006. Linguistics across Cultures: The Impact of Culture on Second Language Learning. *Journal of Foreign Language Instruction*, 1(1), pp.1-10.

Lau, R., 2017. China's Belt and Road: What's in it for Malaysia?. *The Borneo Post Online,* [online] 3 Sept. Available at: <https://www.theborneopost.com/2017/09/03/chinas-belt-and-road-whats-in-it-for-malaysia/> [Accessed 2 January 2019].

LehmanBrown, 2017. *The Belt and Road Initiative.* [online] Available at: <https://www.lehmanbrown.com/wp-content/uploads/2017/08/The-Belt-and-Road-Initiative.pdf> [Accessed 27 May 2018].

Lei, Z., Tang, W., Duffield, C., Zhang, L. and Hui, F.K.P., 2017. The impact of technical standards on international project performance: Chinese contractors' experience. *International Journal of Project Management*, 35(8), pp.1597-1607.

Leong, T., 2017. Speed and scale of Chinese contractors ignite fear in Malaysia. *The Straits Times Online,* [online] 7 May. Available at: <https://www.straitstimes.com/asia/speed-and-scale-of-chinese-contractors-ignite-fear-in-malaysia> [Accessed 15 January 2019].

Lim, G., 2018. Resolving the Malacca Dilemma: Malaysia's Role in the Belt and Road Initiative. In: A. Arduino and G. Xue, eds. 2018. *Securing the Belt and Road Initiative*. Palgrave, Singapore.

Liu, W. and Dunford, M., 2016. Inclusive globalization: Unpacking China's belt and road initiative. *Area Development and Policy*, 1(3), pp.323-340.

Liu, X., Zhang, S. and Feng, X., 2017, January. Comparative Analysis of International Competitiveness of Chinese-American Automobile Industry. In *2016 2nd International Conference on Economics, Management Engineering and Education Technology (ICEMEET 2016).* Atlantis Press.

Malay Mail, 2017. Three projects under One Belt One Road initiative signed in Beijing. *Malay Mail Online,* [online] 13 May. Available at: <https://www.malaymail.com/s/1376061/three-projects-under-one-belt-one-road-initiative-signed-in-beijing> [Accessed 10 January 2019].

Mselle, J., 2014. An Evaluation of Enabling Factors for Technology Transfer in Tanzania Construction Industry. *International Journal of Construction Engineering and Management*, 3(3), pp.99-104.

National Bureau of Statistics of China, 2018. *China Statistical Yearbook 2018.* [online] Available at: <http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm> [Accessed 3 March 2019].

New Deep Water Terminal, 2016. *The development of the new deep water terminal.* [online] Available at: <http://www.kuantanport.com.my/en_GB/port-development/ndwt/> [Accessed 10 January 2019].

New Straits Times, 2018. 'We cannot afford this': Malaysia pushes back on China's big projects. *New Straits Times Online,* [online] 21 Aug. Available at: <https://www.nst.com.my/news/nation/2018/08/403620/we-cannot-afford-malaysia-pushes-back-chinas-big-projects> [Accessed 31 March 2019].

Ofori, G., 1992. Construction Technology Transfer: Issues and Options.

Ofori, G. and Zhao, Z.Y., 2006. Chinese contractors and international construction: Tentative analytical models and research agenda. In *The CRIOCM 2006 International Symposium on Advancement of Construction Management and Real Estate*.

Ofori, G., 2000. Challenges of construction industries in developing countries: Lessons from various countries. In: Ssegawa, J. and Ngowi, A. B., eds. *2nd International Conference on Construction in Developing Countries: Challenges Facing the Construction Industry in Developing Countries*. Gaborone, 15-17 November 2017.

Ofori, G., Leong, C. and Pin, T., 2002. Impact of foreign contractors on Singapore construction industry: a qualitative study. *Engineering, Construction and Architectural Management*, 9(1), pp.16-28.

Ohashi, H., 2018. The Belt and Road Initiative (BRI) in the context of China's opening-up policy. *Journal of Contemporary East Asia Studies*, 7(2), pp.85-103.

Omar, R., Hua, T.K., Sallehuddin, A.M., Sarpin, N., Yahya, M.Y., Chen, G.K., Mohamed, S. and Masrom, M.A.N., 2019. Implementation of Technology Transfer in Mass Rapid Transport (MRT) Project in Malaysia. *International Conference on Built Environment and Engineering 2018 - "Enhancing Construction Industry Through IR4.0"*. 20 February 2019. EDP Sciences.

Omar, R., Takim, R. and Nawawi, A.H., 2008. Importing international technology through international technology transfer (ITT) projects in construction: Synthesis of ITT projects models. *Asian Social Science*, 4(8), pp.38-46.

Ong, H. S., 2018. Please look after affected workers and environment after cancelling ECRL says Bentong rep. *The Star Online,* [online] 25 August. Available at: <https://www.thestar.com.my/news/nation/2018/08/25/please-look-after-affected-workers-and-environment-after-cancelling-ecrl-says-bentong-rep/> [Accessed 15 January 2019].

Ooi, T. C., 2019. Malaysia looks to better transparency in BRI projects. *New Straits Times Online*, [online] 10 Mar Available at: <https://www.nst.com.my/business/2019/03/467801/malaysia-looks-better-transparency-bri-projects> [Accessed 4 April 2019].

Park, J.L., Yoo, S.K., Lee, J.S., Kim, J.H. and Kim, J.J., 2015. Comparing the efficiency and productivity of construction firms in China, Japan, and Korea using DEA and DEA-based Malmquist. *Journal of Asian architecture and building engineering*, 14(1), pp.57-64.

Pendrakowska, P., 2018. Poland's perspective on the Belt and Road Initiative. *Journal of Contemporary East Asia Studies*, 7(2), pp.190-206.

People's Daily, 2018. China speed: World amazed by railway project completed within 9 hours. *People's Daily Online,* [online] 25 January. Available at: <http://en.people.cn/n3/2018/0125/c90000-9419908.html> [Accessed 4 April 2019].

PlanGrid, 2017. *5 Common Causes of Cost Overruns in Construction Projects.* [blog] 1 November 2017. Available at: <https://blog.plangrid.com/2017/11/5-common-causes-of-cost-overruns-in-construction-projects/> [Accessed 30 March 2019].

Project Management Institute, 2017. *Project Management Job Growth and Talent Gap Report // 2017-2027*. [pdf] Newtown Square, USA, Anderson Economic Group. Available at: <http://www.pmi.org/-/media/pmi/documents/public/pdf/learning/job-growth-report.pdf> [Accessed 4 April 2019].

Sachdeva, G., 2018. Indian Perceptions of the Chinese Belt and Road Initiative. *International Studies*, 55(4), pp.285-296.

Saldaña, J., 2009. *The coding manual for qualitative researchers*. California: Sage Publications.

Saunders, M., Lewis, P. and Thornhill, A., 2016. *Research Methods for Business Students*. 7th ed. Italy: Pearson.

Sekaran, U. and Bougie, R., 2009. *Research methods for business: A skill building approach*. 5th ed. United Kingdom: John Wiley & Sons.

Silin, Y., Kapustina, L., Trevisan, I. and Drevalev, A., 2017. China's economic interests in the "One Belt, One Road" initiative. *SHS Web of Conferences*. Czech Republic. 19 October 2017. EDP Sciences.

Summers, T., 2016. China's 'New Silk Roads': sub-national regions and networks of global political economy. *Third World Quarterly*, 37(9), pp.1628-1643.

Tan, S. and Achariam, N., 2017. *China investments put Malaysia at risk, warn MP, economist.* [online] Available at: <https://www.themalaysianinsight.com/s/12213> [Accessed 30 March 2019].

Tan, S. M. and Fong, K., 2017. *Cover Story: Local contractors feel the heat* [online] Available at: <https://www.theedgemarkets.com/article/cover-story-local-contractors-feel-heat> [Accessed 30 September 2018].

Teoh, S., 2018. KL-Singapore high-speed rail costs above S$37b with interest: Lim Guan Eng. *The Straits Times Online,* [online] 1 June. Available at: <https://www.straitstimes.com/asia/se-asia/hsr-costs-above-37b-with-interest-kl-says> [Accessed 11 January 2019].

The Straits Times, 2018. East Coast Rail Link cancellation will not affect job opportunities: Malaysia minister. *The Straits Times Online,* [online] 24 Aug. Available at: <https://www.straitstimes.com/asia/se-asia/east-coast-rail-link-cancellation-will-not-affect-job-opportunities-malaysia-minister> [Accessed 15 January 2019].

Weerasinghe, K.B. and Ekanayake, L.L., 2013. Technology transfer to local construction industry through foreign contractors: barriers and enablers.

Xavier, G., 2018. Benefits and risks of the OBOR partnership. *New Straits Times Online*, [online] 9 July. Available at: <https://www.nst.com.my/opinion/columnists/2018/07/388961/benefits-and-risks-obor-partnership> [Accessed 20 March 2019].

Xinhua, 2015. *China's Belt and Road Initiative benefits world: experts.* [online] Available at: <https://english.gov.cn/news/top_news/2015/10/15/content_281475212268936.htm> [Accessed 30 June 2018].

Xinhua, 2018. *BRI brings Chinese infrastructure know-how to developing countries, says U.S. expert* [online] Available at: <https://eng.yidaiyilu.gov.cn/home/rolling/75783.htm> [Accessed 31 January 2019].

Xinhua, 2018. *Feature: Chinese technology transfer boosts railway know-how in Malaysia.* [online] Available at: <http://www.xinhuanet.com/english/2018-09/07/c_137452537.htm> [Accessed 30 March 2019].

Xu, Q., 2008. Coping with Cultural to Speaking English in the Chinese Context. *Asian Social Sciences*, 4(12), pp.83-85.

Ye, K., Lu, W. and Jiang, W., 2009. Concentration in the international construction market. *Construction Management and Economics*, 27(12), pp.1197-1207.

Yin, R. K., 2011. *Qualitative Research from Start to Finish*. New York: Guilford Publications.

Yunus, R., 2017. Local contractors losing out to foreign rivals. *The Malaysian Reserve Online*, [online] 3 Nov. Available at: <https://themalaysianreserve.com/2017/11/03/local-contractors-losing-foreign-rivals/> [Accessed 23 January 2019].

Zhao, Z.Y. and Shen, L.Y., 2008. Are Chinese contractors competitive in international markets?. *Construction Management and Economics*, 26(3), pp.225-236.

Zhou, C., 2018. *Announcement of Annual Results for the year ended 31 December 2018.* [online] Available at: <http://en.ccccltd.cn/investorrelations/announcement/201903/P020190329688273941201.pdf> [Accessed 15 February 2019].

APPENDICES

APPENDIX A: Interview Guide Sample

Interview Question

1. **Experience of working with Chinese contractors**
    a. Have you deal with China-based contractors before?

2. **Approach of Chinese contractors in Malaysian construction business**
    a. How China-based contractors execute the construction work in Malaysia?
    b. In your opinion, how China-based contractors different with Malaysian contractors in carrying out the construction work?

3. **Opportunity of Belt and Road Initiative**
    a. What is your opinion on the impacts of BRI/ presence of China-based contractors in Malaysia?

4. **Threat of Belt and Road Initiative**
    a. Does the Belt and Road Initiative negatively affect you and your company? Why?
    b. What are the impacts and challenges to your company as well as the construction projects after the termination of BRI projects?
    c. How your company copes with the challenges? (If any)
    d. What is your comment on Malaysian government's termination of the construction contracts with China-based contractor in Malaysia?

5. **Prospect of Belt and Road Initiative**
    a. Will you collaborate with China-based contractors when there is an opportunity in the future? Why?

About Yourself

1. What is your gender?
    - Male
    - Female

2. How long is your working experience?
    - Less than 2 years
    - 2 to 5 years
    - 5 to 10 years
    - 10 years and above

3. Which of the following best described the nature of your company's business?
    - Consultancy
    - Construction Business including main contractors, sub-contractors etc
    - Construction Building Material Supplier
    - Plant and Equipment Supplier
    - Manufacturer

4. Which of the following best described your role in your company?
    - Architect
    - Civil & Structural Engineer
    - Mechanical & Electrical Engineer
    - Quantity Surveyor
    - Contractor
    - Sub-contractor
    - If others, please state:

      _____

5. What type of projects you have involved? (You may tick more than one)
    - Public building
    - Private building
    - Commercial
    - Industrial
    - Infrastructure

APPENDIX B: Interview Transcript Sample

Interview: E

Audio: 24:35

Transcribed: 22 February 2019

[00:00]

Interviewer: Did you deal with China-based contractor before?

Interviewee: Yes.

Interviewer: So do you mind to tell me the name of the company?

Interviewee: Errr NT Engineering International Sdn. Bhd. if I'm not mistaken.

Interviewer: May I know what kind of project have you work with them?

Interviewee: One project. They are my main sub-contractor and I'm their structure contractor. I'm their aluminum formwork contractor.

Interviewer: Oh, you're a contractor right?

Interviewee: I am contractor.

Interviewer: Okay.

Interviewee: Sub-contractor.

Interviewer: What of project ya? Sorry.

Interviewee: High rise.

[01:00]

Interviewer: Okay. In your opinion, how China-based contractors different with Malaysian contractors in carrying out the construction work?

Interviewee: Emm maybe they monitor the works more. For example, one of the sub, that do carpenter work, although the sub-con of carpenter got supervisor, but China also locate one supervisor under the main contractor, who specifically monitor the carpenter work. Same goes to steel bar. They locate a supervisor that specifically monitor the steel bar work. Same goes to concrete. Malaysia's style is just to locate a person to monitor everything.

[02:00]

Interviewer: Why do they appoint so many supervisors?

Interviewee: Maybe they feel… I think that they want to have someone to be responsible when something happened.

Interviewer: So when there's something happened, they will find the supervisor?

Interviewee: Yes. Such as quality issue, defect. They will treat the supervisor like how they treat the sub-con. And I have a supervisor, he has supervisor to monitor.

Interviewer: So that mean there are two similar position, two supervisors?

Interviewee: Correct. Meaning one position will have two supervisors. One is theirs, one is ours. Understand?

Interviewer: Oh that's quite awkward.

Interviewee: So actually I'm dealing with him, because he is my client. So something like this.

[03:00]

Interviewer: I see.

Interviewee: And for the reason of why there's so many Malaysian contractors here, if you refer to the quality issue, for the project that I cooperated, to me the quality is not very good. The project that he did is not very good actually. Maybe it's due to convenience, causing a lot of defects.

Interviewer: Oh you mean they want to finish fast?

Interviewee: Yes. They cause defects maybe because they want to finish fast. Secondly, they're rich.

Interviewer: How to say? If rich….

Interviewee: Contractors here from China are very rich. They can bid the tender because they allow the developer to extend the payment duration. So they're easier to get the project.

Interviewer: Oh I see.

[04:00]

Interviewee: Ya. Now usually the China-based contractors in Malaysia are top 10 contractors in China. They normally come here with a large amount

of fund and purposely get the projects and start to work. Maybe, their attractive point is they can hold payments up to six months.

Interviewer: That means they didn't get six months of payment?

Interviewee: Not that they don't get the payment. It's like… For example, after I claim this month, I can claim the first month's payment after six months.

Interviewer: Okay.

Interviewee: So they have a high turnover of fund. This is very attractive to the developers. So that is their selling point. Previously I worked with China Construction Third Engineering Bureau Co., Ltd.

Interviewer: What does it means?

[05:00]

Interviewee: CCCC has many bureau, they have 16 branches. I dealt with the third bureau.

Interviewer: Oh so it's a subsidiary company right?

Interviewee: Yes. In term of executing work, I think they will show their expertise obviously. Maybe the Malaysian supervisors don't show off their profession. It'll feel like, they purposely come and point you out, questioning you, whether you are knowledgeable. So, to me, their way of supervising work is better.

Interviewer: So to you is better?

Interviewee: Yes. And it's stricter. Maybe it's not a good news for us, the sub-con. But to them, being strict is good. From their perspective is good, not my perspective.

[06:00]

Interviewer: Why?

Interviewee: Because when they're being strict, maybe I spend 7 days to complete the work, it becomes 10 days to complete.

Interviewer: Is there any conflict when there's two supervisors?

Interviewee: I think no. Because after I've completed my work, he will deal with my supervisor. For example, I am a sub-con for concreting, I have

supervisor for concreting, and they have supervisor for concreting too. So maybe when I have problem with concreting, I will look for my supervisor. They have an exact person for them to deal with. For example, any problem with steel work, look for the supervisor of steel work. They have a system like that, but Malaysian main contractors don't practise this. Usually one person supervises everything, like steel, carpenter and concrete work.

[07:00]

Interviewer: How about material utilization? They use own material or material in Malaysia?

Interviewee: They use materials in Malaysia, for the company I'm dealing now. But the previous China-based contractors, they import the materials from China. Such as NT Engineering International Sdn Bhd.

Interviewer: What is the company that uses local material?

Interviewee: CCCC.

Interviewer: How about the material used by CCCC for the TRX project?

Interviewee: Actually they use both local and China's material. China Construction Third Engineering Bureau Co., Ltd. usually use local material. They use China material also, maybe because they think that the local material is not good enough. Second point is cheap. The material from China is cheap.

[08:00]

Interviewer: How about the quality?

Interviewee: I think the quality is more or less the same. Because the raw material here is more expensive. It's more worth if the material imported to here in one or two containers, because he's main con. But it's not worth for sub-con, because the quantity is too less.

Interviewer: How about the knowledge exchange? Did they share their knowledge with you?

Interviewee: Yes, maybe they share their knowledge with me because I'm young. My supervisors are born in 90's. My client is elder than me.

[09:00]

Interviewer: Oh you're so young.

Interviewee: Ya. Maybe they look at us as junior. At least, I don't think that they will keep the knowledge within themselves.

Interviewer: Can you share what kind of knowledge that they share with you?

Interviewee: Their expertise in their profession. Mainly in construction, including their own experience. They will share it when we are chatting.

Interviewer: Maybe they also share the knowledge with others too? Not only to juniors.

Interviewee: For this I don't know.

[10:00]

Interviewer: How about technology transfer?

Interviewee: How to say the technology? I think it's similar with Malaysia.

Interviewer: As I know, the steel construction in TRX project. Something like that?

Interviewee: I think it's almost the same. Because they use labour from Malaysia.

Interviewer: They didn't bring new technology to Malaysia?

Interviewee: Got. If they bring in their system here, they demand to use their people. For example, I'm doing the aluminum formwork system, our system is called as flat tie system, and their system is called as tie root system.

[11:00]

Interviewer: I see.

Interviewee: They're the same, which are also system formwork. Just that our method is different. They think that they can complete one level in three days, but our flat tie system in Malaysia takes 7 days. They only bring in their tie root system with the condition that using their own people. If they use local labour here, it has to take 7 days.

Interviewer: They are okay with taking 7 days to complete?

Interviewee: They have no choice but to accept it.

Interviewer: They are main con right?

Interviewee: Yes.

Interviewer: They have the power to control right?

Interviewee: Correct.

Interviewer: Then they can just bring in their people to do tie root system right?

[12:00]

Interviewee: Yes they can. It's depends on how you compare it. The salary for Bangladesh worker is RM60 per day, but the China worker is RM200 to RM300. Depends on how they choose.

Interviewer: Oh the payment for workers from China is quite high.

Interviewee: Yes, because most of them are skilled worker. In addition, hiring the skilled workers shall include their permit, accommodation, high salary and raising their family. More than 20 skilled workers are having such a high salary. So, a labour may earns up to RM8000 to RM9000 per month.

Interviewer: Client willing to pay this much of money?

Interviewee: No, this is paid by the main contractor. For example, if China-based contractors don't like Malaysian system, they can bring in their system to Malaysia unless it's fully operated by China-based workers. If they use Bangladesh workers for their system, it will be a mess.

[13:00]

Interviewer: They don't share the system formwork with Malaysian at all? Even one person?

Interviewee: No. They usually use people in Malaysia, because it will be expensive to bring in people from Malaysia. I mean the cost. Usually, if the whole team of China-based contractors develop themselves in Malaysia, they usually use local workers.

Interviewer: The tie root system from China, you said only use their own worker?

Interviewee: I said unless use their own workers. They can pay the price, then they can use their skilled workers, which can complete one level in three days. If they can't pay the price, they just use the local workers.

[14:00]

Interviewer: Why don't they just introduce the tie root system in Malaysia and let the local workers to do it?

Interviewee: They can. But you see, Malaysia is using system formwork now. If you suddenly bring in something new, some more the project cost is few million, will you invest in the system on someone who doesn't know how to operate it?

Interviewer: Nope.

Interviewee: Hahaha of course no. The cost in Malaysia and China is comparable as well. They can pay this price. For example, the skilled workers from China and Bangladesh skilled workers, as I mainly use Bangladesh workers, the salary for Bangladesh workers is RM80 per day, but for China-based contractors is maybe RM200 to RM300 per day.

[15:00]

Interviewer: One day? Wow.

Interviewee: But this skilled worker in China, maybe not RM200 to RM300, but maybe RMB200 to RMB300 only. Because it's considered that they're working overseas, their price will be high. Do you understand?

Interviewer: Understand.

Interviewee: So if the China-based contractors want to use the technology from China, unless they use their own workers.

Interviewer: Is there any client agrees that the China-based contractors to bring in their technology, but let some of the Malaysian workers to try to use it?

Interviewee: Yes, there is. But so far, maybe one out of 100 projects is like this. Usually they come to Malaysia, they will follow the rules in Malaysia.

[16:00]

Interviewer: Okay. Do you think there's any country growth with the presence of China-based contractors?

Interviewee: I think yes. Because the workers from China is much better than the local one.

Interviewer: More effective?

Interviewee: Yes.

Interviewer: How about the job opportunities? Because of Belt and Road Initiative, we now have many big projects like train projects.

Interviewee: I think there's no difference.

Interviewer: I mean not only to construction industry. Maybe other industry?

[17:00]

Interviewee: I think there's help. Such as technology, the technology in China is more advanced than Malaysia. You mean is there any country's growth because of the influx of China-based contractors right?

Interviewer: Yes correct.

Interviewee: Oh yes. Because there's many things that Malaysia acquire now, it's after China, such as Weishang, Alibaba, Alipay, Shoppee, Food Panda, and Grab. The ideas are came from China.

[18:00]

Interviewer: Oh I see.

Interviewee: Many Malaysian realize that China has something that Malaysia don't, so they bring in to Malaysia. Similarly, people from China will question: 'Why you don't have this, don't have that'. So maybe that's why they operate such things in Malaysia.

Interviewer: Oh. Do you think that the presence of China-based contractors will increase the competitiveness among the local contractors?

Interviewee: Yes, definitely.

Interviewer: How big is the impact?

Interviewee: If you refer to main contractor, the Chinese will be their competitors.

[19:00]

Interviewer: In your opinion, is there any impact to your project or your company after the termination of major projects, such as ECRL?

Interviewee: No. Because I'm doing private projects only.

Interviewer: Do you have any comments on the cancellation of these projects?

Interviewee: I don't have any comments, because it doesn't affect me.

Interviewer: To your works?

Interviewee: No impact too. I didn't involve in train project, I only involve in high rise project. Hahaha.

Interviewer: Lastly, would you cooperate with China-based contractors when you have the opportunities?

[20:00]

Interviewee: Yes. My new project now is cooperate with China-based contractors.

Interviewer: What kind project?

Interviewee: In Sri Kembangan, behind Aeon. There's three towers, two towers are mine.

Interviewer: I see. Okay.

Interviewee: That's China-based company too, named as Qingjian Group.

[21:00]

Interviewer: Can you summarize on why you're willing to work with the China-based contractors?

Interviewee: When there's job, I'll do. Hahaha.

Interviewer: But you can choose to work with local contractors, instead of China-based contractors.

Interviewee: Of course, if the local contractor offers me a job, I will do it. If the Chinese offers me a job, I'll do it too. Because I'm a sub-contractor.

Interviewer: I heard that you have a lot of working experience with the China-based contractors.

Interviewee: This is my third project with them.

Interviewer: Why is it so coincident?

Interviewee: I don't know. The job just comes this way. I seldom look for it.

[22:00]

Interviewer: Is your project big? Usually.

Interviewee: I built the structure of these two towers.

Interviewer: Consider is big projects? As you said the China-based contractors are top 10 in China, how do they get to find you as a partner?

Interviewee: I think it's because of fate and recommendations from others. I'm just a sub-con for structure.

Interviewer: How about the language?

Interviewee: For me, it's not a problem. I have half-year experience as a worker in China.

Interviewer: As a general worker?

[23:00]

Interviewee: Nope, actually I'm an engineer. I was a production engineer there. For half year.

Interviewer: So you start to learn their language?

Interviewee: Their language, their phrases.

Interviewer: Have you see any scenario that the China-based contractors are unable to communicate with the local workers?

Interviewer: Oh. The Chinese are very smart. They can even communicate with Bangladesh.

Interviewee: How to communicate?

Interviewer: I don't know actually. Previously the project that I worked with NT, the concreters that the China-based supervisor managed were Bangladesh. But they can communicate. The Chinese speak mandarin and the Bangladesh speak their own language. They can understand each other. As the middle person, I can't understand them.

[24:00]

Interviewer: Wow first time I heard something like this. There's translator is it?

Interviewee: No. The Bangladesh workers just gesturing and the Chinese know what it means.

Interviewer: Oh okay. That's all from me. Thank you.

APPENDIX C: In Vivo codes under Themes

Table C-1: In Vivo codes of Sub-themes under Local Material Priority

Sub-theme	Interviewee group	In Vivo code
Cost of material	Malaysia	*"Second point is cheap. The material from China is cheap."*
		"Because the raw material here is more expensive. It's more worth if the material imported to here in one or two containers, because he's main con. But it's not worth for sub-con, because the quantity is too less."
		"The material can be cheap, because of the workmanship. They have a lot of resources."
	China	*"The metal processing in Malaysia is not developed yet, so their cost is higher."*
		"China's cost is lower, because China has more factories. Our materials are very competitive, because there are many factories to produce the materials."
Quality of material	Malaysia	*"I think the quality is more or less the same."*
	China	-
Use of local material	Malaysia	*"Some if they can obtain in Malaysia they will use Malaysia. Some if they think is cheaper in China then they will bring over."*
		"We have to accept because during the negotiation in the project based. If you don't agree then from the beginning you say you have to use the local one, you agree then maybe 50/50 like this."
		"They use the raw materials from local. I think they import plywood from their homeland."
		"They use materials in Malaysia, for the company I'm dealing now. But the previous China-based contractors, they import the materials from China. Such as NT Engineering International Sdn Bhd."

Table C-1 (Continued)

		"Actually they use both local and China's material. China Construction Third Engineering Bureau Co., Ltd. usually use local material. They use China material also, maybe because they think that the local material is not good enough."
		"We like to have our in-house supplier, our construction companies says that we have our own quarry and our quarry can help to get other quarry to supply to meet the demand for each month. Although we have quarry on our own, but their requirement is about 100,000 tons per month, we only can supply 20,000 to 30,000 tons per month, so we couldn't meet their target. So we as a quarry, we try to find other nearby sources to complete the task."
		"But for the raw material for foundation and concrete, they get from local, because they don't bring these from their country. Normally the cost of producing raw material is cheaper in local, because we have the same machineries as they used. It would be expensive due to the transport cost."
		"They used purely local material for my project."
		"They intend to import material from China, but expensive for them. So they import from local."
		"They only get certain materials from local, like raw material."
		"The China-based contractors must engage a local supplier from Malaysia to control the material for all the job. Like CCCC, they engage a local supplier to control the trades and get the material. They call it as 'Business Chamber'."
	China	*"If we could find the local material and facilities, we will prioritize using the local one. Because can save a lot of time compared with import from China."*
		"For SUKE project, basically 80% and above is local material, unless few particular material, which is hardly found in Malaysia. Such as bailey"

Table C-1 (Continued)

		"Most of the material are obtained in Malaysia."
		"The raw material is definitely imported locally. We have a specialized supplier, which is YTL to supply the concrete."
		"We have material department. They have many contacts. They can select the suppliers after comparing their prices."
Use of foreign material	Malaysia	*"Malaysia has our material, but they bring their own material from China."*
		"They have their own standard, they have their own material and bring all the way from China."
		"For steel structure, it's cheaper to get from their country."
		"For example, the MRT station, the pile is imported from China, because only China provide the material within the short time range."
		"Depends on the project, if bulk quantity, time constraint, the price, I think we better to order from China. If small quantity, it's no point we spend three months to order the material from China."
		"Mostly the mega project, they take from China. Last time I do the underground station and Merdeka Station, the ceiling is from China. They have special shape, which only can be done by China."
		"Regard to ECRL, it's different. The machineries and workers are from China."
	China	*"The production of this kind of material is lesser in Malaysia. We need a large amount of this material, so we will prioritize the supplier that is suitable in the market."*
		"Only some of the material are obtained from China due to cost issue or unable to obtain in Malaysia."

Table C-1 (Continued)

	"Some materials, like tie rod, the available size is small, like 16mm. The bigger size is not available in Malaysia, then only we import from China, like 20mm and 32mm." *"Furthermore, the cycle time to buy local material is long. For example, I need 20-30 days to buy the local material. Although the cycle time is similar to purchase from China, but we can obtain the sufficient amount. So we purchase from China after considering the time and cost aspects."*

Table C-2: In Vivo codes of Sub-themes under Use of Machineries

Sub-theme	**Interviewee group**	**In Vivo code**
Capacity and capability	Malaysia	*"The Chinese contractors use their advanced technology in Malaysia. Like using steel structure, can build one floor in three days. Malaysians use conventional method to build buildings."* *"Errr local maybe not so advance."* *"They have what Malaysia has, and they are more advanced."* *"The tower crane is special, I think. It's not operated from the bottom, but attach to the building. The local one is operated at the bottom. So they have their method to build upwards."* *"They have the technology to produce what the demands need."* *"Okay, mostly the technology they are bring from China. The rare one is we have the gantry crane. The gantry crane can lift 30 meters. The weight is around 120 tons, Malaysia one around 40 tons only. "* *"They have the technology to produce what the demands need."*

Table C-2 (Continued)

		"Okay, mostly the technology they are bring from China. The rare one is we have the gantry crane. The gantry crane can lift 30 meters. The weight is around 120 tons, Malaysia one around 40 tons only. "
	China	*"So far, our company has well-developed skill on the technology."*
Foreign machineries priority	Malaysia	*"Let say if you give the whole project to China, because they say they can provide machineries and labour, so there will be complete whole project hand over to them. So you no need to worry about short labour or quality, because ensured by them."* *"They will bring their machineries in. Let say those lorry, cement mixer, all these they will bring in."* *"Not to their standard."* *"After that they will take back. Or they maybe they can just sell second hand to local people."* *"They use machineries from China, like backhoe, excavator and lorry."* *"Most of the machineries are get from their place, because it's cheaper."* *"For the equipment, whatsoever, they bring from China. We don't have their technology here."* *"They bring all the machineries from China, like bored pile machine, excavator, because it's cheaper and I don't know why!"*
	China	*"Considering the contract duration with the China-based contractors, client will request a completion date, then we will estimate the duration, some special equipment, we might have no choice but need to import from China or other countries."* *"There is very less special equipment in Malaysia, and it's essential in our construction."*

Table C-2 (Continued)

	"Taking SUKE highway as an example, we do more on bridges instead of roads. For bridge, we need a lot of special equipment, such as bridge girder erection equipment."
	"As I know, it's hardly to find the gantry crane that lift 50 tons. Even if there is, it may be rented to other construction project. Then we couldn't get it in a short time. So we will import from China to make sure the construction is completed as stated by client."

Table C-3: In Vivo codes of Sub-themes under Knowledge Transfer

Sub-theme	**Interviewee group**	**In Vivo code**
Technology transfer	Malaysia	*"We need them to come and share the technology so that we can learn."*
		"Actually in fact we can learn a lot from China technology also. Like those advanced machinery. Their skill. You see the PNB building, they use three of four days, one level, do you know that?"
		"So you know this technology I don't think Malaysia will got it."
		"They're learning from China. But also I think they cannot be independent somehow."
		"Actually Malaysia's technology is very slow. Learn up the technology. We should learn from China, because they improve a lot. Malaysia is very slow."
		"If you suddenly bring in something new, some more the project cost is few million, will you invest in the system on someone who doesn't know how to operate it? Hahaha of course no."
		"So if the China-based contractors want to use the technology from China, they want use their own workers."

Table C-3 (Continued)

	“If they bring in their system here, they demand to use their people. For example, I’m doing the aluminum formwork system, our system is called as flat tie system, and their system is called as tie root system. They’re the same, which are also system formwork. Just that our method is different. They think that they can complete one level in three days, but our flat tie system in Malaysia takes 7 days. They only bring in their tie root system with the condition that using their own people. If they use local labour here, it has to take 7 days." *"I think there’s help. Such as technology, the technology in China is more advanced than Malaysia."* *"No, this is paid by the main contractor. For example, if China-based contractors don’t like Malaysian system, they can bring in their system to Malaysia unless it’s fully operated by China-based workers. If they use Bangladesh workers for their system, it will be a mess."* *"Nope, because everything come with the cost. Normally they will bring their own people to do all the checking. If you refer to direct contact to knowledge transfer and technology transfer, nope."* *"They want to transfer their technology to other countries so that their country can improve, so their government support them."* *"How the local people can operate? Normally the manual is in Chinese."* *"We will miss the technology transfer from them."* *"I did MRT project last time, so I have experience on railway. When they haul the project, I have lesser opportunities."* *"Yes. I think half of the project they use labour from China. Mostly on the equipment. For normal work like the excavator, whatsoever, they use the local one."*

Table C-3 (Continued)

		"They learn new things, because whatever machineries or equipment that they want to bring to Malaysia, they need to do submission to relevant department, department of safety and machinery department for example. Normally the document is prepared by the local people. They translate, whatsoever, the method. So for the major work, we need to present to Lembaga Lebuhraya, the authority, about their technology and so on."
		"Perhaps, they ask the local contractors to involve in their project, but they are using workers from China, like engineer. Of course, we invest in other countries also. In India and Indonesia, we bring our expert for management only. But China is different, they bring their worker all the way from China. So how our country to share their technology?"
	China	*"Yes, definitely. When we explain our proposal during the presentation, they will learn. Of course, the relevant person in charge will know about it. I think this will help a lot."*
		"Yes, definitely. We will gather with the client and consultants weekly and monthly to discuss about the technology used in the project. Client will provide us a construction plan, our engineer will evaluate and improve it, even save cost. After we try to make improvement, we will submit to client. After we discussed and get approved, then only we proceed with it. I think this is one of the methods to transfer knowledge and technology. Engineers always have this kind of meeting."
		"We have a presentation to explain our proposal and method statement to get the approval from the consultant. We will discuss to determine which method is workable."
Attitude of learning	Malaysia	*"So the local contractors may lose not because of the China-based contractors, but because of themselves."*
		"I can say Malaysian are ego. They don't want to learn and explore."

Table C-3 (Continued)

		"In good way, we can learn from them. We have different culture. At the same time, we also have to cooperate with them, like share opinions and knowledge to each other."
		"Yes I will collaborate with them, because I want to have new knowledge and experience and learn about their culture. We need to develop our skill as well. We are learning inside a box now, so why not we learn outside the box? We can compare our mindset and improve."
		"Try to work with different contractors, to learn people's culture, way of working, efficiency, et cetera."
	China	*"There are something deserve us to learn from Malaysia. The documents are solid. For example, the information will be completed as the work is completed. Unlike in China, some information is not sufficient after the work is completed and it needs to be added on."*
		"Their management system and documentation deserve us to learn from them. I think that it's good. Like the construction report on site, record."
Willingness to share	Malaysia	*"I learn about their safety standard. As a sub-contractor, they have a safety induction, it's like a passport to the site. Before you enter the site, you have to attend the induction."*
		"Their expertise in their profession. Mainly in construction, including their own experience. They will share it when we are chatting."
		"Yes, maybe they share their knowledge with me because I'm young. Maybe they look at us as junior. At least, I don't think that they will keep the knowledge within themselves."
		"I think they did share the knowledge with the local people."
		"Just overview only. They do the detailed work."

Table C-3 (Continued)

		"Yes. Normally the China contractors are very good. They're willing to share whatever technology they have. For example, when there is a new technology, they will have a presentation, factory visit to China, to expose us what is their current technology." *"No, they totally didn't share knowledge with others. They're proud of their expertise."*
	China	-

Table C-4: In Vivo codes of Sub-themes under Working Culture

Sub-theme	Interviewee group	In Vivo code
Working attitude	Malaysia	*"I think their attitude can be changed. If let say my project say "non-smoking area" and I will set a smoking area for them, they have to follow."* *"They are strict on safety matters like rules and regulations, unlike Malaysia's standard. They wear proper uniform on site and office. They have their own discipline."* *"They are the main contractor, so they are like ruler on the site, so we have to follow their opinion, because we want to tell them the procedures in Malaysia. If safety, we have our own law, OSHA and FMA. They have their law as well, but different. As for safety, they have their own standard, so we have to follow their standard, the site are registered under their names. To compare, the law is similar, but Malaysia is slightly lack on safety part. But they are very strict, punctual and don't miss one thing in safety."* *"They have their own style. We give them ideas from Malaysian's mentality, they have their own schedule, step-by-step working. Their work is very good, follows procedure and timing."* *"The China safety manager doesn't follow the Malaysia's safety rules. So we reported to DOSH."*

Table C-4 (Continued)

	"They want to follow their rules, but I think that they should follow Malaysian's law once they touch down in Malaysia. They cannot follow their rules and procedures, because this is my country. For safety, we have JKKP, Jabatan Keselamatan Kesihatan Pekerja, we have two acts, which are OSHA and FMA, and they cannot bring their own law to Malaysia. We already advise them to stop their progress, because the work is potential harmful and may cause injury or death. Out of nowhere, the China contractor disagrees our rules and regulation."
	"Let say concreting work, we are not allowed to work at night in that project. We don't have the permit from the authority. We stopped their work because it pasts 7p.m., but still they want to work until night. Yes, we can give them a light and guidance, but it's noisy and people want to sleep, because that area has houses. Plus, the concreting lorry is slow, the tiny stones dropped. We don't have enough material to do at night, like barricade the area and traffic controller. We don't want any accidents to be happened, but they disobey our instruction."
	"My main con delays like six months. Mostly the staff is Malaysian. But the Chinese staff from MCC doesn't delay more than six months."
	"As a sub-contractor, what I can see is they are workaholic."
	"Delays only about few days. Based on my experience, Malaysian's delay is about a month. Chinese, maybe not few days, but not more a month, like one week or 10 days."
	"As what I see is they are focus on their work. Unlike the Bangladesh workers, resting and chatting with others. The Chinese workers are very hardworking, they work from 8am to 5pm."
	"Such as the sub-con hired here, they rest for some time and that's how they end the day. As for China-based workers, they come to work with the purpose of raising themselves and have the attitude that 'I have to perform well'."

Table C-4 (Continued)

	"What I see is they don't follow the law. They only do the works. As they anyhow must…with the local contractor, so they don't need to worry about others and focus on the work. Then the local authority settles for them."
	"Something like… The authorities will 'kacau', but the China-based contractors don't bother about them and focus on their work. Then the local contractors will help them to settle it. They focus on their scope of work only."
	"Their speed is very fast."
	"As I can see they can produce the outcome in a fast speed."
	"In my opinion, the China-based construction companies work really hard and therefore up to the standard, where we can get the completed project in proper timeline we set."
	"As you know, the culture of China-based companies, they always work fast. Some of their small Malaysian companies may not work up to their standard."
	"The Chinese's speed is faster."
	"They are more efficient and hardworking."
	"There is lack of safety but the progress is very good. We inform them to use PPE. But sometimes when we're not there, they 'curi curi' don't use the PPE. Mostly is the working at height. They're not afraid of working at height. It's common for them."
	"But I like their work. If I'm free and single like you, mostly my attitude will be like them. No problem, because I'm young."
	"Let say I want to follow their working culture, working for 24 hours whatsoever, yes, I like their style, but I have limitation, I have family, I cannot afford this."

Table C-4 (Continued)

		"Plus, they can do the work with lesser people. So we think that they're hardworking to fulfill the task."
		"They want to simplify all the work. For example, if they found our drawing is difficult, they're trying to change on site, the drawing isn't changed. For example, when they find it difficult to tie the rebar, they don't follow our construction method. They have a proposal, but it's hard for us, we need to review and it takes time up to three weeks."
		"It's hard for us to control them, in term of construction. In term of budgeting, they will try to reduce the cost. For example, our construction cost is RM40 per meter, they will reduce the cost."
		"It's not easy to control them, because when we ask them to do something, but they try to do it fast. They don't bother about safety, sometimes."
		"We had an experience with them. We asked them to close the excavation area and rectify something, but the China-based contractor doesn't want to rectify it. They don't follow the order. They are angry and ask the excavator to backfill the area with soil. Later on we need to excavate again."
	China	*"I think that the labours from China are definitely more hardworking, because they can work overtime every day. This is cannot achieved by the Malaysian."*
		"I think the biggest difference is the lifestyle, it will cause the difference in efficiency of work of all construction players."
		"I feel that, maybe the local workers are punctual, they will leave on time."
		"They have more rest time too. The working time and overtime is a lot."

Table C-4 (Continued)

		"If someone is appointed to in charge of certain task, he will pay more attention on it, like site walk more often and greet the workers." *"We have lesser holidays as compared to local contractors. We still work when the local people are enjoying their holiday. Our working time is longer too. For example, the Malaysian leave their work at 5 p.m., but our team will request us to work longer until 6pm or 6.30p.m."* *"No, we don't enjoy the public holidays in Malaysia. I work 7 days a week, but we have annual leave as well. Our standard working hour is from 7.30a.m. to 6.30p.m., sometimes we work overtime too."*
Communication barrier	Malaysia	*"Low level contractors only speak mandarin, higher level can speak different languages. For example, The project manager for our project can speak English. So it depends on their education level."* *"Actually China people, they know English. Labour, maybe they don't know much. The workers, lower range people. But supervisor, above all these, they know English. So by right, communication is not a problem."* *"They don't know how to speak English. They don't hire someone who can speak English, they just hire a translator. I think they can say some words only. Some can speak English, but not in a proper way."* *"We have to send our Chinese friends to communicate with them."* *"We have to deal with them for sometimes to understand their phrases. We usually call the name of the construction structure in English, but they call them in Mandarin. They have their own phrases, but we are used to speak with English."* *"Most of them cannot speak in English. Just a few people, I think mostly the top management can speak in English."*

Table C-4 (Continued)

	"The Chinese are very smart. They can even communicate with Bangladesh. Previously the project that I worked with NT, the concreters that the China-based supervisor managed were Bangladesh. But they can communicate. The Chinese speak mandarin and the Bangladesh speak their own language. They can understand each other. "
	"They have translator and some local Chinese people to work with them."
	"Based on our experience in working with this China habour, most of the time we face a lot of miscommunication, because of language barrier. They don't speak English. They have translator but he can't be 24 hours with them."
	"They speak in English, but not very fluent. They hire translator. For example, the project manager is not good in English, so he hires local translator to help him. We sometimes speak in Mandarin. There's a Malay project manager, we sometimes will speak in Mandarin when the Chinese don't understand us for their convenience. We use English and Mandarin in the meeting."
	"Not too fluent. We can understand. If we don't understand, we can ask them to elaborate."
	"As I can see, they just communicate with the Chinese's engineer. The engineer will communicate with the general labour."
	"They can't. But I think, what I see, they sub the work, mostly they have local people to communicate with the Bangladesh worker, like our Malaysian Chinese."
China	*"When we first work in Malaysia, we had difficulty in communicating with the local people. I think it is fine with me now as I've worked here for more than two years."*
	"Yes I speak with English. But my English is not very fluent."

Table C-4 (Continued)

		"Basically it's not an issue. Before the staff from China come to Malaysia, a training for English will be organised for them. But as a management team, we will encourage our staff to learn English. So we have training in English. I think we can understand each other through some phrases and gestures." *"And we're lucky in Malaysia because there are more Chinese. So the management team who doesn't speak English fluently, it's more convenient to them as there are Chinese here. They can speak Mandarin to help."* *"As what I see, the Chinese staff communicate with the Bangladesh through few words and gestures."* *"When we first work here, we have communication problem with them. Language and lifestyle are different. It gets better after some time as we know each other's lifestyle. Now we don't have any problem communicating with them."* *"We have our own general worker. We will communicate with both Chinese and Malaysian workers."* *"We have our foreman in our company. He keeps in touch with the Bangladesh workers for some time. Of course, they don't fully speak in the same language, but they can use some gestures and specific phrases to understand each other."*
Expertise and experience	Malaysia	*"I think China can win the tender if they have high standard and deliver the progress very well. From there, the local contractors have to learn from their mistake."* *"In term of executing work, I think they will show their expertise obviously. Maybe the Malaysian supervisors don't show off their profession. It'll feel like, they purposely come and point you out, questioning you, whether you are knowledgeable."*

Table C-4 (Continued)

	"They have a lot more experiences than us in train project. Efficient." *"We have never experience before that the China-based contractors don't meet the timeline. China-based companies have expertise to design everything according to the schedule. For example, you may have design failure, so you may need to redesign and recalculate all the cost. Most of the projects by China-base companies meet the timeline."* *"They've done a lot of projects, and we cannot deny that they've done a good job."* *"They have a lot of expert, this is one of the opportunities for them to work."* *"We do this very expensive, but they use this and this they can complete, better we follow the China's method, for example."* *"But they have good technology, they're able to do work with minimum formation. For example, to finish first stage of the pier, they just use three to four people only to erect formwork, install rebar and the concrete within three days. Our local Bangladesh, local people, I think they use six to seven people to finish that work. They can work very fast."* *"The China-based contractors are talented and experienced in doing the job actually."* *"China has a lot of experience actually."* *"For big project, I think we can collaborate with them, because they know what to do with the big project. They have more experience, such as port, infrastructure and bridge."* *"They have their skills."* *"Malaysian never expose to big project, so they need expert here if they want to involve in big project."*

Table C-4 (Continued)

	China	*"For example, our construction enterprises have built many different types of bridges. Their skill is relatively well-developed. When they come to Malaysia, they can transfer the technology to here. Maybe there are many Malaysian have built the bridge before, but overall it's not as much as China. They have better competitive strength, they can transfer the technology to other countries."* *"Our management team need some Chinese workers to support them. If they want to do something on site, they will need some Chinese workers to help them. For example, we have many foreman to lead their workers on site. The Chinese foreman understands more about the requirement of the management team."*

Table C-5: In Vivo codes of Sub-themes under Quality Control

Sub-theme	**Interviewee group**	**In Vivo code**
Quality of work	Malaysia	*"The quality will be ensured by them."* *"I heard that their quality of work is poorer. Because they're fast, causing the poorer quality of work, such as plastering, 'squareness', this is from what I heard."* *"If you refer to the quality issue, for the project that I cooperated, to me the quality is not very good. The project that he did is not very good actually. Maybe it's due to convenience, causing a lot of defects."* *"They cause defects maybe because they want to finish fast."* *"...but the quality is to the standard."* *"I think their quality is up to standard, but different with Australia or Japan. I will rate China as 6/10, but Australia and Japan is 8/10."*

Table C-5 (Continued)

		"Yes, their performance is good. I think Chinese contractors prioritize time, Malaysian contractors prioritizes quality."
Supervision of work	Malaysia	*"So we have to cover everything. Too busy and we couldn't monitor the work and insufficient manpower."* *"Hmm maybe they monitor the works more. For example, one of the sub, that do carpenter work, although the sub-con of carpenter got supervisor, but China also locate one supervisor under the main contractor, who specifically monitor the carpenter work. Same goes to concrete. Malaysia's style is just to locate a person to monitor everything."* *"So, to me, their way of supervising work is better. And it's stricter. Maybe it's not a good news for us, the sub-con. But to them, being strict is good. From their perspective is good, not my perspective. Because when they're being strict, maybe I spend 7 days to complete the work, it becomes 10 days to complete."* *"Because after I've completed my work, he will deal with my supervisor. For example, I am a sub-con for concreting, I have supervisor for concreting, and they have supervisor for concreting too. So maybe when I have problem with concreting, I will look for my supervisor. They have an exact person for them to deal with. For example, any problem with steel work, look for the supervisor of steel work. They have a system like that, but Malaysian main contractors don't practice this."*
	China	*"We have a specific department that responsible for the equipment. Our division of work is very detailed, such as equipment department, material department, engineering department, surveyor department, and tester."* *"China contractors are more active in executing the work. For example, we will monitor the progress more closely as compared to the Malaysian contractors, especially the important progress."*

Table C-6: In Vivo codes of Sub-themes under Competition Strategy

Sub-theme	Interviewee group	In Vivo code
Strong financial background	Malaysia	*"Although they suffer loss, they still can carry out the work, as what I heard. The most important thing to them is to get the project."* *"Their contract price can be cheap. That's why nowadays the structure work is offered to China-based contractors, architectural work is offered to local contractors. It becomes two main contractors existed."* *"Contractors here from China are very rich. They can bid the tender because they allow the developer to extend the payment duration. So they're easier to get the project."* *"Now usually the China-based contractors in Malaysia are top 10 contractors in China. They normally come here with a large amount of fund and purposely get the projects and start to work. Maybe, their attractive point is they can hold payments up to six months. For example, after I claim this month, I can claim the first month's payment after six months."* *"So they have a high turnover of fund. This is very attractive to the developers. So that is their selling point."* *"Basically they start with politics. China has their own world bank."* *"Most of the China construction companies are GOC, which is government-owned company, where they build the company on government's fund."* *"They have very less financial support. For example, west coast expressway, 40% of fund is from government and 60% of fund is from the construction company."* *"Their financial stability is not bad too."* *"Of course they're doing business to make profit, but not all of them are making profit."*

Table C-6 (Continued)

		"We need them to invest in our project. Local contractor may not have such a large amount fund to invest in the projects."
		"Some of them may invest in our local construction industry, so it helps us."
		"They have a lot of money, so they can start any project without hassle. Unlike us, we have to bond guarantee, take loan and so on. They don't need because they are supported by the government. If they get the project, they can start immediately."
		"At the same time, it influences on the competitiveness of local construction players, because the Chinese can offer low tender cost, but the local people can't make it."
		"They may suffer loss in some projects, but they still committed to complete the project. Because the cost is too low, the productivity of Malaysian workers is slower than they expected."
		"They're selected because their tender price is more competitive."
	China	*"If fund is needed, China can invest."*
Perceptions on competitiveness	Malaysia	*Yes, because most of the major projects are bid by them."*
		"Yes, definitely. If you refer to main contractor, the Chinese will be their competitors."
		"One should know how to play the game, where you set the company in Malaysia as main construction company for the project, you will hire the management team from China with their machineries just to complete the projects, not for them to gain place in our country."
		"For small project, I think it's not competitive for them, because they need to bring a lot of resources and manpower, it's not worth for small project."

Table C-6 (Continued)

		"But for big project, it's worth to bring them, because I guarantee that 90% of their projects are completed if the China-based company do. So the competitiveness for the big project, China is more competitive."
	China	*"In short-range view, it may cause negative impact to the local supplier."* *"But if you look at it in a long-range view, you will realize that it increases the competitiveness. If they don't compete their products with other countries, they will not improve. I think that in order to develop a country, one should expose to more competitions. A clean competition. You wouldn't improve if you're just earning money every day without competition. It's depends on how you think about it."* *"Yes, definitely. But from another perspective, firstly Malaysia is a diverse country, they have three major ethic group, it's very tolerant. Malaysia is well protect the local people. There is a protection clause in Malaysia's law."* *"There will be increased competitiveness, but also it will promote self-upgrade."* *"I'm sad to hear this, as we bid the project through tendering as well. Secondly, the local workers are more than the Chinese anyway. We only come to manage the project, the employment opportunities are depends on Malaysian anyway, we seldom involve in the work execution."*

Table C-7: In Vivo codes of Sub-themes under Demand of Human Resource

Sub-theme	**Interviewee group**	**In Vivo code**
Employment opportunities	Malaysia	*"Ya, the design for the double track project is solely produced by the Malaysian"* *"The Chinese won't do all the trades on their own anyway, they will surely sub to the local contractors."*

Table C-7 (Continued)

	"If not mistaken the consultants are recommended by the government. Yes Malaysian."
	"I mean the local contractor might not have the experience and capital to take up such a big project. If the Chinese become the main contractor, the local contractors will have the opportunity to involve as well."
	"If this project never, I mean stop this project, many people will be jobless. Actually 30% or 50% also affected a lot because the project is very big."
	"I think Gamuda has around 500 safety supervisors, for example. They lose their job. It's difficult for them to find job now. The standard salary is RM3500 to RM5000, if too many people are looking for job, their salary will drop."
	"Some people who have the capability don't have the opportunities."
	"There must be an impact to the construction industry, as there are more foreigners to compete with us."
	"Yes, it will become competitive, but the local company will gain the benefit. Our government will not give the job directly to China. They will have a local company that will gain the tender, then they give the job to China-based company."
	"From the experience of water terminal project, most of the people are from China. By percentage, I think the local that they take for the project is around 30%."
	"They didn't affect our employment rate as they still hire the local people to work, only few of them are Chinese in the management team."
	"They bring sub-contractors from China also."
	"Maybe they can sub to our contractors, but I don't think they sub all to our contractors, because they want to do by themselves."

Table C-7 (Continued)

		"They bring one Chinese people from China for management team only. They hire local sub-contractors, general workers and so on. They sub the work packages to local contractors as well. The Chinese in the management team are general manager, project manager, contract manager, purchaser and so on."
		"On the bad side, our job opportunities will be reduced. Like engineer whatsoever, because they pay their engineer very low, because they provide the house and food already, so I can see that they can extend their salary for one or two months without pay. They still can live because food and hostel are provided."
		"Like ECRL, the design is prepared by them. We are just checkers and endorse it only."
	China	*"Firstly, the normal operation of the staff. For example, one is transferred to ECRL and he has a plan for the next three to four years. But now the project is terminated in one year, he lost his job in the management team and forced to transfer to another project. This will interrupt the China staff's plan."*
		"However, when foreigners come to Malaysia, at the same time, they also offer more positions or other benefits. I think it benefits both side."
		"If I think from your side, yes, it is difficult for me to find job, now there are so many foreigners. I feel sad about this."
		"Similarly, we will prioritize to hire the suitable local staff, if they fit our requirement."
		"For management, China and Malaysian is 60:40."
		"We have different packages and will sub to other construction companies. In this case, we will follow a standard procedure and conduct tendering. If Malaysian construction company win the tender, of course the local workers are more. So it's depends on which company win the tender."

Table C-7 (Continued)

	"For this SUKE project, we also offer job to the Malaysian contractors who are more outstanding. Regardless China-based or Malaysian contractors, there must be another chance working together if you're performing well."
	"China-based contractors get the projects through tendering. I think the reason of choosing them is due to the cost and duration of work, because maybe the local contractors cannot complete the project as fast as them."