

**THE EFFECT OF FOREIGN LABOUR INVOLVEMENT ON THE
MALAYSIAN CONSTRUCTION PROJECT PERFORMANCE**

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KUALA LUMPUR**

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MALAYSIAN CONSTRUCTION PROJECT PERFORMANCE**

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**DISSERTATION SUBMITTED IN FULFILMENT OF THE
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(BUILDING)**

**FACULTY OF BUILT ENVIRONMENT
UNIVERSITY OF MALAYA
KUALA LUMPUR**

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ORIGINALITY DECLARATION

I hereby declare that this dissertation is my own, the data used in the completion of this dissertation was taken from both primary and secondary sources and that recognition has been given to the references used. It has not been submitted for any degree or examination at any other university.

University of Malaya

ABSTRACT

Supply of a local construction labour has been all along a shortage in construction industry due to their lack of interest to work as a construction labourer. The main reason could be due to the 3D's perceptions, ie. dirty, dangerous and difficult. At the same time developers and main contractors prefer to award their sub-contract directly to the foreign labour rather than to the small scale sub-contractor as cost for direct award is cheaper and therefore definitely increasing their profit margin. This research is to systematically identify the important factors that need to be considered in selecting foreign labour, their allocation into different trades and to discuss how is the foreign workers characteristics that's includes compliance to government guidelines, type of expertise, level of expertise and origin correlated with project performance. Hence, one hundred (100) set of questionnaire survey was distributed in Klang Valley to explore the foreign labour involvement in every trades of construction activities. In addition to this questionnaire survey, a selected 10 industrial experts were interviewed to validate data that had been collected. Data was analysed using average index method, frequency analysis, descriptive analysis and bi-variate spearman rank correlation analysis by Statistical Package for Social Science (SPSS) software. From the findings, it shows that more involvement of foreign labour had been identified for architectural and structural works. Most of the foreign labours are from Indonesia. The distribution of foreign labour was effected by the compliance of government guidelines, type of expertise, level of expertise and origin. Result from the survey data analysis is that the origin and level of expertise of foreign labour from Indonesia do have a significant correlations with project performance in terms of work completed on time, good workmanship and less defects. Foreign labour from China have significant correlations with project performance in terms of good workmanship. Other origin doesn't have any significant correlations. Type of expertise of foreign labour have a significant correlations with project performance in terms of good workmanship and less defects but not correlated with work completed on time and budget. Existing approach implemented by the Government is having significant correlations with project performance.

ABSTRAK

Bekalan buruh binaan tempatan merupakan satu cabaran kerana kurangnya penyertaan mereka sebagai buruh binaan atas anggapan kotor, bahaya dan rumit. Dalam masa yang sama, pemaju dan kontraktor utama lebih memilih memberi kontrak terus kepada buruh asing dan bukan melalui sub-kontraktor tempatan kerana buruh asing jauh lebih murah justeru menjimatkan dan secara tidak langsung meningkatkan keuntungan syarikat. Tujuan kajian ini ialah untuk mengenalpasti secara terperinci faktor penting diambil kira semasa pemilihan dan pengagihan tenaga buruh asing di tapak bina dan membincangkan bagaimana ia berhubung kait dengan prestasi projek. Oleh itu 100 set soalan kajiselidik yang mensasarkan kontraktor utama telah diagihkan di Lembah Kelang untuk mengkaji corak penglibatan buruh asing mengikut sub-tred atau kepakaran kerja masing-masing. Setelah mengumpul jawapan kajiselidik, 10 responden ditemuduga untuk memastikan data yang telah diisi adalah benar. Data terkumpul dianalisis menggunakan kaedah indek, analisis kekerapan, analisis penghuraian dan analisis hubungkait dengan mengaplikasikan perisian komputer *Statistical Package for Social Science*. Hasil penemuan menunjukkan ramai penglibatan buruh asing telah dikenalpasti untuk hasil kerja senibina dan struktur. Pekerja asing yang paling ramai di Lembah Kelang ialah dari Indonesia. Pengambilan dan pengagihan pekerja asing dipengaruhi oleh kesan mengambilkira dan melaksanakan projek mengikut garis panduan yang telah ditetapkan oleh kerajaan, jenis kepakaran dan tahap kepakaran mengikut negara asal. Hasil dari kajiselidik dan analisis menunjukkan tahap kepakaran menurut negara asal pekerja asing dari Indonesia mempunyai hubungkait dengan prestasi projek dari segi kerja siap dalam masa yang ditetapkan, kualiti kerja yang baik dan kurang kecacatan. Pekerja asing dari Cina mempunyai hubungkait dari segi kualiti kerja yang baik. Pekerja dari negara lain tidak mempunyai hubungkait yang ketara. Jenis kepakaran pekerja asing juga ada hubungkait dengan kualiti kerja yang baik dan kurang kecacatan tetapi tiada hubungkait dengan penyiapan projek menepati masa yang ditetapkan dan dalam jangkakan anggaran perbelanjaan. Pemantauan kerajaan yang dilaksanakan untuk mengawal penglibatan pekerja asing mempunyai hubungkait yang ketara dengan prestasi projek.

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ABBREVIATIONS

ABM - Akademi Binaan Malaysia

CIDB – Construction Industry Development Board

CIMP – Construction Industry Master Plan

CL – Construction Labour

CLAB – Construction Labour Exchange Centre Berhad

ECLR – Estimated Construction Labour Requirement

FOMEMA – Foreign Workers Medical Examination and Monitoring Agency

FW – Foreign workers

GCLR – Gross Construction Labour Requirement

IBS – Industrial Building System

ILO – International Labour Organisation

JCS – Job Clearing System

JIM – Jabatan Imigresen Malaysia

JKKPA – Jawatankuasa Kabinet Pengambilan Pekerja Asing

JTK – Jabatan Tenaga Kerja

KHEDN – Kementerian Hal Ehwal Dalam Negeri

KSM – Kementerian Sumber Manusia

MOHR – Ministry of Human Resource

MTUC - Malaysian Trade Union Congress

NEM – New Economic Model

PLKS – Pas Lawatan Kerja Sementara

PV – Project Value

TACL – Total Available Construction Labour

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CHAPTER 1

INTRODUCTION

1.1 Introduction

It is always the Government intention to reduce the nation's dependency on foreign labour. One of the stringent approaches was by raising levies since beginning of the year 2011. However it was cautioned that such a move have had a severe impact to the construction and property industry. The Malaysian construction and property industry relies heavily on foreign workers, but not by choice. The supply of local workers is practically non-existent as far as the industry is concerned and the levy increase will be punitive to the sector, which has contributed significantly to the economy and the Gross Domestic Profit (GDP).

The steady growth of the construction industry over the years has been well-supported by the availability of adequate workforce in the industry. The proposed increase of levy will definitely hit the industry as there is no ready supply of local workforce. (Real Estate Housing Development Association (REHDA) press conference 21 May 2010). The Construction Industry Development Board (CIDB) has been tasked to train Malaysian workers to take over construction works in the country in order to reduce dependency on foreign labour. The results, however, have not been felt across the sector and are insufficient to support the entire construction industry. The Government to first ensures that the pool of local construction workers is sufficient and reliable for the industry. Implementation of the usage of Industrialised Building System (IBS) and hopes that this will be properly implemented in the industry first to ensure that any decline in the number of foreign workers numbers will not be detrimental to the industry.

The Real Estate and Housing Development Association urge the Government to look into effective ways to properly promote and incentivise the adoption of IBS. Until these areas are properly attended to, the construction sector will remain dependent on foreign workers in the construction sector.

1.2 Research Background

Malaysia has a labour force of 11.1 million in 2006 and estimated to be at 12,059,700 in a year 2011. While Malaysia offers a large workforce, there is currently a shortage of skilled workers in some industries. (Asrul Hadi, 2010). Two (2.0) million registered migrant workers in Malaysia (of which contributed 17% of the total workforce), 38.2% were employed in the manufacturing sector, 16% in the construction industry, 14.2% in the plantation and 31.6% for other sectors. (Finance Ministry, economic report 2010/2011).

Indonesia accounted for the highest number of registered foreign workers in Malaysia at 50.9%. This was attributable to their country's proximity to Malaysia and its cultural and language similarities with Malaysia. Bangladesh was second highest, accounting for 17% of the total foreign workers in Malaysia, followed by Nepal at 9.7%, Myanmar 7.8%, India 6.3%, Vietnam 4.2% and others is 4.1%. (Asrul Hadi, 2010).

Previous Annual Labour force survey conducted by Department of Statistics year 2005, revealed that the number of foreign workers has increased to 1.1 million in 2000 compared to about 136,000 persons in the early 1980s. Number of legal foreign workers in Malaysia rose to 1,359,632 in July 2004.

Malaysia in recent years has absorbed large number of foreign workers to work in low pay and low skilled fields. In general, low skilled foreign workers are employed in position that most Malaysian refuse to do. (Ames Gross, 2011) Malaysia Trade Union Congress (MTUC) pointed out that in early 1990s all building including multistorey buildings, highways even the east-west highway was entirely built by locals. It is obvious that the construction industry is taking unfair advantage of the understanding shown by the Government. Importing cheap labour is often the main cause of distortion between relative price of capital and labour.

The demand of foreign workers is not due to genuine shortage but due to desire of employers to pay lower wages (MTUC, 2002). Ling 2006 in the dissertation's questionnaire have requested the respondent to answer whether they seek for local labour before engaging foreign labour and more respondent answered no compared with yes. The reason given was nonexistence of local labour, local labour demand for higher pay with request for more annual leave, not willing to work with longer working hours compared with foreign labour.

A similar situation is found in some developed countries where construction workers has for many years undertaken largely by immigrants, or by the children of immigrants (ILO, 1995). In United States where the wage advantage that construction workers have traditionally enjoyed over other industries has steadily eroded over the past 20 years leading to leakage of skilled workers from the industry and difficulty in replacing them (Phillips, 2000).

1.3 Problem Statements

From minding babies to erecting skyscrapers, Malaysia's economy has been supported over the last three decades by a foreign workforce drawn mainly from Indonesia, Philippines, Bangladesh, Myanmar, China and others as an industrialisation drive created a wealth of low-paying jobs shunned by locals. But as more employment opportunities open up in other Asian economies, Malaysia's appeal as a destination for manual jobs is waning. Malaysia will soon lose competitiveness in these economic sectors. (Kun Lung Wu, 2011). If we are not ready with trained local workers to move into this particularly construction jobs and create higher value, we will lose out on the lower cost production segment. Malaysia is no longer an "Asian Tiger" and its allure is fading quickly, especially since other Asean nations are coming up fast. Indonesia has made great strides in trying to show in the economic growth. Singapore continues to be a magnet for higher skilled workers, and better paid lower skilled workers. Philippines is slowly awaking from its very, very long slumber and Vietnam, Cambodia are rising fast.

Unless something dramatic happens, Malaysia's star will continue to wane and before long, we may be the ones exporting labor to other developing countries. Our neighbours are getting better. Unskilled workers from Indonesia are going home; our local skilled workers are going off the country. (Sheikh Yahya, 2011). Therefore, shortage of foreign labour would be the main challenges in the near future. This study is to find out other alternatives of supplying country to foreign labour in Malaysia, which includes Bangladesh, Myanmar, China and others compared with the most employed Indonesians labour and its effects on project performance.

1.4 Aim and Objectives of Study

The overall aim of this research is to study the involvement of foreign labour in construction industry and to establish relationship between distribution of foreign labour according to trades with project performance. This research involves construction industry player especially main contractors that having registered with CIDB Class G7 in Klang Valley.

- 1) To identify the existing approach to manage involvement to foreign labour in construction industry.
- 2) To categorise the foreign labour involvement in construction industry by country of origin and their type of expertise.
- 3) To establish relationship between foreign labour characteristics with construction project performance.

Based on the aim and objectives, five research questioned has been formulated as follows:-

- 1) What are the existing approaches implemented by the Government to manage foreign labour involvement in construction industry?
- 2) In which trades are the most involvement of the foreign labour?
- 3) To establish relationship between origin and level of expertise of foreign labour with project performance. *Does the origin and level of expertise of foreign labour correlate with project performance?*
- 4) To establish relationship between type of expertise of foreign labour with project performance. *Does the type of expertise of foreign labour correlate with project performance?*
- 5) To establish relationship between the Government existing approach with project performance. *Does the Government existing approach correlate with project performance?*

1.5 The Gap and Rationale of Study

Having reviewed the published works by the most knowledgeable researchers, the author feels that the existing researchers mostly focused on the foreign labour trends, general movement and allocations of foreign workers in different industries in Malaysia (i.e. manufacturing, plantation, construction, etc), impact to the economy of Malaysia, etc.

Previous recent researchers related to foreign labour include Abdul (2011) with the title of problem faced by contractors in managing foreign workers at site. This research finding elaborated factors that influence the productivity and quality of foreign workers including induction courses. Foreign workers on site had benefited a lot from such programs. This followed 58.8% respondents agree that work quality is dependent on the skills of foreign worker, equipment, tools and technology. Further to that, 44.1% respondents not agreed that most foreign labour has insufficient knowledge to carry out the work correctly.

Zaleha, et. al (2011) with the title of impact of foreign workers on labour productivity in Malaysian manufacturing sector. The aim of the research is to examine the economic impact of foreign workers on labour productivity in Malaysian manufacturing sector using annual time series data which covers 1972 to 2005 periods. Besides, the relationship between foreign workers, relationship between domestic workers was also investigated. Research analysis results indicated that increasing the domestic labour, foreign labour and material would yield positive influence on the productivity of the manufacturing industries. But the capital labour ratio tends to show negative relationship on the labour productivity. Since foreign labour has positive relationship and significant impact on the labour productivity, the research concluded that the government will need a long time to reduce

the dependency on foreign workers. Further, the study found that there is no causal relationship between domestic and foreign labour. The results exhibit that domestic and foreign workers are neither substitute nor complement to each other. Therefore, reducing the number of foreign workers will not affect the performance of domestic workers.

Shiadri (2008) with title of causes of poor participation of local workers in Malaysia construction industry & strategies for improvement. Research analysis summarised that respondents agreed that the first three major factors that influence the poor participation of local workforce in construction industry were related to (1) uncomfortable, (2) unsafe and unhealthy working conditions and (3) temporary employment status. The most critical factors were ranked the factors that influence the poor participation of local labour to work in the construction industry from 1 to 5 are includes (1) Uncomfortable working conditions (dirty, hot, dusty, etc.); (2) Serious risk of exposure to unsafe and unhealthy working conditions; (3) Temporary employment status based on project and unsecured job; (4) Insecurity of income that comes with the temporary employment status, labelled as a dangerous, dirty and difficult work, poor image in the eyes of workforce due to employment of unskilled and poor educational foreign workers and (5) Unattractiveness of a career pathway in construction industry. From the questionnaire, the respondent agreed to select the five major strategies that can influence on the improvement of local labour participation. The strategies identified were (1) training and advancement, (2) employment status, (3) enhance the safety practice and procedure, (4) boost image of construction workers, and (5) provide conducive site accommodations and services.

Ling (2006) with title foreign labour issues and implication in construction industry. This research identified causes of employing foreign labour in construction industry which includes poor image, poor working conditions where local labour prefer to take employment in a comfortable environment. Construction job known as high risks job, accident is much higher compare to other industries with low wages. Local young generation have higher education level. Employer can easily bring foreign labour who were prepared to accept lower wages and willing to work longer hour. This research also identified the impact of employing foreign labour in construction industry which includes creating cultural pollution, foreign labour pose many social problem include spread of disease, buglary, murder, assault, rape, etc. Increase number of foreign labour resulted the outflow of money from our country. Presence of foreign labour in construction industry will maintain lower wages level. Cheaper labour cost will decrease production cost. Great inflow of foreign labour caused lower wages for local workers and they are taking away from local. Ling (2006) identified that the requirement of sending back the foreign labour at every three years is not effecting towards low productivity and quality due to most of the them apply for extension of work permit or the will come back to Malaysia again after a short break in their country. High expenses in foreign labour recruitment process and long permit processing time may cause problem mobilising new workers on time. Accomodation problem for foreign labour if contractor don't have new job after completion of work. Foreign labour initially fill up the vacancy or at least minimised the extend of manpower shortage in construction industry.

Kang (2007) with title of Foreign labour inflows to Malaysia – trends and implication has also the same reearsh study with (Ling 2006). The outcome and analysis of research are almost similar.

Lai (2004) with title of Foreign workers issues in Malaysia : new government policy on employment of foreign workers. This research is covers mostly on the procedure of employing of foreign workers and policy that need to be adhered to. Government as a policymakers has provided outlines, rules, regulations, policies and procedure to be adhered to in order to bring in foreign workers in Malaysia.

However, none of the reseachers reflects in detail study on the current allocations and distributions of foreign labour according to trades at construction site. What is a reasons of labour distribution to be as such. In addition to that the author has also extended this study to find out the correlations between the foreign labour allocations and project performance. The lack of relevant research on the allocations and distribution of foreign labour into different trades in construction industry whereby the latest research was carried out by Azizah in 1998, provides an opportunity and a need for a specific research and hence this is a pilot works.

The main goal of this research is to identify the relationship between distribution of foreign labour according to trades and project performance. This study is a continuation of an ongoing effort of the Government to reduce reliance of foreign labour in Construction Industry in Malaysia by encouraging local labour to be involved. This study also revealed that the application of proper allocation of foreign labour at site has achieved desirable project performance, thus making useful contribution to the industry, academia and society. The further agenda is to improve and encourage involvement of local labour to all these sub-trade which is with high pattern of involvement and dependency to foreign labour.

1.6 The Scope of Research

This research studies the involvement of foreign labour in the Malaysian construction industry. Respondent of the study is limited to main contractors in Klang Valley who have registered with CIDB under Class G7, as they are the key professionals' body engaging a lot of foreign labour.

1.7 Significant of Study

The study is significant for the following reasons:-

- 1) To find out why contractors in Klang Valley is using more foreign labour compare to local labour in construction industry.
- 2) To find out why government of Malaysia is still unable to produce trained local labour to replace foreign labour in construction industry.
- 3) To be able to advise that existing foreign labour level of expertise has proven to contribute to achieve optimum project performance.

1.8 Research Methodology

The main focus of the study is to achieve earlier stated objectives through the collection of data using survey questionnaires and interviews, (Uma Sekaran, 2010).

The methodology is set to gather the data to achieve the outlined objectives. Refer Figure 1.1, the first step of study is to rationalise the issue to set up the topic of study. Then the statement of problems, aims and objectives were developed. This study employed several methods of data collection for the purpose of objectives achievement.

For the knowledge acquisition phase, the literature in connection with the study to be carried out is reviewed through journals, books, conference papers, magazines, and websites. From that information, a set of questionnaire form develop. The respondents are Malaysian Citizenship workforce. The data analysed using statistical method.

The final phase of the study is to define the conclusions and recommendation with reference to the objectives, subsequent to the analysis from the questionnaire.

The Methodology Flow Chart is as shown in Figure 1.1 below.

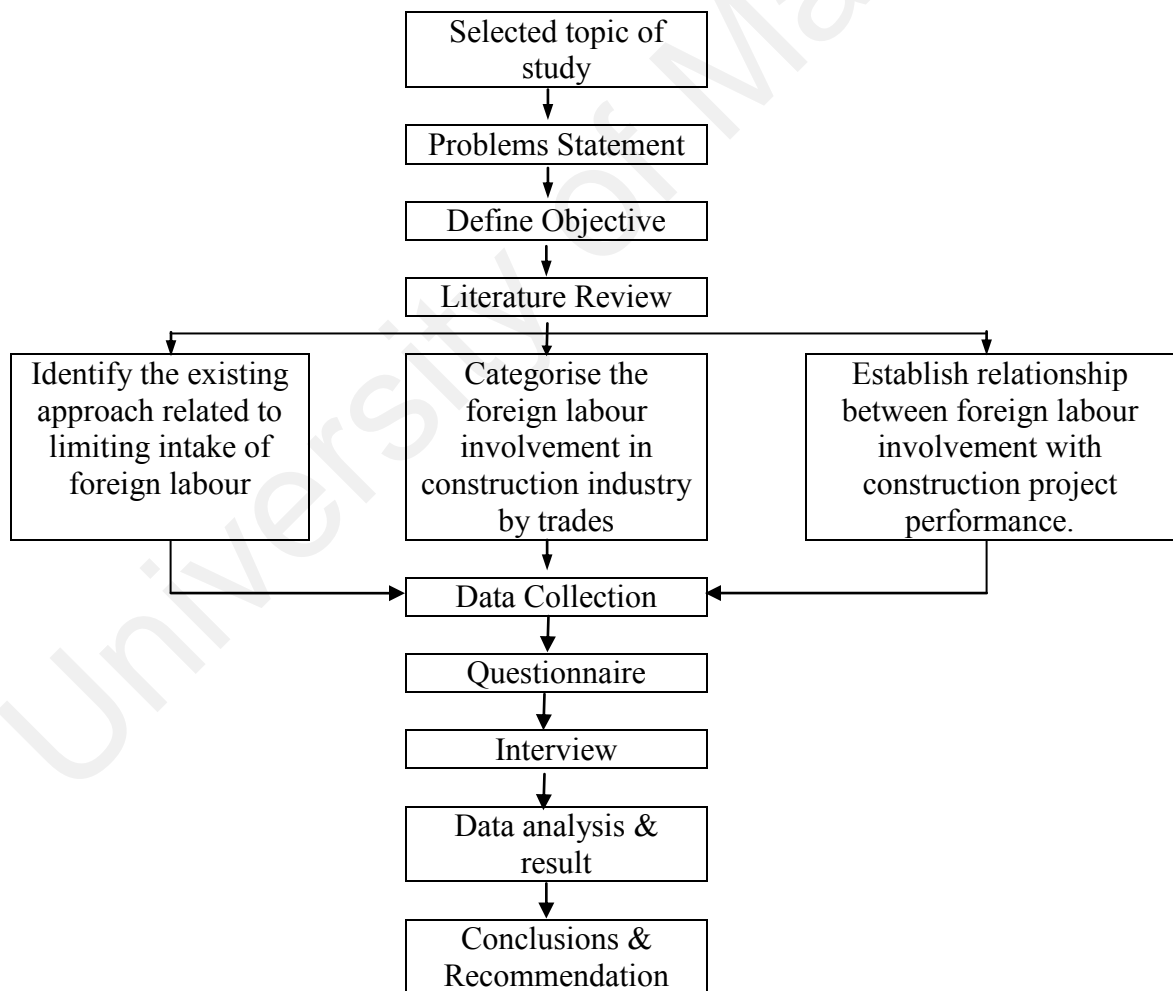


Figure 1.1 : Methodology Flow Chart

1.9 Structure of dissertation

This study provides some valuable insights into the extent and severity of involvement of foreign labour in certain sub-trades of the construction industry. By having this results and conclusion, hopefully the Government or the CIDB will continue to attract local labour participation especially to that particular trades conquered by foreign labour.

The first chapter is the introduction of the research, research background that includes the problem statements, the aim and objectives of study, gap & rationale of study, the scope and significant of study, research methodology and dissertation structure.

The second chapter is on the literature review that elaborates the historical exodus and growth of foreign labours in Malaysian Construction industry. Focused on the Government's existing approach to control and limiting the intake of foreign labour in Malaysia and previous studies showing the involvement of foreign labour in construction industry in other countries. Foreign labour performance in Construction Industry in Malaysia, function of the Akademi Binaan Malaysia in training local labour, effectiveness of the existing approach and proposals for further improvement.

The third chapter is still on literature review but focusing on the relationship between foreign labour and their performance. Describing the independent variables which includes government control trades and foreign labour characteristics that is level of expertise, type of expertise and origin or spoken languages. Dependent variables is a project performance which includes project completion to be on time, project completed within the budget, good quality of workmanship and less defects after 12 months from the date of completion of works.

The fourth chapter is the research methodology where elaborate the research strategy, research collection and design, research method which includes data collection, sampling design and procedure, research model, development of research model and describing the method of data transformation.

The fifth chapter discusses the data analysis and results of the study. Transforming all data into tables & graphs using appropriate and selected analysis methods like average index method, frequency analysis, descriptive analysis and bi-variate spearman rank analysis by SPSS (Statistical Package for Social Science) software version 17.0. The data were used to establish relationship between foreign labour characteristics with construction project performance using correlation test.

The sixth chapter is the conclusion and recommendation of the study. To revisit and answer the research questions, research aim and research objectives. To elaborate the contribution of the study, recommendation and suggestion for further research.

1.10 Conclusion

The introduction of research, research background that includes the problem statements, the aim and objectives of study, gap & rationale of study, the scope and significant of study, research methodology and dissertation structure has been elaborated in this chapter.

Literature review elaborated further in Chapter 2.

CHAPTER 2

THE GROWTH OF FOREIGN LABOUR IN MALAYSIAN CONSTRUCTION INDUSTRY

2.1 Introduction

When describing foreign workers or foreign labour in Malaysia, it is always referring to a person that came from other countries to work in Malaysia. Government classified them according to their differences of nationality, gender, age, job classifications includes type (expatriate, skill, semi skilled or unskilled workers), status (legal or illegal) and occupational sector (construction, manufacturing, services, plantation, etc.).

Definition of Foreign workers

The term “foreign worker” will be used to refer to foreign workers in general and “foreign labour” for the unskilled, semi skilled and skilled workers.

The United Nations Convention and protection of the Right of All Migrant Workers and their family defines a migrant workers as a “person who is to be engaged, is engaged or has been engaged in a remunerated activity in a country of which he or she is not a national.”

Definition of Expatriates

Expatriates (pekerja ikhtisas) consists of skilled professional and technical workers which have a minimum 2 years tenure with a minimum monthly income of RM2,500.00.

Definition of Skilled Labour

International Labour of Organisation (ILO) defined skilled labour as a person that have served an apprenticeship, practice the trade learned or a similar activity, and by reason of their knowledge and vocational capacity are given tasks which are particularly difficult, involving varied responsibilities or field.

Definition of Semi-skilled labour

International Labour of Organisation (ILO) defined semi skilled labour as a person that can only perform their job after a period of instruction of several months in general and are given task-mostly specific to the industry which are regularly repeated, are less difficult and involve less responsibility.

Definition of Unskilled labour

International Labour of Organisation (ILO) defined un-skilled labour as a person who is require no specific vocational training or only brief initiation and work on ancillary tasks.

2.2 Historical movement of Foreign Labour

2.2.1 Foreign labour movement in Global Perspective

Many countries around the world initially welcomed the migrants mainly to meet their labour shortages in various development sector. Britain was perhaps the first country to experience large scale of labour immigrants in the nineteenth century. The industrial revolution rapidly absorbed the unemployed workers from the countryside.

Since 1850, France has had an excess number of immigrants. When the landless rural proletariat moved into industrial area, foreign labourers were brought in to replace them. It was estimated that from 1891 to 1901, 57% of French population increased due to immigration (Descloitres 1967). The industrial development in Germany occurred in the western parts of the Reich and it attracted a large number of landless labourers from the eastern provinces. The first immigrant workers in Germany were the Poles who settled in Ruhr to work as miners or industrial workers (Castles and Kosac 1973).

In Switzerland, large scale immigration began in the 1880's and initially the migrants came mainly from its neighbouring countries like Germany, Austria, France and Italy. As the demand for labourers increased, the Italians became the largest group Switzerland. They were employed in the heavy manual jobs which were often rejected by Swiss and they were replacing the indigenous workers because it was expected that they would work for less. (Hagman 1966 as quoted in Castles and Kosac 1973). After the Second World War, millions of people migrated from the underdeveloped parts of Southern Europe, Africa and Asia to Western Europe in search of employment and better economic opportunities. Most of the developed countries of Western Europe somehow experienced large scale immigration almost at the same time. Moreover, the importation of the immigrant workers was a survival necessity for economies of these countries (Power 1979).

Foreign worker were brought to France to meet the needs of its industries during 1960's. Most of them are foreign workers from Algeria, Morocco and Tunisia where later become the residents of the biggest cities in France (Gerald 1996).

The United Kingdom brought many of the workers from their former colonies like India, Pakistan, Bangladesh and the West Indies. The Netherlands brought many people from Indonesia and Surinam, both its former colonies (Gerald 1996). Denmark was regarded as one of the homogeneous societies in Europe. It experienced a substantial intrusion of foreign workers who were ethno-linguistically and culturally different from the Danes (Gerald 1996).

United States also invited a large number of foreign workers for the purpose of employing them in developing its national infrastructure mostly are from African countries, Caribbean countries and from Asia (Thomas 1968). Dependence on foreign workers in many Middle Eastern Countries dates back to the establishment of the oil industries in the Gulf region in 1930's. Most of the labour force in the Gulf Countries are from Jordan, Syria, Egypt, India, Pakistan and Bangladesh (Weiner 1990).

In Japan, unskilled foreign workers from Philippines, Bangladesh, Pakistan and China find job in construction industry and small scale industrial sectors in Japan, while the women from Thailand, Taiwan and the Philippines found jobs as entertainers in bars and restaurants and also as maid (Lan 1992). Singapore (Kong 1995) indicate that foreign labour had been the foundation of Singapore society and that most of the present population, in a real sense are the descendants of earlier immigrants. Mostly the Foreign labourers consists of Malaysian, Indonesian, China, Taiwan, Hong Kong, India, Pakistan, Bangladesh and Sri Lanka. Hong Kong has a demanding labour market with multifarious employment opportunities in the manufacturing and industrial sectors. Their foreign labour are mostly from China.

Table 2.1 shows the number and percentages of foreign workers and immigrant in selected developed European countries which have long tradition of in-migration and where the ‘graying’ of their population has been going on since the 70s as a result of declining population growth. i.e. on the average less than one percent per annum.

They have pressing reasons to allow more immigrants particularly young one to come so that a dependency ratio of three economically active population (24-60 years old) to one elderly can be achieved. However, usually the percentage of foreign workers and immigrants is very high among their workforce out of their total population.

Table 2.1 : Foreigners and workers in selected country (number in thousands)

Year	1990		1999	
	No. & % of population (immigrants)	No. & % of labour force (workers)	No. & % of population (immigrants)	No. & % of labour force (workers)
France	3,596.6 (6.3)	1,549.5 (6.2)	3,263.2 (5.6)	1,593.8 (5.8)
Germany	5,342.5 (8.4)	0	7,343.6 (8.9)	3545 (8.8)
Italy	781.1 (1.4)	0	1,252 (2.2)	747.6 (3.6)
Japan	0	0	0	n/a
Malaysia	805.4 (4.4)	281.7 (4.0)	1,384.8 (5.9)	818.5 (9)
Netherlands	692.4 (4.6)	197 (3.1)	651.5 (4.1)	0
Spain	278.7 (0.7)	85.4 (0.6)	801.3 (2.0)	172.8 (1.0)
United Kingdom	1,723 (3.2)	882 (3.3)	2208 (3.8)	1,005 (3.7)

Source :

Morokvasic-Muller (2004) p. 37 & 38 and Malaysian Economic report 2003/2004 p. 72

2.2.2 Historical Background of the Labour Force Migration in Malaysia

The inflow of international migration in Malaysia is not a recent phenomenon. Rather, it started during the colonial period when the British administration imported the Indian and Chinese workers in large numbers to work in their plantation, mining and the communication sectors (Parmer 1960, Sandhu 1969).

The Malays were economically self supporting and they traditionally lived in scattered villages. Since there was no necessity for them to work as a strenuous work-force under the strict employment contract, the British found it difficult to pool them together to work for them.

This non participation of the local Malay labour in the plantation and mining industries forced the rulers and the developers of this country to depend mostly on immigrant labour. Initially the immigrants were brought from the three most densely populated neighboring regions like Java, China and India mainly with a desire to get cheap labour supply (Parmer 1960).

Before the colonial rule, inter island migration was very common in this region and its continued during the British administration. Inter island migration allowed many Indonesian to enter Malaysian peninsula on a voluntary basis to search for employment and subsequently were assimilated into this culture as they had started living here permanently (Bahrin 1967).

Ethnic and lingua-cultural similarity of the Malays and Indonesian were the main factors which accentuated the Indonesian settlement here long before the arrival of British. Bugis and Sumatrans initially entered as traders and merchants, the Javanese were mostly construction labourers and smallholders (Bahrin 1967). The bulk of the Indonesian immigrants actually were the Javanese who were recruited through Dutch authorities mostly from 1921 to 1931 and they were employed as labourers in the rubber estates. Usually the Javanese were recruited under the indenture system (Jackson 1961) through European farms in Java and they were supplied to Malaya through certain farms. It was only during 1930's that they started on their own.

After independence, migration in Malaysia was regulated and controlled by the formulation of new immigration laws. The laws were often violated mostly by Indonesian because of their close proximity through the sea route. However, this inflow was later stopped during the middle of 1960's when there was confrontation between both countries over the formation of Malaysia.

To reduce political and ethnic tension, this unrestricted immigration of the Chinese as well as the Indonesian and the Indian was later halted after the Country's independence in 1957. But due to the glorious development in various sectors and the advent of the Malaysian economy with concomitant labour shortages, the country was again compelled to import foreign labour from neighbouring countries.

This situation allowed Malaysia to import foreign workers from Bangladesh, Indonesia, Philippines, Thailand and other neighbouring countries to work in the newly instituted manufacturing, construction and service sectors of the country. The workers are now granted only temporary work permits and after the completion of their term, they have to go back to their respective countries. Current Size of foreign workers, based on the issuance of Pas Lawatan Kerja Sementara (PLKS) the number of legal unskilled/semi skilled foreign workers fluctuate over the years in response to the economic situation and policy measures formulated and implemented (see Table 2.2).

Table 2.2 : Issuance of Work Permits to foreign workers in Malaysia (2000 to 2010)

Year	Peninsula (%)	Sabah (%)	Sarawak (%)	Malaysia
2000	77.18	11.62	11.20	819,684
2001	75.16	13.37	11.49	769,566
2002	77.13	13.80	9.07	1,057,156
2003	78.13	13.13	8.74	1,239,862
2004	78.33	13.06	8.61	1,359,500
2005	78.88	13.20	7.92	1,613,000
2006	77.65	13.91	8.44	1,771,000
2007	76.75	13.27	9.98	1,926,000
2008	78.13	13.56	8.31	2,050,000
2009	78.82	13.17	8.01	1,975,000
2010	77.90	13.75	8.35	2,011,000

Source : Ministry of Home Affair, Department of Immigration (2011), Pusat Bandar Damansara

The selection of source of countries is reviewed from time to time based on economic, social or political considerations. In 1980s, Malaysia's immediate neighbour in the ASEAN region were given preference with Indonesia, the Philippines and Thailand. By the 90s, Indians, Pakistanis and Bangladeshis were also recruited as such in a year 1998, the second largest number of foreign workers were the Bangladeshis. Since 2003, the range of source countries grew larger including Cambodia, Vietnam, Nepal, Uzbekistan, etc (see Table 2.3).

Table 2.3 : Malaysia : Distribution of Foreign Workers by Country of Origin

Location Year / Nationality	Peninsula		Sabah & Labuan		Sarawak		Total number	
	2003	2009	2003	2009	2003	2009	2003	2009
Indonesian	611,463	977,097	156,310	245,818	99,664	156,415	867,437	1,379,330
Thais	14,704	23,998	13	21	28	44	14,745	24,063
Cambodian	2,363	3,804	0	0	0	0	2,363	3,804
Nepalese	97,193	156,632	0	0	37	58	97,230	156,690
Myanmar	40,220	64,340	0	0	9	15	40,229	64,355
Filipino	6,361	10,176	9,449	13,809	357	560	16,167	24,545
Vietnamese	50,781	81,235	0	0	74	116	50,855	81,351
Laotians	76	122	0	0	0	0	76	122
Uzbekistan	17	28	0	0	0	0	17	28
Indians	51,885	83,000	124	190	131	205	52,140	83,395
Bangladesh	89,576	143,296	0	0	338	530	89,914	143,826
Pakistanis	2,368	3,788	2	200	3	5	2,327	3,993
Sri Lankans	837	1,339	0	0	13	21	850	1,360
China	3,000	4,830	0	0	0	0	5,000	4,830
Others	2,267	3,010	5	91	194	228	466	3,329
Total	973,111	1,556,695	165,903	260,108	100,848	158,197	1,239,862	1,975,000

Source : Ministry of Home Affairs, Department of Immigration (2011), Pusat Bandar Damansara

2.2.3 Problems in dealing with Foreign Labour in Malaysia

Huge number of legal and illegal foreign workers always manage to find their way to this country even without permission and official working permit. The immediate result is the drastic increase in the number of foreign workers wherein their proportion contributes to a substantial percentage of the total local population.

For instance in the Gulf States, the proportions of immigrant workers are usually high : 39 per cent in Bahrain, 45 per cent in Oman, 71 per cent in Kuwait, 81 per cent in Qatar and 85 per cent in the United Arab Emirates. In Western Europe, migrant workers comprise a

much lower proportion, ie as low as 9 per cent in France, 9 per cent in Western Germany, 7 per cent in Austria and 24 per cent in Switzerland (weiner 1990).

All government usually impose measures and restrictions on immigrant labourers. The level of restrictions however differs from one country to another. As an example, country which admit no migrants differ from countries that have annual quota. Some countries consider admission primarily on the basis of manpower needs, family reunions and humanitarian considerations. Some other countries pay particular attention to race, religion, language and culture in determining who may enter. (Zehadul, 1999)

Differences over policies toward immigrant labour can also be seen where some countries grant all the right of citizenship, while some extend various political rights and social benefits as compared to those given to citizens.

Among the five small countries of the Gulf : Kuwait, Qatar, Bahrain, the United Arab Emirates and Oman, about two-thirds of all their labour force are immigrant workers who have been imported as a means of fulfilling short-term labour needs. These governments have also rejected the notion that the immigrant workers should be politically and socially integrated with their own societies.

Therefore, these countries pursue the following policies towards immigrant labour.
(Zehadul, 1999)

- Immigrant labour cannot primarily become citizens
- With the expectation of Oman and United Arab Emirates, non nationals are not permitted to own a business, purchase a house or land, be given business licenses, etc.
- There is no free labour market and immigrant workers cannot change jobs.
- Immigrant labourers have restricted policy rights, cannot join trade unions and public meetings.
- With the exception of Kuwait, social welfare benefits given to citizen are generally not extended to foreigner.
- Immigrant workers are not permitted to bring along their wives and children with them unless their wages are above a level specified by the government (generally unskilled and semi-skilled workers do not meet this wage requirement). These policies are simply the mechanism to establish the temporary position of the immigrant labourer.

2.2.4 Formulation of Malaysian Immigration Policy

The formulation of Malaysian Immigration laws was originally regulated in the same year as that of the country's independence in 1957. These early laws, however were often ignored and disregarded, especially by a negligible number of residents who had relatives and economic interests close to the border areas of the northern and northeastern states.

During the sixties, a small number of immigrants from Indonesia entered the country after the end of the confrontation period between Indonesia and Malaysia due to formation of Malaysia.

The arrivals though illegal, did not face any action from the authorities. In 1969, a new law relating to employment was introduced, known as Employment Regulation 1969 (Restriction and Employment Permit) to give some flexibility to foreign workers to obtain work permit and stay in this country.

However it was again ignored by many, either employers, immigrants or relatives of the immigrants. A large proportion of immigrants came through their links with family members and relatives in Malaysia while some others through friends and workmates, without official and valid documents (Moha Asri Abdullah, 1999)

A number of them were bought in by businessman, contractors and sub-contractors purely on the basis of economic consideration. The exact figure of these immigrants was difficult to ascertain as some of them worked in rural areas, small farms and in individual houses (Moha Asri Abdullah, 1999).

The small inflow of such immigrants into the country continued till the 1970s. This early period of inaction and ignorance of the state was largely due to early assumption that their presence and employment were temporary in nature, and that they would eventually return to their respective countries.

Prior to the 1970's the state seems to have underestimated the capacity and boldness of illegal immigrants in defying the laws of the country. Conversely, the illegal inflow of immigrants became even more rampant and the Indonesian migrants were later joined by other nationals from ASEAN and South Asian Countries.

In spite of the relatively long history in cross border immigration, the post independence government appears ill-equipped at first to deal with inflow with foreign workers into country, thus although the inflow began in the 70s following the expansion of land development, the estate sector, expansion of infrastructure and services following the implementation of the Second Malaysian Plan (1970-1975), it was only in the early 80s when action was taken to effect a policy on immigrant workers. Beginning with the signing of the Medan Agreement between Malaysia and Indonesia 1984, a policy came into full effect only in early 90s. (Azizah Kassim, 2005).

The present policy on employment of foreign nationals is determined by the Cabinet Committee on Foreign Workers. The policy, which is designed as a stop gap measure to alleviate labour shortages in some economic sectors, divides foreign workers into two major categories i.e. the unskilled/semi-skilled workers and the expatriates comprising the managerial, professional and technical personnel.

Foreign workers are to be recruited and employed legally and because the policy was formulated at the same time when the country was already inundated with illegal workers, the policy also lays emphasis on stamping out illegal immigrants and irregular workers. Among the major implementing agencies involved in the recruitment and employment of

foreign workers are the Department of Immigration and Department of Human Resource and to deal with illegal immigrants, the immigration and the police.

Two separate institutional structures and procedure were revised to cater for the expatriates and unskilled / semiskilled groups. The *Jawatankuasa Teknikal Pengambilan Pekerja Asing* deliberates on application from potential employers of the semi-skilled, the *Jawatankuasa Pegawai Dagang* on application for expatriate employment. The distinction between the two groups of workers began with their allocation of work permits. The unskilled/semi skilled is issued with *Pas Lawatan Kerja Sementara* (PLKS) which in essence view them as visitors who are given permission to work temporarily.

The expatriates are given work passes or *pas pengajian*. The distinction is also extended to the terms and conditions of their employment and the exercise of their basic rights such as a right to be accompanied by their respective family members (dependents) while working in Malaysia.

The expatriates are assured a minimum monthly pay of RM2,500 and minimum tenure of 2 years. In addition, they are also allowed to take along their immediate family members. Even after completion of their tenure, the elderly ones are also permitted to stay on under the Malaysia My Second Home Scheme (previously the Silver Hair Programme). No such provision to unskilled/semi-skilled group (Azizah, 2005).

On the two types of foreign workers, the unskilled/semi-skilled category is more problematic in terms of recruitment and employment. Thus, the policy makers concentrate more on this group, establishing institutions and procedures for their legal recruitment and

employment. They identify the source countries, which whom Malaysia would sign MOU's, determine the sort of job that can be allocated to foreigners, decide on the nature of their work contract and tenure, cost of levy etc.

The private sector, which partakes in implementing this policy, is allowed to form recruiting agencies to act as intermediaries between prospective workers and employers; and in 1997, in an attempt to ensure only healthy workers are employed, the Government permitted the establishment of FOMEMA (Foreign Workers Medical Examination and Monitoring Agency) which is entrusted with conducting rigorous annual medical examination on the workers.

Among the important procedure which are seen as problematic are the cost and process attaining the PLKS which is renewable every year subject to payment of specific fees and the levy which are varies in amount depending on the sector concerned. Generally, the lowest levy are for the domestic services and plantations and the highest are for manufacturing. The imposition of the levy is to discourage employers to engage foreigners at the expense of the locals.

The tenure for the unskilled/semi-skilled workers (except for domestic maid) is five years after which he/she has to return home and stay six months before returning back to Malaysia. The prohibition for foreign workers to take along their spouse and other family members, and to marry while in service.

While the aim of the policy remain constant, the procedures are revised from time to time in response to immediate problems, be they social, economic or political.

In attempting to stamp out irregular workers, the government has taken several measures which includes launching regulation (*pemutihan*) and amnesty (*pengampunan*) exercises and to encourage voluntary repatriation. In addition, it also since 1992, implemented two on-going programmes with the generic code name Ops Nyah 1 and Ops Nyah 2.

The former is designed as a border control mechanism to stop further incursion/ clandestine entry into the country and the latter to root out illegal immigrants already in the country. A series of operations such as Ops Pintu, Ops Sayang and Ops Bersepadu have been launched.

In addition, the Government has also amended in January 2006 both of the Immigrations (Act 155) Act 1957/63 and Passport (Act 150) Act 1966, to include higher penalty for illegal immigrations; and Section 55A, 55B, 55D and 55E which make the employment; trafficking and protection of illegal immigrants an offence; as well as the possession and production of false official documents.

2.3 Involvement of foreign Labour in Construction Industry in Malaysia

It is undeniable that foreign workers have contributed to the economic growth of the country, in particular by alleviating labour shortages in the construction sector. However, their presence has also put up stress on public amenities and services, such as the provision of public services, health and education facilities. *(extracted from Economic report 2004/2005, Ministry of Finance Malaysia).*

Distribution of foreign labour by trades (Azizah Kassim, 1998a), identified that 4% of the foreign labour in construction industry is allocated to be a bricklayer, 44% is a carpenter, 12% is a barbender, 4% is a tractor operator, 4% is a supervisor, 16% is a general labourer, 8% is a plasterer and another 8% is a painter.

This is the pattern of foreign labour employment and involvement according to sub-trades in year 1998 and no recent research been carried for the allocation, distribution and allocation of foreign workers according to sub-trades.

Foreign labour employment in 1998

Nature of employment & Job Type	No	%
<u>Self employed</u>		
Food stall operator	1	1.5
Retailer	8	11.9
Vegetable vendor	1	1.5
Tailor	1	1.5
Taxi driver	1	1.5
Lorry driver	1	1.5
Carpenter	5	7.4
Cobbler	1	1.5
Sub-contractor (doing house repairs, etc.)	3	4.5
Sub-Total	22	32.8
<hr/>		
<u>Employed</u>		
Maids	4	6
Manufacturing	1	1.5
Services	15	22.4
Kindergarten teacher		
Kindergarten child care		
Drivers (3)		
Gardener		
Dispatch rider		
Cleaners (4)		
Security guard		
Waiters (2)		
Garbage disposal labourer		
Construction Work	25	37.3
Bricklayer		
Carpenters (11)		
Barbenders (3)		
Labourers (4)		
Plasterers (2)		
Painters (2)		
Tractor Operator		
Site Supervisor		
Total	67	100

Figure 2.1 Profile of Foreign Migrant Workers in Malaysia in 1998

Conference of Migrant Workers and the Malaysian Economy (19 to 20 May 1998).

Source : Azizah Kassim 1998a : 16

2.4 Foreign labour performance in Malaysian construction industry

Recent researchers related to performance of foreign labour in are including Abdul (2011) with title of problem faced by contractors in managing foreign workers at site. This research finding elaborated factors that influence the productivity and quality of foreign workers are including induction courses. Foreign workers on site had benefited a lot from such programs. This followed 58.8% respondents agree that work quality is dependent on the skills of foreign worker, equipment, tools and technology adopted. Further to that, 44.1% respondents agreed that most foreign labour has sufficient knowledge to carry out the work correctly.

Zaleha, et. al (2011) Research analysis results indicated that increasing the domestic labour, foreign labour and material would yield positive influence on the productivity of the manufacturing industries. Ling (2006) identified that the requirement of sending back the foreign labour at every three years is not effecting towards low productivity and quality due to most of the them apply for extension of work permit or the will come back to Malaysia again after a short break in their country. The latest suggestion by Kwan (2011) that to consider extending the work permit for foreign workers to 5 years for other sector including construction industry in addition to plantation sector is appropriate.

Kwan (2011) said that future of construction industry is aligned with the well being and progress of the country and this should be a guide to everyone to move forward. Although there is a need to limit the number of foreign worker, a proper balance where there is a gradual limitation of foreign workers in this country must be juxtaposed with the need to preserve the number of skilled construction workers so that they can still continue to contribute towards the economy.

2.5 Function of Akademi Binaan Malaysia (ABM) in training local labour

The Immigration Department under the Ministry of Home affair bears full responsibility for the Policy Implementation. The Government reviews the employment situation regularly and industries that require foreign labour will be scrutinised before importation is allowed. (Lai 2004, Zehadul, et. al. 1999).

Prior to this, the employers are required to forward their recruitment advertisements and reminded that local workers should be given priority. When such vacancies are not filled by the locals, the employers can apply to Immigration Department with some deposit as a form of guarantee.

In line with the Government objectives to reduce dependence to foreign labour, Construction Industry Development Board (CIDB) came out with the guideline outlined in form of handbook manual. CIDB handbook manual (2007) identified the list of trades that is exclusive and reserved just for the locals and foreign labour is not allowed to fill this vacancy and a guideline and procedure on how the Contractors in Malaysia should be getting a skilled and trained labour from the Akademi Binaan Malaysia (ABM), an authorised CIDB's training centre .

2.5.1 List of trades that is exclusive and reserved just for the locals

List of trades that is exclusive and reserved just for the locals are as follows:-

1. Building and Civil Engineering

Plumber, Scaffolder, Non Destructive Testing, Radiography Testing Technician, Ultrasonic Testing Technicians, Penetrant Testing Technician and Magnetic Testing Technician.

2. Mechanical & Electrical

Electrical chargeman, electrical wireman, air conditioning system installer, welder and welder Inspector, telephone & telegraph installer, lift & escalator installer.

3. Earthworks Machinery Operator

All types of Machinery Operators include Excavator, Backhoe loader, Shovel, Dozer, Grader, Scraper, Forklift and Lorry driver.

4. Crane Operator

Tower Crane Operator, Mobile Crane Operator and Crawler Crane Operator.

5. Site Supervisor

Architecture works, maintenance works, civil works, electrical works, mechanical works & structural works supervisor.

CIDB advised that Contractors in Malaysia are encouraged to use local labourers instead of foreign labour by obtaining their trained labour particulars from the Six (6) ABM centres as follows:-

- Akademi Binaan Malaysia (ABM), Wilayah Tengah,
- Akademi Binaan Malaysia (ABM), Wilayah Utara
- Akademi Binaan Malaysia (ABM), Wilayah Selatan
- Akademi Binaan Malaysia (ABM), Wilayah Timur
- Akademi Binaan Malaysia (ABM), Wilayah Sabah
- Akademi Binaan Malaysia (ABM), Wilayah Sarawak

Other than the exclusive trades identified above, ABM is also producing a trained local labourers for bricklaying, tiling, plastering etc.

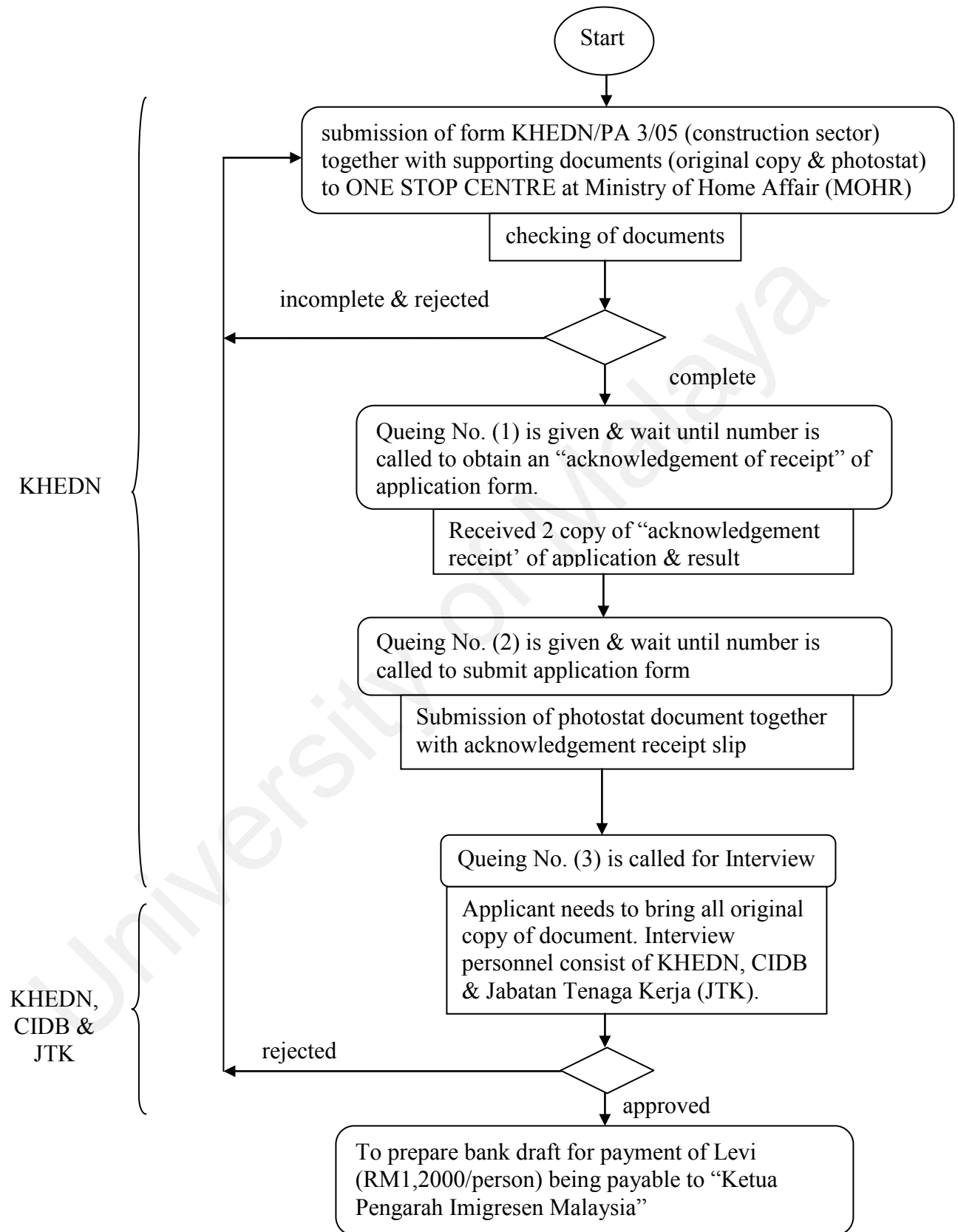
ABM is the training arm of CIDB Malaysia which caters for the development and upgrading of skills amongst construction personnel. A key focus of the ABM involves equipping construction personnel with the right skills, standards, competency, quality and productivity.

ABM has outlined seven (7) objectives to fulfill its role.

1. To produce more locally skilled and semi skilled construction personnel, hence reducing countries dependency on foreign workers.
2. To undertake structured and widely recognised Construction Skills Development courses which are conducted by well trained and professional trainers.
3. To produce productive, safety conscious, quality oriented and competent construction personnel to meet the ever changing needs of the construction industry.
4. To provide opportunities for construction personnel to upgrade their skills from time to time.
5. To support the industry in pursuit of competitive advantage by providing them with the right construction manpower capable of handling the increasingly advanced construction technology.
6. To develop and pave the way for the present and future export of locally groomed skilled manpower.
7. To carry out skills accreditation programs.

2.5.2 Guideline for application of foreign labour in Construction Industry

Starting from 1st August 2005, applications for foreign labour in Construction Industry is to be forwarded to One Stop Centre that at Ministry of Home Affair, division of foreign labour application, Level 4, Block 2G4 (Podium), Precint 2, Pusat Pentadbiran Kerajaan Persekutuan, Putrajaya Kuala Lumpur. Applicants are also required to fill in a form KHEDN/PA 3/05 that also can be obtained and printed via website <http://www.moha.gov.my>. Submission of application require the owner of the company or board of director to personally attend to submit their application to the One Stop Centre.



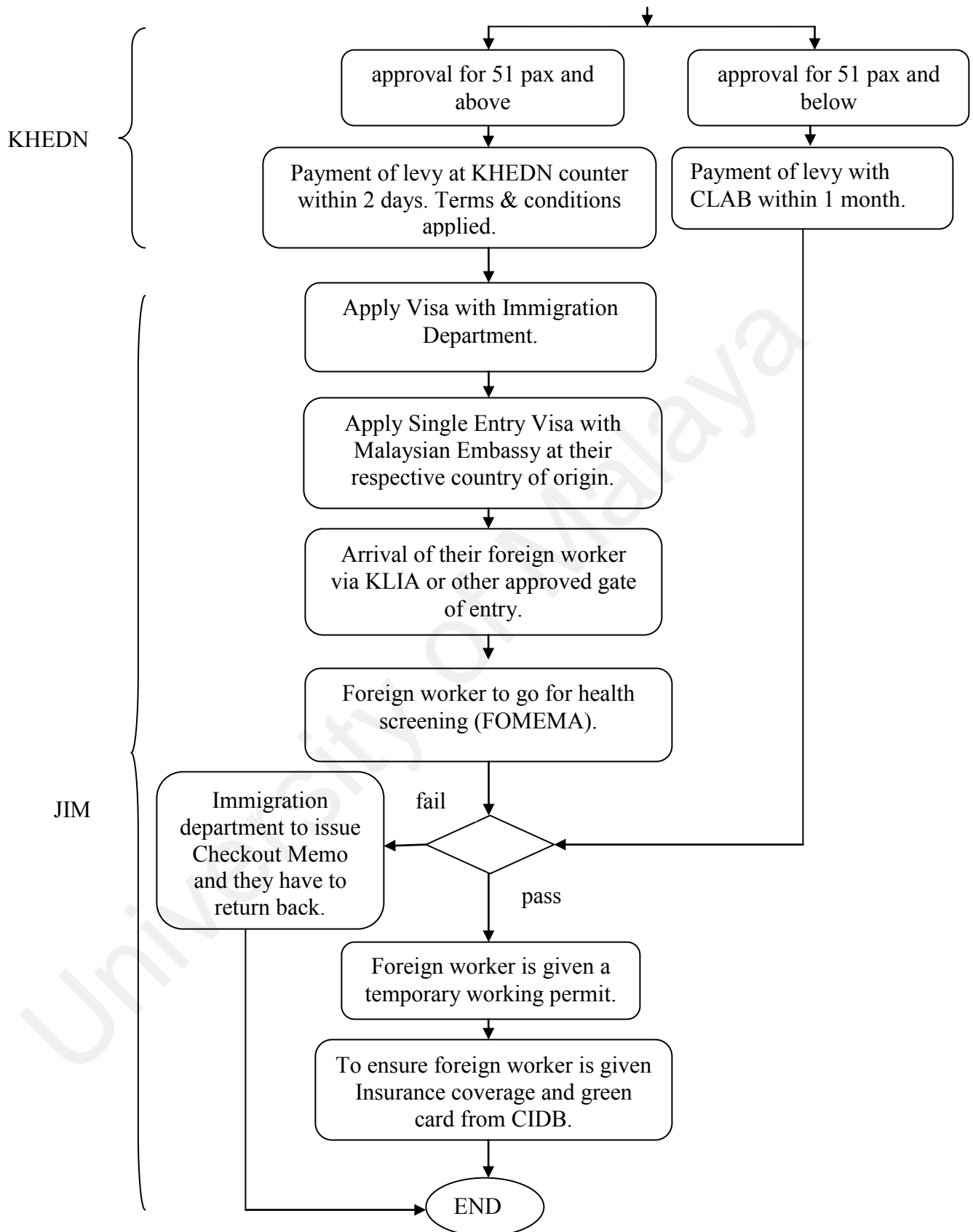


Figure 2.2 Process of foreign labour application

Source : Panduan Permohonan Pekerja Asing Sektor Pembinaan dated 1st January 2007 by CIDB

2.6 Effectiveness of the existing approach and proposal for further improvement

The Malaysian Insider (Asrul Hadi 2010), stated that government needs to conduct a comprehensive study of the country dependence on foreign labour. The country local labour force is not sufficient to maintain local industries despite the government ambitious plan for a high income economy under the New Economic Model (NEM).

Every sector of the industry including construction industry had too much dependent to foreign labour, these has make the government extremely stressed up. Supply of local labour is limited and therefore most of the business is dependent on foreign labour.

However, banning foreign labour could not solve the problem of unemployment in the country. Government cannot solve the problem of unemployment by not allowing the construction company to hire foreign labour.

Government urge all sectors to increase productivity through innovation and not by easy route by hiring foreign workers. Training the local labour resources is not only on theory of the construction method and management but supported with practical training, fiscal management and export. Government also admit that the local are weak in this matter. Local goes to many talk, courses, seminar, etc., which equipped them only by theory but they reluctant to practice it or going down to site to do practically.

Government is calling for employers to provide in house training which is called “shap floor training” to increase skills of the local labour. (Asrul Hadi 2010).

(Kang 2007, Lai 2004, Zehadul Karim et.al 1999), underlined the following are recommendations which the policy planners for their future planning:-

- a. Foreign workers are an international issue which requires international and regional cooperation. A harmonised labour policy should be formulated to deal with them efficiently. Laws should be enacted for all countries in the world for preserving their basic rights like supporting their health and labour insurance, providing them hygienic accommodations and creating awareness in the community to show them respect as minority.
- b. Malaysia has been experiencing a rapid economic growth in its multifarious development sectors and it is therefore, quite obvious that it requires a huge number of manpower. Since there is an acute shortage of work force, it has been suggested that the country should be immediately go for installing high powered technology for its development programmes which will reduce dependence on foreign workers.
- c. The presence of legal and illegal workers in the country poses serious social implications on the local community. The local often complain about the foreign workers violating the norms and values of the society and not respecting the local culture. In this regard, as the receiving country, Malaysia may request that the exporter countries introduce some orientation programme for their workers before the send them to work in this country. The illegal immigrants do not have any records and therefore, are not enlisted for medical insurance and other privileges. So, it is suggested that the importation and employment of illegal foreign workers should be stopped immediately.

- d. The presence of foreign workers is a challenge for Malaysia. It is quite likely that the international community has great expectations of the country as it is absorbing a huge amount of the labour force to employ in multi development sectors. The government should therefore form strategies to protect them from any unlawful repression. While they are performing their job to boost the country's economic development, they should be appreciated so that they get further incentive to work.
- e. Foreign labour is only a transit workforce which can be brought in or withdrawn with very short notice depending on the strategies of the sending countries. While relying on the foreign workers, the government should develop a long term manpower strategy to train its labour force with suitable knowledge and skills for their future needs, or find some labour substitute technology. The requirement of employers who seek to recruit foreign workers to submit proposal to eliminate such need within a certain period as adopted in other country.
- f. Government of Malaysia is urged to formulate a most transparent and comprehensive policy to deal with the foreign workers so that they can be utilised suitably in a better working environment and also at the same time, so that they do not hurt the sentiment of the local people.

2.7 Conclusion

Foreign workers have increased over the past decade due to sustained economic growth and the tight labour market situation. As a long terms measure to ensure sustainable growth as well as minimise socio-economic implications, a medium to long term policy on foreign workers will be revised with the view to reducing over dependence on foreign workers while attracting the more skilled and trained professional.

At this point in time, the use of foreign workers is still necessary. It must be noted that while the industry steps up efforts to increase the local labour capacity, the use of foreign workers will continue to be a necessity. While the industry puts in place programmes to promote and attract local workforce, it will take time for the programmes to yield results. In the intervening years, there will still be demand for foreign labour. In light of this, technical training will also be given to the foreign workers to raise their skill profile. Although it may difficult to make a handful a wet trades (e.g. bricklaying, plastering) appealing to local labour, the industry should continuously attract a skilled workforce.

The Malaysian construction industry will always have a need for a small population of legal, skilled foreign workers. It is therefore important that two mechanism are in place to safeguard the progress and development of the industry. Firstly, it will be necessary to introduce a mechanism to differentiate between skilled and unskilled foreign workers before they allowed to enter the country. This will help maintain a high skill level in the construction workforce. Secondly, training must be provided to those unskilled foreign workers who are already in the country.

CHAPTER 3

LABOUR CHARACTERISTICS RELATED TO PROJECT PERFORMANCE

3.1 Introduction

The previous chapter has discussed the existing literature or history of foreign labour movement to other countries and also pattern of foreign labour intake to Malaysia, process of foreign labour application, and some restriction of trades that cannot be taken by foreign labour. These intake of foreign labour is necessary to fulfill the receiving country needs to work in construction industry as a labourers that cannot be filled up by local labours.

Vacancy as a labourers in construction industry in Malaysia is not a preferable job by the locals due to their perception of 3D which is dirty, dangerous and demeaning. Azizah Kassim (1998a) has also carried our a research on the allocation of these construction labour into trades. These has motivated this research to find out what is the correlations of foreign labour involvement on construction project performance.

This chapter provide an elaboration of the interrelation of the independent and dependent variables. Foreign labourers have increased over the past decade due to sustained economic growth and the tight labour market situation. The emergence of foreign labour at site operations is an indispensable component of labour force. The lack of local interest combined with labour shortage means Malaysia will continue to be dependent on foreign labour to move the wheels of the country's economy.

3.2 Factors considered in allocation of foreign labour (independent variables)

Allocation of foreign labour in construction industry is highly depending on the needs of each sub-trades. The demand is strongly influence by on how difficult is the task required and therefore the main contractor require a skilled labour or semi skilled labour to fill in that required position and vise versa.

3.2.1 Government control trades

As explained in the earlier chapter, government has restricted involvement of foreign labour in the construction managerial post, operator, technician, officer, etc. Apart from the job description, government is also restricting in terms of ratio of involvement of foreign labour at their project site. (Abdul Rahim, 2011).

Table 3.1 shows the calculation of foreign labour that is allowed to be employed at site. Total number of foreign workers is depending on the project duration (D) and project value (PV). Reasons of limiting the intake of foreign labour is to allow local labourers to participate.

Estimation of workers requirement

Table 3.1 : An estimation of workers requirement varies according to types of construction projects

Type of Construction Project	Factor of gross CL requirement per RM1.0m project value
Low rise building (4 storey and less)	$(150/D) \times PV$
High rise building (above 4 storey)	$(120/D) \times PV$
Infrastructure works <ul style="list-style-type: none"> • Road/highway • Bridges • Piping works (>1350 mm diameter) • Retaining walls • Sewerage • Land reclamation • Overhead transmission power line • Underground cable 	$(100/D) \times PV$
Building Services <ul style="list-style-type: none"> • Electrical wiring • Fire fighting installation • Telecommunication cabling 	$(80/D \times PV)$
Landscape	$(80/D \times PV)$

Where CL = Construction Labour; D=Duration; and PV = Project Value
 Source : Mukhtar (2005)

Table 3.2 : Illustrate the “norm” in computation of numbers of construction workers by project

Type of development	Project Value	No. of construction workers required
Housing	< RM1m	<15
	RM2m – RM10m	15-60
	RM10m – RM20m	80-120
	RM20m – RM40m	100-200
	RM40m – RM60m	200-300
High rise building	<RM10m	<30
	RM10m – RM20m	30 – 40
	RM20m –RM40m	40 - 60
	RM40m –RM60m	60 – 80
	RM60m – RM80m	80 – 100
Infrastructure road & highway	For every RM10m = 1 gang	
	Road Highway	30/gang 50/gang
b1. Piping Works b2. Housing reticulation works c.river retaining wall d.bridges	Diameter 1350mm	30/gang 5/gang
	RM3m	30
	<RM1m	<15
	RM1m – RM3m	15 – 60
	RM3m – RM5m	60 – 80
	RM5m – RM10m	80 – 120

Source : Mukhtar (2005)

Table 3.3 : Illustrate the “norm” in computation of numbers of construction workers by specialised project

Type of specialised projects	Project Value	No. of construction workers required
Plumbing & sanitary works	No limitation of PV	4/gang
Transmission line Tower erector Stringing	No limitation of PV	15/gang 40/gang
Underground cable	No limitation of PV	15/gang
Oil & gas pipeline: Electrical & installation Gas pipe fitting, welding	RM1m RM5m – RM6m	20-30 (duration : 6m) 70-80 (duration : 6m)
Roof truss installation	< RM0.5m = 1 gang	5/gang
Boring (soil investigation)	RM0.5m- RM1m	5/gang
Piling	= 2 gang	6/gang

Source : Mukhtar (2005)

General formula

The general formula on computation of Gross Construction Labour requirement is based on Project Value (material + labour) or on labour cost as follows:

Based on project value (material + labour)

$$\frac{\text{Project Value (RM)} \times 15\% \times \text{1 month}}{\text{Duration (month)} \times \text{worker salary}}$$

Based on labour cost

$$\frac{\text{Project Value (RM)} \times 40\% \times \text{1 month}}{\text{Duration (month)} \times \text{worker salary}}$$

Estimation on Construction labour requirement

Estimation on construction labour requirement is computed based on the following formula:

$$\text{GCLR} - \text{TACL} = \text{ECLR}$$

Where GCLR = Gross Construction Labour Requirement

TACL = Total Available Construction Labour (Local+ Foreign)

ECLR = Estimated Construction Labour Requirement

ECLR will be the recommended figure to Jabatan Tenaga Kerja (JTK) on Employment of Foreign Workers at KHEDN

Example of computation

Table 3.4 : An example of computation on the number of construction labour requirement is illustrated as follows:-

Project	Project Value	Project Period
P1	RM1.48m	11.02.2011 – 11.08.2011 (6 months)
P2	RM202,000.00	21.04.2011 – 21.08.2011 (4 months)
P3	RM950,000.00	12.2.2011 -12.8.2011 (6 months)
P4	RM208,875.00	04.05.2011 -04.07.2011 (2 months)

Source : Mukhtar (2005)

Assumptions:

- Number of existing local workers = 70
- Number of existing foreign workers = 1
- Number of foreign workers applied for = 8
- 15% from project value is labour cost
- Salary per worker is RM1,000.00 per month

Computation formula

$$\frac{\text{Project value (RM)}}{\text{Project Duration (mth)}} \times 15\% \times \frac{1 \text{ month}}{\text{RM1,000}} = \text{Number of foreign workers applied for}$$

The number of workers required to implement all the project above concurrently is as follows:-

$$P1 : \frac{\text{RM1,480,000}}{6 \text{ months}} \times 15\% \times \frac{1 \text{ month}}{\text{RM1,000}} = 37 \text{ workers}$$

$$P2 : \frac{\text{RM202,000}}{4 \text{ months}} \times 15\% \times \frac{1 \text{ month}}{\text{RM1,000}} = 8 \text{ workers}$$

$$P3 : \frac{\text{RM950,000}}{6 \text{ months}} \times 15\% \times \frac{1 \text{ month}}{\text{RM1,000}} = 24 \text{ workers}$$

$$P4 : \frac{\text{RM208,875}}{2 \text{ months}} \times 15\% \times \frac{1 \text{ month}}{\text{RM1,000}} = 16 \text{ workers}$$

$$\text{Total number required} = 85 \text{ workers}$$

The eligible number of foreign workers applied for is computed as follows:

Eligible no. of FW applied for = total no of workers required x 75% (limitation on no of FW allowed) – no. of existing FW ie. (85 workers x 75%) – 1 FW = 63 FW

However, since the number applied for is 85, hence the recommended number of FW=63

Verification of information

Whenever any uncertainties arise, verification of information will be made either by telephone call or interview or visit to the site. Contractor who found to provide false information shall be blacklisted. Any future applications for employment of foreign workers by the said contractor will not be considered by the Jabatan Tenaga Kerja (JTK) on employment of foreign workers

Common mistakes in application of foreign workers

An analysis on rejection of application for foreign workers from January—April 2005 reveals the following common mistakes by the employer:

Table 3.5 : List of reasons of rejection

Reason of rejection	Total	%
1. Adequate number of FW	217	31.8
2. Incomplete information	100	14.7
3. Expired/no CIDB registration	92	13.6
4. Incomplete filling of application form	86	12.5
5. Ambiguous information	72	10.6
6. Position is reserved for local workers	52	7.6
7. Project completed	35	5.2
8. FW not from source country	12	1.7
9. Complete approval earlier	8	1.2
10. Application out of category applied	5	0.7
11. Falsified CIDB certificate	3	0.4
Total	682	100

Source : Mukhtar (2005)

Table 3.5 shows a few reasons why application to apply foreign labour is rejected. It is showing that 217 numbers of application which is represent 32% of application is rejected due the project site has already having adequate number of foreign workers. If the contractors feel that their workforce is not sufficient, that vacancy should be filled up by local labour.

3.2.2 Level of expertise

Foreign labour expertise had been categorised into unskilled, semi skilled and skilled. Skilled labourers although is more expensive compare with unskilled and semi-skilled but their experties will make the employer to be less problem as their expertise would contribute to high quality of workmanship and able to speed up the whole operation of works at site. Azizah Kassim (2005).

3.2.3 Type of expertise

Expertise means speciality in doing the allocated or specified task that have given to them. Allocation and distribution of foreign labourers at site is depending on their respective expertise. Foreign labourers whom experts in architecture works, ie plastering works, bricklaying etc. is not able to do works in other trades, ie electrical works, plumbing works, etc. and vice versa (Azizah, 2005). Selection of foreign labour according to their type of experties and years of works experience will contribute to their high level of workmanship and speedy completion. Usually the sending country especially Indonesia will trained their workers before sending to Malaysia. They will send their workers batch by batch according to their speciality for easy monitoring of outgoing labourers from their country. However labourers without any experience will come as a general labour. They will learn as an

apprenticeship and gain experience and expertise according to which sub-trade are they handling or working with. (Azizah, 2005).

3.2.4 Origin / spoken languages

The mixture of construction labourers from different countries speaking different languages and with different cultures, traditions and work ethic poses managerial problems on site (Nurul Azita, et. al 2012). Communication between Malaysian supervisors and the largely semi-literate foreign labour from many communities, most of them who have little command of Malay languages is difficult. This leads to errors resulting from misunderstood instruction, which in return, culminate re-works, wastage, delays and increased costs (Nurul Azita, et. al. 2012). Among the factors identified as contributing problems are lack of basic command of local languages (MOHR, 2004).

Study shows that the main adjustment problem facing foreign workers is language (Nurul Azita, et. a. 2012). Many employers have supervisors who have learned the main languages of the country of origin of the foreign workers. However, the use of sign language is not uncommon on construction sites. The limitations of such a form of communication are clear. There is anecdotal evidence that because of the ease of communication with them in Malay which have a similarities with bahasa indonesia, contractor prefer employ Indonesian foreign labour.

3.3 Definition of Performance Measurement (dependent variables)

Performance measurement is the ongoing monitoring and reporting of programme accomplishment, particularly progress towards preestablished goals. It is typically conducted by programme or agency management (Thomas and Thomas, 2005). Performance measure may address the type or level of programme activities conducted (process), the direct products and services delivered by a programme (outputs), and/or the results of those products and services (outcome). A 'program' may be any activity, project, function or policy that has an identifiable purpose or set of objectives.

From Voytek et al 2004 & Neely et al 2000 said that:-

- *Performance measurement* can be defined as the process of quantifying the efficiency and effectiveness of action.
- *A performance measurement* can be defined as a metric used to quantify the efficiency and/or effectiveness of an action.
- *A performance measurement system* can be defined as the set of metric used to quantify both the efficiency and effectiveness of actions.

3.3.1 Program evaluation

Program evaluations are individual systematic studies conducted periodically or on ad hoc basis to assess how well is the programme is working (Oakland and Marosszky, 2006).

They are often conducted by experts external to the programme, either inside or outside the agency as well as by programme managers. A program evaluations typically examine achievement of programme objectives in the context of other aspects of programme performance or in the context in which it occurs.

3.3.2 Different focus

Performance measurement focuses on whether a programme has achieved its objectives, expressed as measurable performance standards. Programme evaluations typically examine a broader range of information on programme performance and its context that is feasible to monitor on an ongoing basis (Oakland and Marosszeky, 2006).

Depending on their focus, evaluations may examine aspects of programme operations (such as in a process evaluation), or factors in the programme environment that may impede or contribute to its success, to help explain the linkages between program inputs, activities, outputs and outcomes. Alternatively evaluations may assess the program's effects beyond its intended objectives, or estimate what would have occurred in the absence of the programme, in order to assess the program's net impact. Additionally programme evaluation may systematically compare the effectiveness of alternative programs aimed at the same objectives.

3.3.3 Different use

Both forms of assessment aim to support resource allocation and other policy decisions to improve service delivery and program effectiveness. But performance measurement, because of its ongoing nature, can serve as an early warning system to management and as a vehicle for improving accountability to the public. A program evaluation's typically more in-depth examination of programme performance and context allows for an overall assessment of whether the programme works and identification of adjustments that may improve its result. The use of learning mechanism helps the parties address their need for continuous improvement (Kululanga et al., 1999).

3.3.4 Process or implementation of evaluation

This form of evaluation assesses the extent of which a program is operating as it was intended. It typically assesses program activities conformance to statutory and regulatory requirement, program design and professional standards or customer expectations.

3.3.5 Outcome evaluation

This form of evaluation assesses the extent to which a program achieves its outcome oriented objectives. It focuses on outputs and outcomes (including unintended effects) to judge program effectiveness but may also assess program process to understand how outcomes are produced.

3.3.6 Impact evaluation

Impact evaluation is a form of outcome evaluation that assesses the net effect of a program by comparing program outcome with an estimate of what would have happened in the absence of the programme. This form of evaluation is employed when external factors are known to influence the program's outcome, in order to isolate the program contribution to achievement of its objectives. Salter and Torbett (2003) mentioned that the measurement of performance could lead to innovation and comparativeness.

3.3.7 Cost benefit and cost effectiveness analysis

These analysis compare a program's outputs or outcomes with the costs (resources expended) to produce them. When applied to existing programs, they are also considered a form of program evaluation. Cost effectiveness analysis assesses the cost of meeting a single goal or objectives, and can be used to identify the least costly alternative to meet the

goal. Cost-benefit analysis aims to identify all relevant costs and benefits, usually expressed in dollar terms.

3.4 Measurement of Project Performance/success

The measurement of project success in the construction industry has traditionally been grounded in the industry-accepted classic objectives success metrics: cost, time/schedule, quality, and durability (Hemanta and Ming 2009 & Johnson 1995). Initial research has indicated that there are more subjective consideration that while being difficult to quantify, can have an important impact on perceptions of project success. The tool would have to provide the flexibility necessary to account for the fact that every project is different.

Measuring Project Success in Construction Industry

Traditionally, project management has dealt only with managing the project planning and implementation process. This view of project management specifically views the project as a task or process that needs to be completed following the specification, budget and time given (Roshana and Hamimah 2008 & Sidewell 1990). This approach has provided universally accepted metrics of cost, schedule and performance to evaluate the success of the project. In addition to the above traditional project metrics the industry professionals have also recognised that, some of the projects, safety performance can be the primary determinant of success, regardless of the outcome of the other classical metrics. The data provided under the traditional metrics are fairly easily quantifiable, however there are other aspects of a project, including the level of 'quality' achieved, and that may be more subjective. Additionally, when subjectivity is involved, the "eye of the beholder" becomes a major factor in evaluating how well a project performed and how successful it was perceived. Without clear measurement of performance against benchmarks, it is difficult

for any teams to determine how well they have done and what improvement they need to make (Cain, 2004).

Baccarini (1999) suggested a successful project can be defined in two distinct components namely the “two concepts”: *project management success* and *product success*. The first concept focuses upon the project success in particular the successful accomplishment of the project time, cost and quality, which can be measured in terms of meeting the project schedule, budget, and conformance to functional and technical specifications respectively. The later concept deal with the effects of the project final product has three key components which are to satisfy the project goal, project purpose and project stakeholders.

Similarly, Atkinson (1999) derived a model of measuring project success in two stages. The first stage is “the delivery stage: the process, doing it right” which can be measured in terms of cost, time, quality and efficiency of the project. This stage is arguably identical with Baccarini’s first concept in defining project success. The second stage is post delivery stage and has been divided into “the system” and “the benefits”. “The system” deals with the benefits of various stakeholders involved with the project and project resultant system, whilst, “the benefits” measures the impact on customer and business success. Again, second stage of Atkinson’s project success model is very similar to Baccarini’s second concept discussed previously. Hence, these shown that time, cost and quality are the three main variables in measuring a success of project management.

3.4.1 Time

In today's highly competitive business environment, time has become a precious commodity (Hemanta and Ming 2009 & Jackson and Hall 1992). Time has been described as both source of competitive advantage and the fundamental measure of manufacturing performance (Voytek 2004, Drucker 1990 & Stalk 1988). Time cannot be stored, borrowed, purchased, traded or changed. Still it permeates every facet of business today, from research and development, through to marketing and distribution. In strategic decision making, time is more useful and universal metric than cost or quality because it can drive improvement in both variables (Jackson and Hall 1992; Vonderesebse 1996). Reducing wait time that can approach 95% of elapsed time offers the most immediate opportunity for improvement (Fooks 1992).

Delays are not uncommon in construction projects (Graves and Rowe 1999, Wright 1997). The clients normally expect fast projects in order to attain "first in the market" advantage over competitor (Kog et. al. 1999). Shorter construction time leads to improve client satisfaction. Because of time related overheads and other relevant expenses such as the hire of construction plant and liquidated damage, contractors also prefer to shorten their stay on site to reduce costs and increase their profits. Once delays occur, working longer hours may make up the lost time, more shifts, increasing the number of labour and providing additional plant & machinery, at considerable additional cost. Quality standard may also invariably drop during accelerated work (Farrow 1991). An emphasis on time can make contractor realise any quality problems will cause rework, making the time target more difficult to achieve, and therefore greater effort is expended in an attempt to guarantee satisfactory quality performance.

3.4.2 Cost

It is undeniable that each construction job has a cost. A low cost give a low price and provides a better opportunity for profit than a high cost. Cost is the utmost important to Main Contractor. In poorly competitive environment, where the formula “labour + material + profit = price” is valid, people attentions tend to stray away from improvements in the production system (Voytek 2004 & Shingo 1998). However this formula is no longer applicable in today’s competitive environment and many companies are realising this rather late. In the current context, price is becoming market led and because of that profit now is severely affected by final cost (“price-cost=profit” or “price-profit =cost”). (Miller and Vollmann 1985) have pointed out that while many managers focus on the visible costs. e.g. direct labour, direct material etc., the majority of overheads are caused by invisible cost, and achieving a competitive criteria. The production of products at competitive cost is a big challenge for the business.

3.4.3 Quality

Quality has been defined in terms of conformance to specification, hence quality based measures of performance has focused on issues such as the number of defects produced and the cost of quality (Voytek 2004 & Barrett 2000). Quality in construction projects, as well as project success, can be regarded as the fulfillment of expectation of stakeholders involved (Barrett 2000 and Sanvido et. al 1992). (Feigenbaum 1961) was the first to suggested that the true cost of quality is a function of the prevention cost as the cost expended in the effort to prevent discrepancies, appraisal cost is cost associated in the evaluation of product quality and in the detection of discrepancies. The failure cost associated with the result of discrepancies is categorised as internal and external failure cost.

(Crosby's 1972) assert that quality is free is based on assumption that for most firms, an increase in prevention costs will be more than offset by a decrease in failure costs. Quality, as a production competitive criterion, has a variety of different connotations and interpretations for production. From a strict operational point of view, the most practical and straightforwardly visible way of detecting quality in any production system is the level of process variability. Strategic decision using this interpretation, usually focus on actions aimed at continuously reducing the root cause of process problem in the long-term (Imai 1986, Shingo 1988). However, one of the shortcomings of this internally oriented definition of quality is the assumption that production is already working under specifications that matches into customer's requirements. This may not always be the case. In this context, a more comprehensive explanation of quality defines it as fitness for use, or the capacity of consistently meet, or exceed, customer needs and expectations. (Roshana and Hamimah 2008, Deming 1986; Juran 1989; Schroeder 1993; Vonderembse 1996).

3.4.4 Defects

In general terms defects or defective works is where the standard and quality of workmanship and material as specified in the contract is deficient. Defects can be classified into two main categories, patent defects and latent defects. Patent defects are defects that can be discovered by normal examination or testing whereas latent defects are defects that are not discoverable by normal examination or testing which manifest itself after a period of time (Anon 1, 2007).

Atkinson defines defects as a breaches of terms and conditions of contract by the contractors (Atkinson, 1999). Defects can take place in any part of a construction project and at any stage of construction. (Cama, 2004) defines defect in a context of a building contract as “a failure of the completed project to satisfy the express or implied quality or quantity obligations of the construction contract. Sweet (1993) acknowledge that the construction defects is defined by the law as failure of the building or any building component to be erected in a reasonably workmanlike manner and Marianne (2005), define construction defect as a failure of a building component to be erected in the appropriate manner. Summerlin and Ogborn acknowledge that construction defects can be the result of design error by the architect, a manufacturing flaw, defective materials, improper use or installation of materials, lack of adherence to the blueprint by the contractor, or any combination thereof (Summerlin and Ogborn, 2006).

Construction defects are inevitable in construction projects delivery and are usually contentious between the employer and the contractor or subcontractors. Construction defects are the unacceptable quality of a project which can be identified and remedied. Defective construction works can be defined as works which fell short of complying with the express descriptions or requirements of the contract, especially any drawings or specifications, together with any implied terms and conditions as to its quality, workmanship, durability, aesthetic, performance or design. Most modern buildings and civil structures are complex undertakings and involve the use of a great variety of engineering methods and processes. Therefore most projects face the possibility of defects and defective works, which generally result in structure that cannot perform their originally intended roles (Atkinson 1999; Cho et al, 2006).

Types and causes of construction defects

Defects in construction project particularly building project are attribute to various reason for example, improper fixing of water pipe, poor quality of material supplied by building merchants or by combination of poor quality of materials and poor workmanship. Irrespective the causes of the defects, they diminish the quality of construction works and sometimes the value.

It is generally believed that there are two major types of defects in building projects. According to Cama (2004) defects are often referred to as patent defects and latent defects. Where the latent defects are the oposite of patents defects.

- i. Patent defects are discoverable upon examination or shortcoming in the structure that is apparent to reasonable inspection for example a roof leak or a foundation crack. Normally, defects are readily apparent to the naked eye and are therefore capable of being accessed and measured relatively easily and then, if necessary, rectified.
- ii. Latent defects are those hidden or concealed defects that would not be discovered in the course of a reasonable inspection. A latent defect is by definition something that is not easily discoverable. Normally, defects only become apparent at some later date or upon an investigation of some consequential effects caused by defects.

Patent defects are plain to see, or at least, that is the theory. Whether the engineer could or should have seen defects on site during site visits has exercised more than one judicial mind. (Nigel, 1996). As to the second category of defects, ie. Latent defects, the same two

references described the following definitions/meanings (Harban, 2003): “A defect which is not discoverable during the course of ordinary and reasonable examination but which manifest itself after a period of time. In building and civil engineering work the most common application is defects becoming apparent after the maintenance period expired. “Robinson and Lavers describe a ‘latent’ defect in the following words (Nigel, 1996): “... a defect that cannot be discovered by normal examination and testing..”.

Most often to clearly differentiate the patent from latent defects depend on the direction of examination and the expertise of the judge in the court of law. According to Cama the decision to classify a defect as a patent defects or latent defects is up to the judge and the outcome sometimes is surprising (Cama, 2004). However as stated by Chan (2002) that by its nature, a latent defects cannot be discovered until it becomes patent and yet it may not be discovered immediately since there may be no immediately apparent sign to indicate the presence of the defects.

According to Kenneth (2002), common type of construction defects includes: structural defects resulting in cracks or collapse; defective or faulty electrical wiring and/or lighting; defective or faulty plumbing, inadequate or faulty drainage systems; inadequate or faulty ventilation, cooling or heating systems; inadequate insulation or sound proofing; inadequate fire protection/suppression systems.

According to Marianne (2005) all types of defects reported from 1997 to 2006 has been related to design deficiencies, construction deficiency and subsurface problems.

3.5 Conclusion

Literature review for foreign labour movement, foreign labour intake and foreign labour pattern generally in the world and particularly in Malaysia has been elaborated in Chapter 2.

This chapter is to elaborate the literature review for both dependent variables and independent variables. Dependent variable is a project performance which consists of (1) project can be completed on time (2) high quality of workmanship (3) maximise profit earning and (4) less defects.

Independent variables is a foreign labour characteristic which consists of (1) government controlled trades and government controlled quantity of foreign labour (2) type of expertise (3) level of expertise and (4) origin of labour. These independent variables for item 2 to 4 are sub-divided into seven sub-trades ie preliminaries, architectural, structural, interior design, mechanical & electrical works, external works and others is as per standard arrangement of Bill of Quantities and as per guideline from Standard Method of Measurement and further categorised or classified them into skilled, semi-skilled and unskilled. Percentage of foreign labour over total labour employed at site needed to be categorised in 5 likert scale of 1 for none, 2 for low, 3 for moderate, 4 for high and 5 for very high.

From the above literature reviews, questionnaire has been formed to find out the inter relation between the independent variables as foreign labour characteristic and dependent variables as project performance. At the end of the study, from the data collection and validation of data collected through face to face interview.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

According to Cambridge dictionaries online: research: a detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding. Research can thus be defined as a systematic process of collecting and analyzing information or data in order to provide sound explanations that can become new information. Research methodology is essential in guiding the researcher to achieve the aim and objectives of the study by scientifically and systematically searching for pertinent information on a specific topic. Research is a systematized effort to gain new knowledge (L.V. Redman, A.V.H. Mory, 1923). Research is an organized, systematic, data based, critical, objective, scientific inquiry or investigation into specific problems, undertaken with the purpose of finding answers or solutions to it (Uma Sekaran, 2010). Research design is a plan to conduct a research that spans the decisions from broad assumption to detailed methods of data collection and analysis (Creswell, 2009). The research design addresses the planning of a scientific inquiry for finding out something. There are two aspects of research design. First, the research must specify clearly as possible what to find out. Second, the research must determine the best way to do it (Babbie, 1998). The educational researchers Creswell and Miller (1997) have described that a research methodology is a belief system or inquiry paradigm that “provides a philosophical base of frame of reference for approaching research that complements a content area of inquiry”. In a fine logic, a research methodology can also be viewed as a process undertaken in the carrying out of a scholarly inquiry.

4.2 Philosophical background

This section discussed the main philosophical issues considered when preparing and commencing the present research. Like every human action, the research is grounded on the philosophical perspective, implicitly or explicitly, to ignore the philosophical issue, while not necessary fatal, can seriously affect the quality of research. According to Easterby-Smith et. al. (2008), understanding the philosophical positioning of research is particularly useful in helping researchers clarify alternatives design and methods for a particular piece of research, and identifying which one is more likely to work in practice.

4.2.1 The research method adopted

In this context, the philosophical approaches underlying this research is triangulation which is a combination of positivist approach and interpretative approach. This approach is chosen because the hypothetical-deductive methods over simplifies reality and usually strips out complicating factors that could be important to construction practitioners (Remenyi et. al. 2002). Moreover this thesis is applying theory from operations management, where researchers applied positivist approach and usually tried to follow a hypothetical-deductive method, proceeding in a logical step-by-step fashion (Flynn et. al. 1990); Pannirselvam et. al. 1999; Scudder and Hill (1998). Other researchers such as Babbie (1998), Bailey (1987) and Best (1989) support the virtues of empirical research. However Mc Grath (1984) in his study of research choices makes it clear that there are no ideal solutions, only a series of compromises. Patton (2002) express the same view that research, like diplomacy, is the art of the possible and Yin (2002) said that the research methodology should be chosen as a function of the research situation.

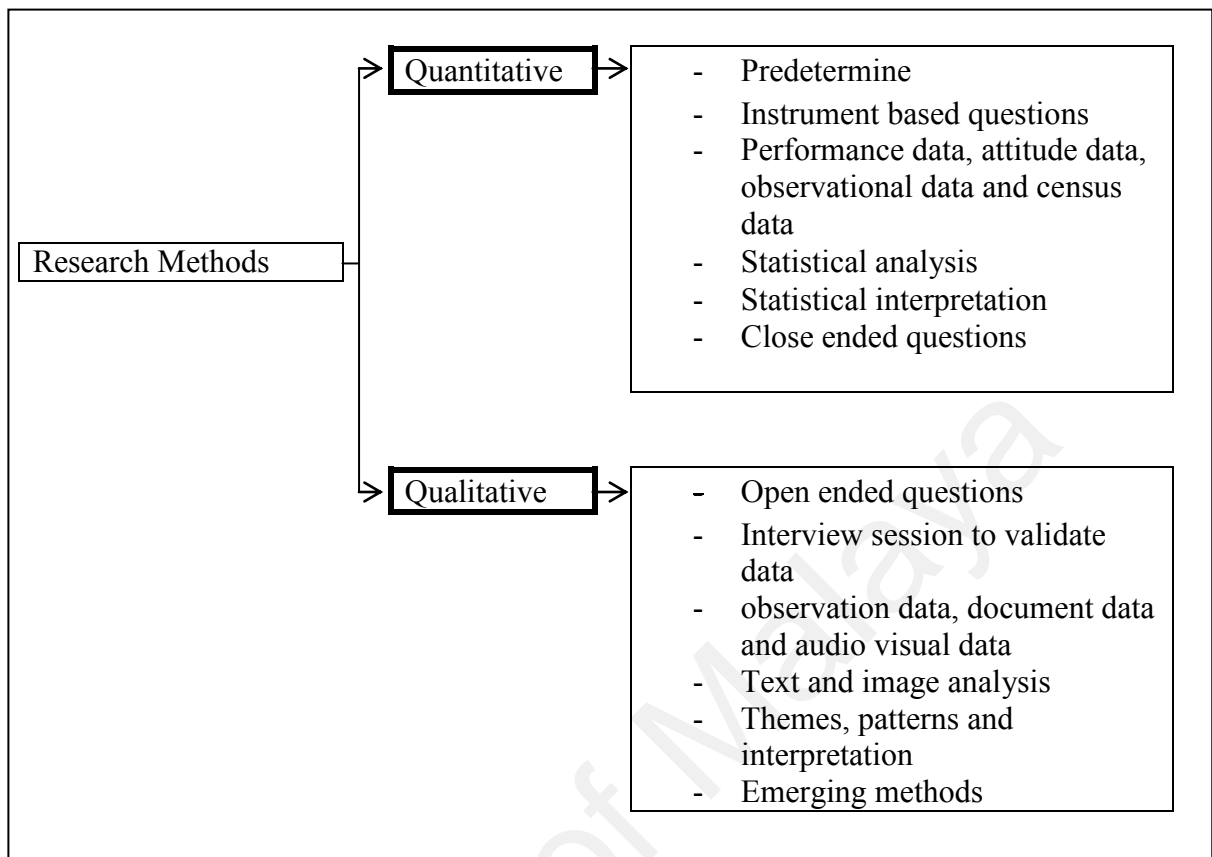


Figure 4.1 shows the philosophical approach adopted using positivist and interpretative approach.

Research method adopted is a mix method, where adopted all items listed under the quantitative research method and for qualitative is selected and limited to interview session to validate data and open ended questions only as shown in a Figure 4.1 above.

4.3 Research strategy

Prior to selecting a research strategy, it is necessary to determine the research topic questions and purpose. The topic of this research is the correlations of foreign labour involvement on construction project performance more significantly to find out the relation between patterns of allocation or involvement of foreign labour in terms of their expertise

with project performance. The research questions are important because this will help the researchers to locate the source of data (Chenail 2000).

A step in research process or a research circle (Leedy et. al., 2005) refer figure 4.2, are includes an initial question is being asked, the initial question is formally stated as problems, preliminaries data is gathered, a tentative hypothesis is formed, data are systematically collected, data are processed and interpreted, a discovery is made – a conclusion is reached, the research question is answered, supported or not supported and therefore the cycle is complete. As described in chapter 1 (page 5), the research questions driving this research are includes the following :-

- | | |
|---------------------|---|
| Research Question 1 | What are the existing approaches implemented by the Government to manage foreign labour involvement in Construction Industry? |
| Research Question 2 | In which trades are the most involvement of the foreign labour? |
| Research Question 3 | To establish relationship between origin and level of expertise of foreign labour with project performance? |
| Research Question 4 | To establish relationship between type of expertise of foreign labour with project performance? |
| Research Question 5 | To establish relationship between the Government existing approach with project performance? |

This dissertation employs triangulation technique, which combines quantitative and qualitative approaches. This research starts with identification of dominant factors through literature review and a questionnaire survey followed by semi structured interviews by 10 respondents. This study was carried out through literature search followed by questionnaire and finally interview. Subsequently, the questionnaires and their results and interferences will be presented. It follows through discussions and suggestion and eventually conclusions were drawn to conclude the study.

The study is designed to find out the actual as possible percentage of involvement of foreign labour in every trades in the construction industry including finding out percentage of skilled, semi skilled and non skilled involves and their respective origin.

At the end of this study we will be able to summarise how these allocation of foreign labours has really contribute to achieve remarkable project performance in terms of project completed on time, contributed high profit to the company, achieved high quality of works and less contractual management argument which leads to arbitration, huge amount to claim for variation order, etc. after one (1) year of works completion.

From the interview to the selected respondent, they have concluded that factors considered in allocation of foreign labour in their project is including type of expertise, level of expertise, origin of labour and government controlled trades.

The purpose of the research survey is to find out what is the most important criteria should acquire by the foreign labour and how is the involvement of foreign labour has contributed to a successful project performance.

Trustworthiness of a research study is also important to evaluating its worth (Lincoln & Guba 2000). Trustworthiness involves establishing the credibility that is a confidence in the truth of finding, transferability that is showing that the finding have applicability in other contents, dependability that is showing that the findings are consistent and could be

repeated, conformability that is a degree of neutrality of the context of which the findings of a study are shaped by the respondents and not researchers bias, motivation, or interest.

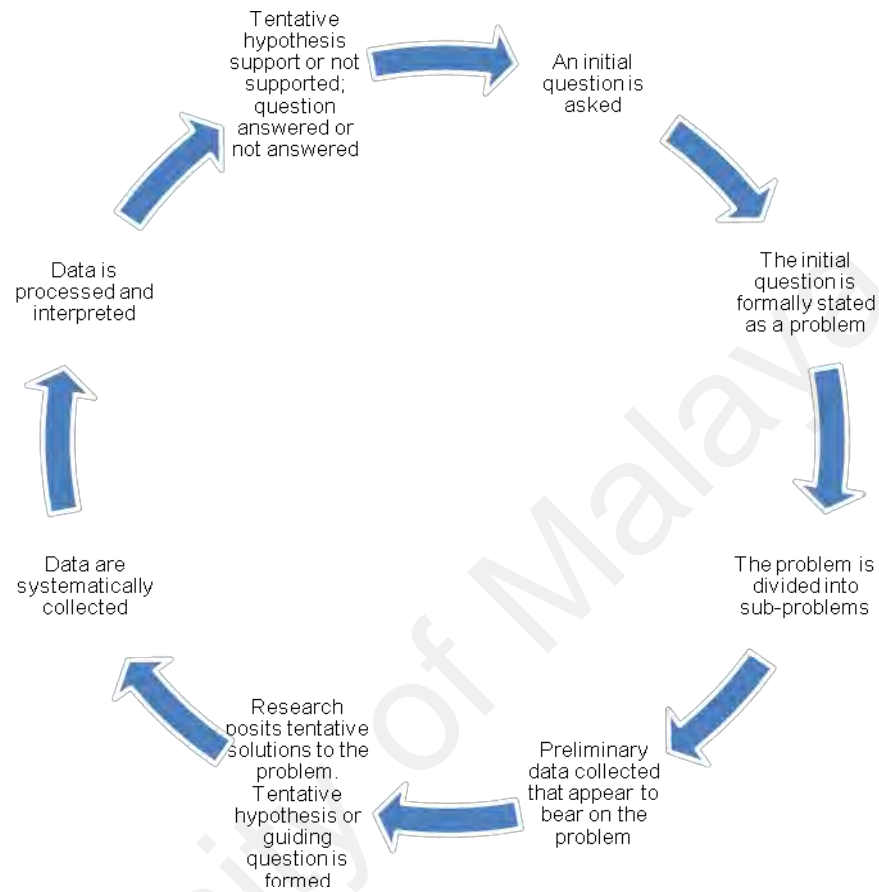


Figure 4.2 : Illustration of research cycle (Leedy et. al., 2005)

Figure 4.2 shows the characteristic of research includes originates with a question or problem, requires clear articulation of a goal, requires a specific plan for proceeding, usually divides the principal problem into more manageable sub-problems, is guided by the scientific research problem, question, or hypothesis, accepts certain critical assumptions, requires the collection and interpretation of data and is , by its nature, cyclical or helical.

4.4 Research collection and design

The terms of research, often conjures up visions of people in white lab coats and eyeglasses, surrounded by test tubes, bunsen burners, or stack of papers and books, but research is nothing more than trying to answer a question about the nature of things in an organised, derecognised and replicable way (Janes 1999). Whereas the research design is defined as the strategy of answering the questions or testing the hypothesis that stimulated the research. The research design is defined as a framework to conduct a research (Malhorta 2004), a master plan specifying the methods and procedures (Zikmund 2003). The overall research design consisting of problem definition, theory building through literature review, and formulation of methodologies, collects data, analyses, evaluate and draw conclusions.

4.5 Research Method

4.5.1 Data Collection

Data collections to complete this research were obtained from two kinds of data below:

- a) Primary data - The primary data was collected in two methods, the first method by the questionnaire, where question been developed and distribute to the relevant respondent and the second method by face-to-face interviews. The questionnaire was designed base on literature and consultation with the relevant professional.
- b) Secondary Data - Secondary data was collected from various sources such as books, journals and reports. This material assists in designing the theoretical and conceptual framework of this research; and it also contributes to the overall outlook of the research. Statistical techniques were used to examine hypothesis of the research.

4.5.2 Description of the targeted respondent

4.5.2a Designation

Targeted respondent are mainly main contractor or developer whom are fully aware with the overall operation of construction at site. Selected designation is preferably a person that having a direct control of foreign labours welfare and allocation at site. The right person in a main contractor company could be a Project Manager or Contract Manager that are based at site, Site Supervisor, Site Agent and Quantity Surveyor where their workstation is fully base at site. From developer, the right person could be a clerk of work.

However respondent that comes from a director and general manager levels is also acceptable as they are fully aware of their foreign labour intake and time to time vacancy needed at site. They are also an important person in signing all form of applications of foreign labour intake to the relevant authorities. Personnel that is not fully stationed at site but having a direct involvement of the project, attending site progress meeting, confirming progress of workdone, fully aware of the operation at site, ie quantity surveyor, estimator, cost controller, project coordinator, etc are also acceptable.

4.5.2b Nature of business and CIDB registration

Nature of business is preferably from a Main Contractor. However, a developer cum Main Contractor is also acceptable as many companies nowadays is doing project by their own in house contractor. CIDB registration must be a registered under Class G7 where they can undertake project in value of 10 million and above.

4.5.2c Years of company establishment

Years of establishment are important to be indicated as this is able to evaluate and gauge their project performance in long range. The longer the company established, the have more experience and resources and therefore their data will be more accurate and reliable.

4.6 Sampling design and procedure

The questionnaires were designed and communicated in a user-friendly multiple-choice format, with only one open-ended question to reduce answering effort, and to aid the recipients in making decisions. The questionnaires were distributed to the targeted respondents by email or fax. Format of questionnaire is digitalised for the respondent to be able to fill in easily.

Uma (2000) has defined sampling as a process of selecting sufficient number of respondent from the population so that by studying the sample and understanding the properties and characteristic of the sample subjects, will be able to generalize the properties to the population elements. In this research, sampling considerations are important to ensure validity of research.

The distributed questionnaires have been collected and analysed using Statistical Package of Social Science (SPSS) version 17. Discussion and analysis was carried out based on the derived results and related comments and suggestion by the participants were included.

4.6.1 Population listing

The population is taken from Construction Industry Development Board (CIDB), located at Jalan Pahang. This population listing (2010-2011) consists of all construction companies with addresses, telephone numbers, facsimiles numbers and their registration grades. The construction company grade, their tendering capacity and numbers of registered contractors are summarized in table 4.2

Table 4.2 Construction Population by Grades

Grade	Tendering Capacity (RM)	Registered companies with CIDB (nos)
G1	Not exceeding 100,000	32,752
G2	Not exceeding 500,000	8,187
G3	Not exceeding 1 million	10,437
G4	Not exceeding 3 million	2,686
G5	Not exceeding 5 million	3,817
G6	Not exceeding 10 million	1,398
G7	No limit	4,573
Total		63,850

(Source CIDB 2011)

These grades (G1 to G7) are classified further as specialist category (Table 4.2) Building Construction (B), Civil Engineering Construction (CE), Mechanical and Electrical Construction (ME). These specialist categories are further subdivided into subspecialties. Building Construction for example is subdivided has 28 subspecialties from B01 to B28, Civil Engineering Construction has 41 subspecialties from CE01 to CE41. Mechanical Construction has 20 subspecialties from M01 to M20 and finally Electrical has 14 subspecialties from E1 to E14. These details are attached in Appendix 2 of this dissertation.

4.6.1.1 Sampling frame for this study

A total of 4,573 construction companies are registered (Table 4.2) as grade seven (G7) with CIDB Malaysia. Out of these, the Building Construction (category B) makes up 1070 companies, the Civil Engineering (CE) 2000, and the Mechanical and Electrical (category ME) 1,503 companies. The researcher has considered Malaysian Grade Seven (G7) with category Building Construction (BE) having a case study project more than 10million in Kuala Lumpur and Selangor. The reason why grade seven (G7) were selected and specialize with Building Construction (BE) categories are as follows:-

1. The G7 construction companies can bid/tender any building construction job without limitation. These companies are normally a Public Listed companies that usually handling big, complex and fast track highrise construction jobs and involvement of more foreign labour in many sub-trade is more suitable for big, complex and speedy construction job. Other job like airports, stadium, terminals, amusement parks normally use lean production system (Ibrahim, AR and Imtiaz, G 2005a). The smaller grade (grade 1 to 6) are usually execute small, simple and probably as a sub-contractor of the G7 selected companies.
2. The category of Building Construction (B) with project value more than 10 million were selected because building construction especially for highrise building with higher the contract value involves more sub-trade specialty that definitely require more involvement of foreign labour.

3. The project executed in Klang Valley (Kuala Lumpur and Selangor) were selected because for limitation of study and comparing projects analysis on same basis.
4. Many researchers in Malaysia drawn sample from Klang Valley area would have more external validity in terms of generalizing the findings (Norjaya 2004).

According to CIDB record on September 2011, there is approximately 1070 numbers of contractors registered with CIDB Class G7 in Malaysia. After screening through their status and background, it was found that 402 numbers of companies (38%) from the 1070 numbers of contractors listed are dormant, 262 no. (24%) are not having project more than 10 million and 229 numbers (21%) doesn't have any recent project related to building and their past track record are project that are not related to building construction. ie. oil & gas industry, oil palm refinery, power plant, highway & bridges, tubewell for drinking water supply, sewerage treatment plant, electric transmission tower etc.

Sample that can be used is only 177 numbers which is consists of 16% from the overall quantity of the registered contractor under class G7 Category B (Building) identified by CIDB. As identified from the earlier chapter, the scope of research is only covering Klang Valley. From the 177 numbers of sample only 100 no. of contractor are active in Klang Valley. Questionnaire has been distributed to the identified 100 numbers of sample since 1st October 2011. Some respondent is representing 2 or more companies as they are the subsidiaries of the same parent company. Sixty four (64) companies responded where represent 64% identified qualified companies form a database for quantitative analysis. Out of 64, 6 respondents reply cannot be used as their scope of works is not representing the whole objectives. Final number of respondent data used is only 59, therefore $N=59$.

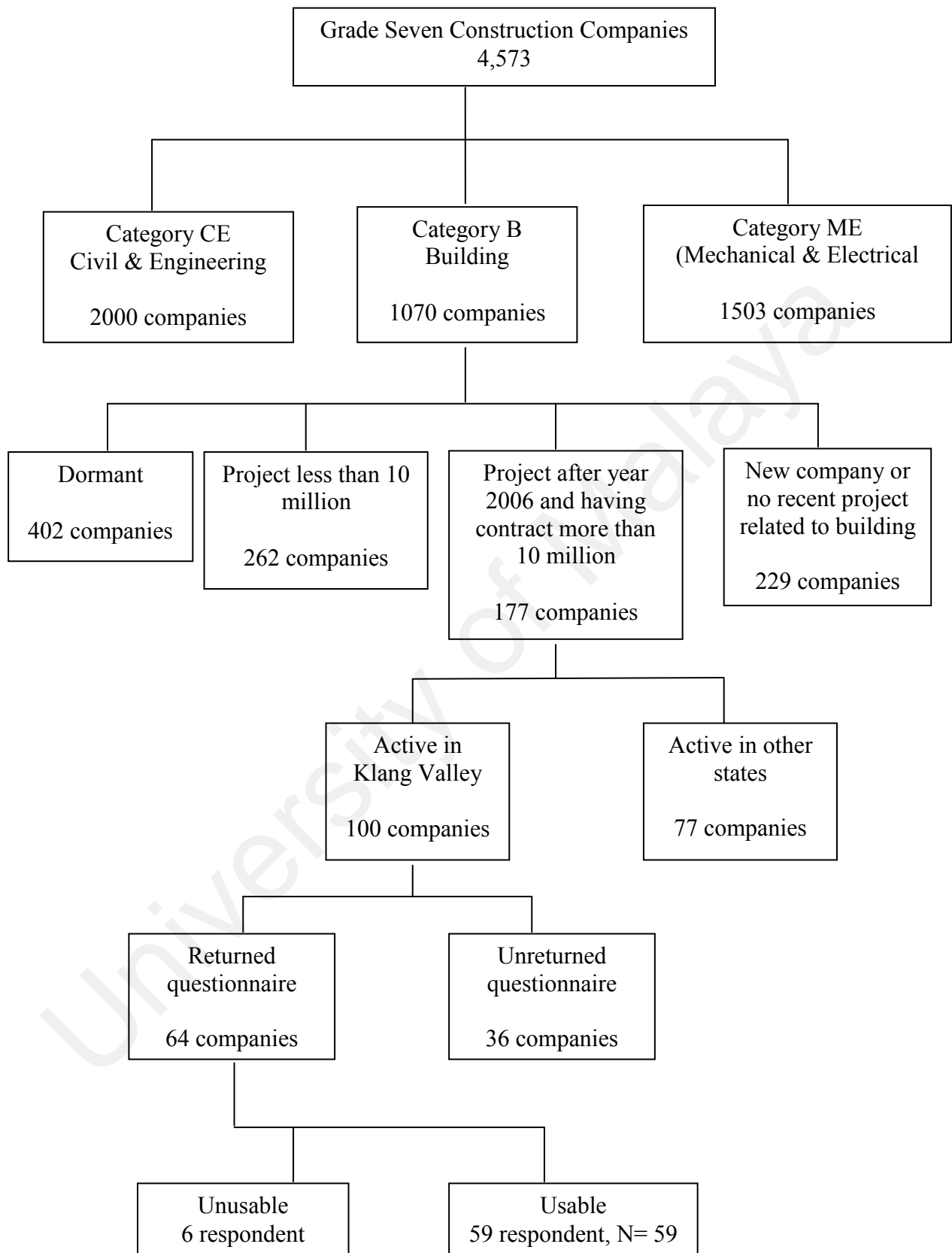


Figure 4.3 Research Population (*Adapted from CIDB 2011*)

4.6.1.2 Respondents

The respondent are Project/Contract manager that are based at site, site quantity surveyor/engineer, supervisor, site coordinator, project executive, etc. provided that their workstation are at site and having direct coordination with foreign labourers at site.

However respond from General Manager or Director are also acceptable that they are also involve in planning, application, decision making, resource allocations of foreign labour and day to day operations. (Abdul Rahim, 2011)

4.6.2 Questionnaire as Design Survey Instrument

The research instrument developed for this thesis survey is a structured questionnaire (see Appendix 4). The instrument was developed from Fienstein and Vondrasek (2006) for the commercial industry was used and adapted to the construction sector. Since the contents are different from the existing instruments, therefore the feedback from the Malaysian G7 construction company's practitioners was incorporated in designing the questionnaires. Five questionnaires were sent to the main contractors to enhance the validity, reliability of the study and to test the robustness of the questions. These respondents have looked into face validity and layout design of the questionnaire as suggested by Babbie 1998. They have also looked into sentence construction as well as the content in the survey. Does the questionnaire conform to the industry norms? Are the questions confusing? The result of this exercise provided invaluable insight to the researchers in terms of the direction of the survey as well as the topic under this study.

Flynn et. al. (1990) suggests that every measurement device should possess three qualities: reliability, validity and representativeness. Reliability concerns the extent to which others can repeat the research with the same results (Worthen et. al 1993). Validity refers to the problem whether the data collected is a true picture of what being studied (Worthen et. al 1993). Representativeness concerns whether the objects of study are typical to others, and consequently the extent to which we can generalize. The reliability of the measuring instrument in this research is addressed by avoiding ambiguous questions and by having a large sample size. Moreover the large sample size also helps in achieving representativeness of the population. However the validity of findings is difficult especially in survey research because of the potential difference between what people say and what they do. This shows that the validity has entered research in a controversial way.

Nevertheless the pre test of the measurement instrument was carried out to enhance the validity. The pre test respondent commented that this questionnaire is containing too many data/information and afraid that other respondents are reluctant to respond. They requested to define what a skilled labour, semi skilled and unskilled and some of them highlighted that not all of the Main Contractor is doing Interior Design Works in their project undertaken.

However questionnaire was proceeded as it is as other detail data may necessary for future research. Follow up letter will be issued to respondent to fill in the questionnaire. Labour expertise was defined accordingly. Incomplete questionnaire will be considered as rejected. This questionnaires and cover letters (Appendix 4) were sent to the identified companies.

The companies who did not respond within a month were sent a friendly reminder (Appendix 3) and contact was made with them through email, telephone & fax. Gillham (2000) suggested that research questionnaire would require a response rate of 30% in order to produce high reliable and convincing research result. Grover (1999) who insisted that a population sample size of 20% and above enables the researchers to generalize without prejudicing the research findings. In this study, the researcher has successfully collected population sample size of 59% which is regarded as reasonable according to Gillham (2000) and Grover (1999). The questionnaire comprises of four sections, namely Section A- Respondents information, Section B – General information of employing foreign labour, Section C – Involvement of foreign labour by trades and D – relation of foreign labour involvement with project performance.

4.7 Research Model

There are one (1) dependent variable and four (4) independent variables.

The dependent variables is a project performance and was measured by asking respondents to “rate the project performance in terms of project completed on time, high quality of workmanship, maximize profit earning and less defects after one year of completion. The respondent rated their answer in 6 points scale with scores ranging from 1 (lower) to 6 (highest) point of scale in descending manner whereby the best performance was identified to 1 with descending performance to the worst indicated as 6. The independent variables covers three principles of foreign labour characteristic that are the type of expertise, level of expertise, origin of labour and government controlled trades and data was tabulated from the questionnaire collected. The respondent rated their answer in 5 points scale with scores

ranging from 1 (lower) to 5 (highest) point of scale in ascending manner whereby the lowest was identified to 1 with ascending labour characteristic to the highest indicated as 5.

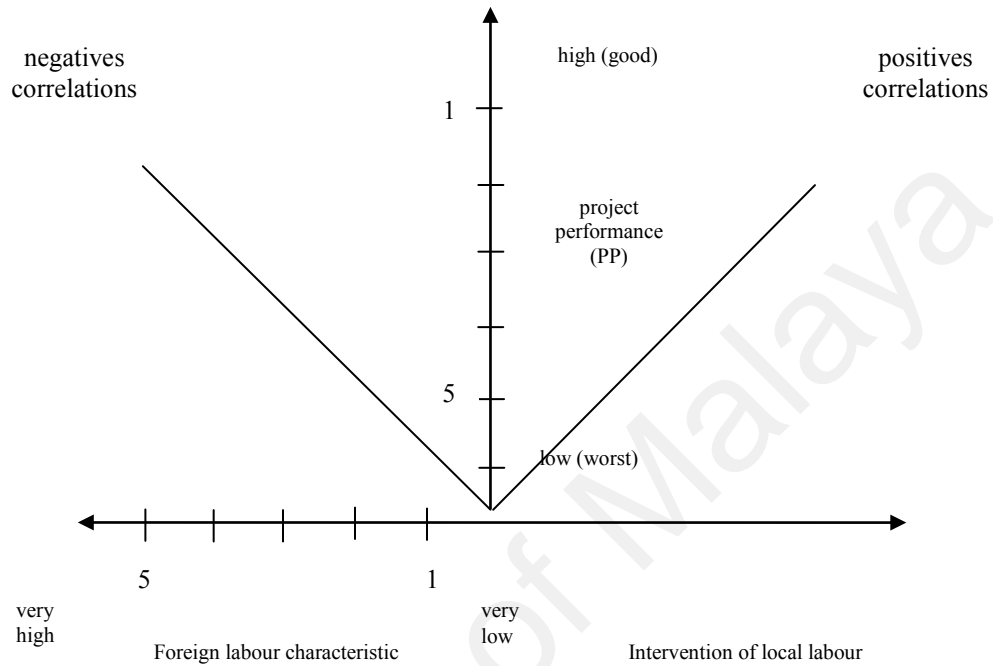


Figure 4.4 : The expected result diagram for correlations test between foreign labour characteristic and project performance(Adapted and further expanded from Azlan, 2007).

The mean and standard deviation were computed with the score of these three answers. The mean is the value of the dependent variable of project performance. On the basis of existing literature, the following research model (Figure 4.5) has been identified for the study.

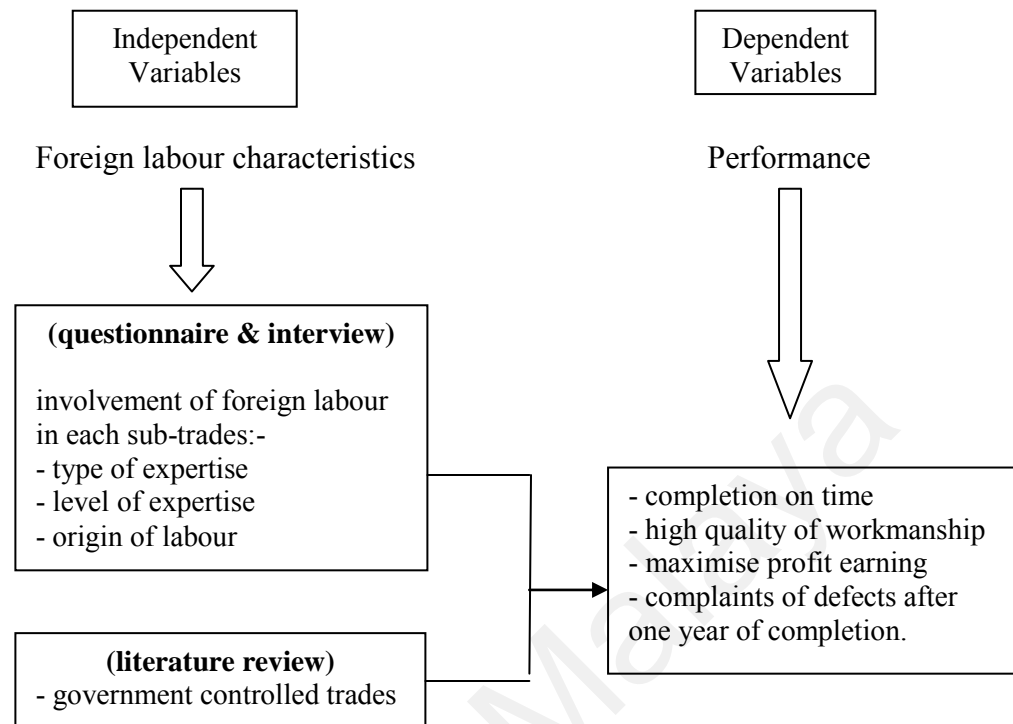


Figure 4.5 Research Model for Labour involvement in Construction Industry
 Source : Modified from Fienstein and Vondrasek (2006)

The framework divided into two set of variables namely the dependent variable category and the independent variable category. The independent variables are to identify involvement of foreign labour in each trade. It measured by percentage.

The dependent variable is the contractors' perception of their foreign labour contribution to their project and indirectly to their company. The satisfaction levels of contractors measured by the money (profit earning), time (work completed on time), good workmanship and less defects after completion. The framework originated from previous studies on 'relationship between job satisfaction and organizational commitment among restaurant employees' conducted by Feinstein and Vondrasek (2006).

4.8 Development of research model

The detailed discussion on the principles of foreign labour characteristics in construction industry is available in Chapter 3. The following section covers a brief definition of attributes. These attributes are then operationalised into a measurable format (refer to questionnaire in Appendix 4). The foreign labour characteristic principles shown in the research model were selected because firstly they are basic, tested, verified and reliable to start the integration of the principles in the company, which contribute to improvement in project performance (Hemanta,2009).

Secondly, the other foreign labour characteristic principles like zero defects are inbuilt with in quality and in reworking that is part of continuous improvement and increase achievement of project performance (Roshana, 2008).

4.8.1 Type of expertise

The main purpose of foreign labour characteristic identification is to identify the type of expertise of foreign labour. According to the online dictionary, expertise is defined as special skill, knowledge of judgment and expertness. Usually foreign labour involved in construction industry is selected and allocated to different trades according to their expertise. The reason of proper selection and allocation is due to the skills and expertise required to each sub-trades are different. For example, foreign labour expertise doing bricklaying under architecture works is unable to carry out Mechanical & Electrical works. Thus, type of expertise of foreign labour allocated properly to their respective expertise is very significant to the completion of works within time frame, good workmanship, less defects and definitely within main contractor budget (Azizah,2005).

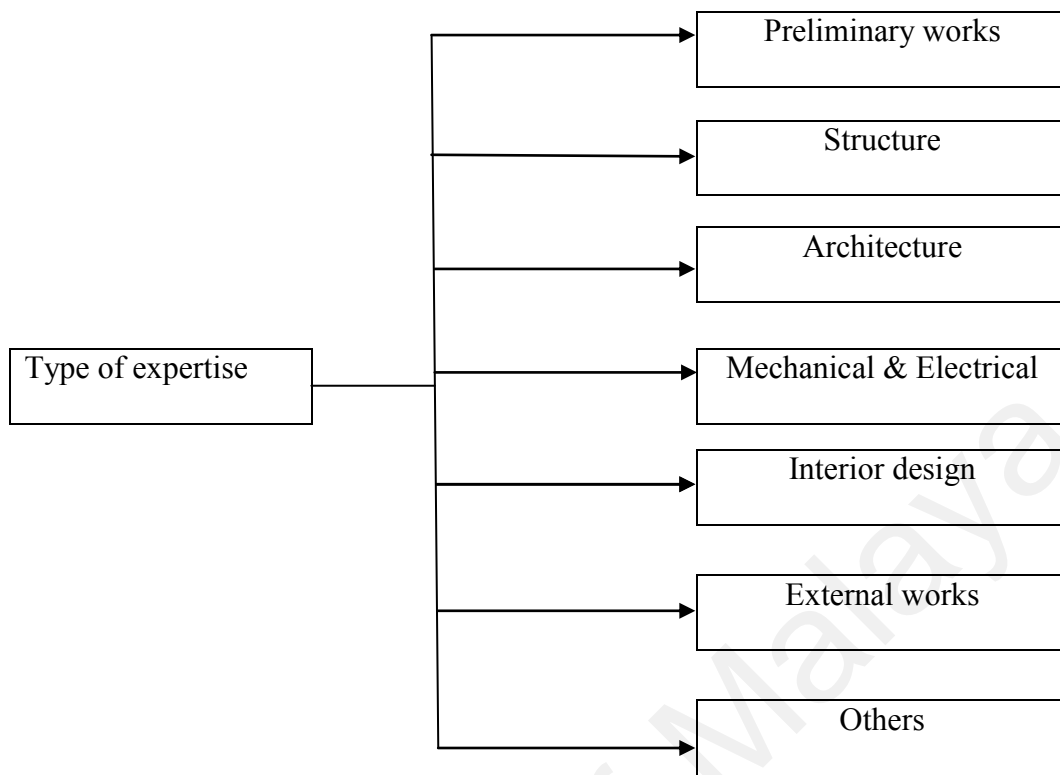


Figure 4.6: Attributes to measure type of expertise
(Adapted from Azizah, 2005)

4.8.2 Level of expertise

Foreign labour is selected according to their level of expertise. Some sub-trade require higher level of expertise compare with others. More skill labour is normally required for architecture and structural works compare with preliminary works, external works, interior works and others. This is due to more involvement of local labour as to comply with government guidelines. Those sub-trade with more involvement local labour usually require unskilled labour only as a general labour. Most of the project development, which is more than 50 million project value, are adopting pre-fabrication formwork. Semi Skilled labour normally involved for installation of aluminium and metal formwork (Suriani, 2010). This is due to pre-fab formwork is already prefabricated according to the approved shop

drawing. Semi-skilled labour is required to understand and interpret the shop drawing. Skill labour is not necessary but unskilled labour is unable to read drawing.

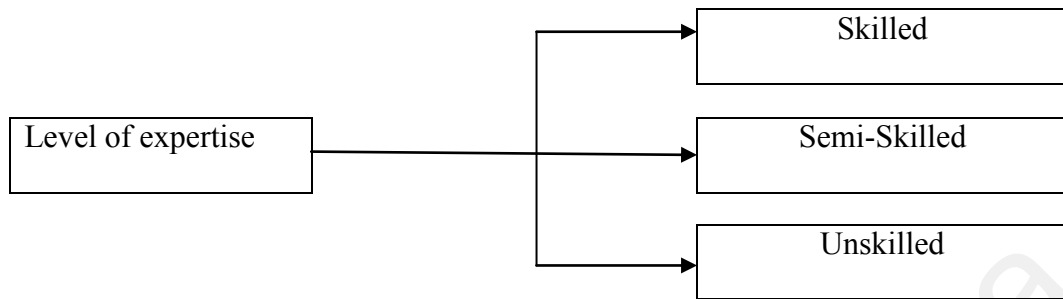


Figure 4.7 : Attributes to measure level of expertise (Adapted from Moha Asri (1999))

4.8.3 Origin

Foreign labour involved in construction activities in Malaysia are normally from Indonesia, Bangladesh, Myanmar, China and others. Others could be from Nepal, India, etc. they normally become a security guard at site. However, Malaysia prefers to hire a foreign labour from Indonesia due to similarity in language, religion, culture, etc. Nurul Azita, et al. (2012).

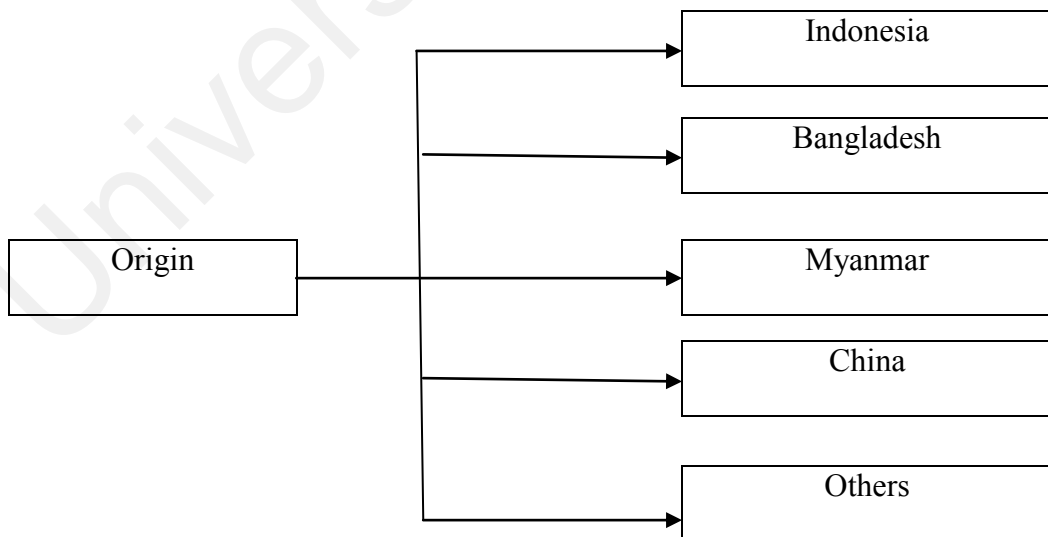


Figure 4.8: Attributes to measure type of origin (Adapted from Moha Asri (1999))

4.8.4 Government existing approach

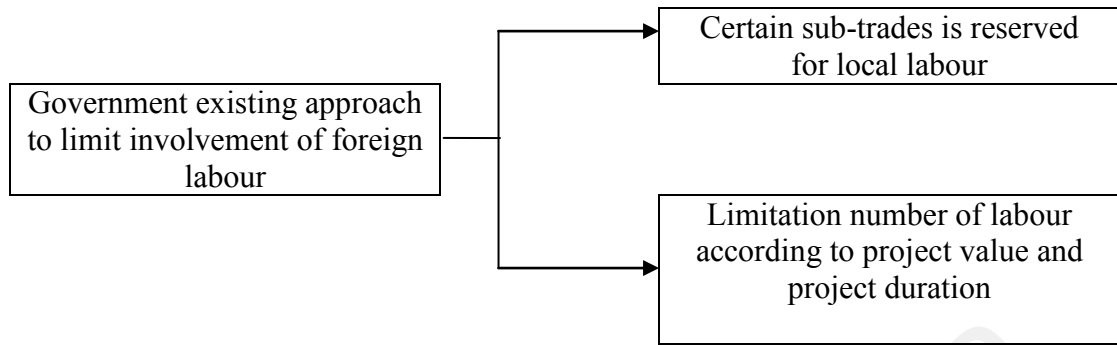


Figure 4.9: Attributes to measure type of government existing approach (Adapted from Mukhtar (2005) and CIDB manual(2007))

4.9 Data transformation

Data obtained in the final survey were analysed using the Statistical Package of Social Science (SPSS) software, version 17.0. Selected appropriate statistical methods were employed using the software, based on the types of data and approach of hypothesis testing (Pallant, 2001). Three types of data were obtained from the final questionnaire survey were nominal, ordinal and ratio data. Therefore, the following statistical techniques were used for data analysis in the study.

4.9.1 Frequency distributions and descriptive statistics

The frequency distribution method has been used to present the profile of the responses obtained in the final survey. The data are shown in tables and graphic forms, which provide a complete view of the profile of the findings with the percentage of responses given to each point on the Likert Scale. (Hong, 2005) have stated that descriptive analysis could provide general overview on what is happening in research finding. The rank some of the variables, calculation of central tendency using the mean was carried out. Five point scale used in questionnaire was transformed to mean readings to determine the ranks of each

variable, following the procedure used by Pallant (2001) in their studies. Descriptive analysis was used to illustrate the basic statistical distributions of the responses. This covered the information about distribution range (maximum and minimum), measures of central tendency (mean and standard error), measures of variability around the mean (standard deviation and variance), measures of deviation from normality (Skewness and Kurtosis), and standard errors of Skewness and Kurtosis (George & Mallery, 2003).

4.9.2 Bi-variate Analysis

Bi-variate analysis refers to the correlation test of two variables in the present study. The correlation test employed was Spearman's Rank Correlation Coefficient Technique. The Spearman's rank correlation coefficient is one of the correlation coefficients that express a relationship between two variables (Lind et. al 2003). It is a non parametric method of correlation coefficient and it normally measures data on at least an ordinal scale. For some cases, it would be also use to measure a relationship between two continuous variables when the distribution is not normal.

4.9.3 Normality Test

Normality test was employed to establish whether the distribution of data is normal or is skewed to one sided (Lind et. al, 2003). Skewness is the extent to which the data points lack symmetry. This test is applicable to interval or ratio type of data where the decision must be made to use either parametric or non parametric methods. The allowable skewness used to determine the normality of the data in the present study was plus or minus 3 (Lind et. al 2003). This test is useful for the question that represent continuous type of data in the final survey.

4.9.4 Reliability Scale Test

Reliability is the consistency of the measurement or the degree of which an instrument measures the same way each time it is used under similar conditions with the same subjects (Pallant, 2001). The purpose of this test is to check whether the scale is consistent and the answer obtained are linked together. A very common way of checking on the instruments used is by using Alpha Cronbach coefficient test. It is a sensitive test, which only allow reading of more than 0.7 (Pallant, 1996). A coefficient reading lower than the allowable figure is only suitable to be used with a descriptive type of analysis. In the present study, Cronbarch's Alpha coefficient showed a reading of 0.92, which indicated that the scale and data obtained is reliable.

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4.10 Conclusion

The present study used triangulation techniques in the research methodology, which combined both qualitative and quantitative approaches. The triangulation technique used was sufficient to obtain required information that could be used to validate the theoretical framework using statistical analysis.

Three stages of data collection methods were used including literature review, feedback on the questionnaire which provide a response of 59 (59%) and interviews of 10 main contractors. It is also discussed the research objectives, questions and hypothesis. It is highlighted the method used in this research. This chapter also covered the research design and methodology aspect, research model, research variable definitions and attributes to measure foreign labour contribution to the project performance. Finally this chapter highlights the plan for data analysis. The overall research design is in Figure 4.4 of this chapter. The data collected using the methodology explained in this chapter will be analysed in the next chapter using SPSS software. The main statistical analysis employed in this study is an average index method, frequency analysis, descriptive analysis and bivariate spearman rank correlation analysis and the result will be presented in the next chapter.

CHAPTER 5

DATA ANALYSIS & RESULT, DISCUSSIONS AND IMPLICATIONS

5.1 Introduction

This chapter presents the analysis and the results of the research derived from the data gathered from the literature review and questionnaires. In accordance to the research methodology as described in the previous chapter, the data and results are analysed and presented in alignment with the objectives in Chapter 1. This chapter also gives the brief information about the respondents' background.

5.2 Survey analysis

The survey for this research aims to find out the relationship or correlations of foreign labour involvement on construction project performance. The population and sample size are discussed in chapter four (page 75) of this research. There are 4,573 nos. of companies registered under CIDB G7. Out of 4,573 numbers, 1070 companies are under Category B which is building. Out of 1070 numbers of companies, we have to take out 402 numbers of companies that is dormant, 262 companies having project less than RM10 million, 229 companies is a new registered company and some without recent project. Only 177 nos. of companies having project after 2006 and having contract more than 10 million, therefore, suitable to be used as a sample. Out of 177 numbers, 100 numbers of companies active in Klang Valley and 77 nos. active in other states. The researcher sent 100 either emails or fax to the respondent according to their preference and request.

5.2.1 Response rate

A total of one hundred (100) questionnaires were distributed. With 65 returned, a returned rate of 65% achieved. The high returned rate is due to the researcher's efforts to ensure higher response by sending reminders, facsimiles, telephone calls and visit by appointment as recommended by Zikmund (2003), Appel and Baim (1991) and Dillman (2000). After eliminating unusable response, 59 responses were coded and used for data analysis. Table 5.1 shows the returned, invalid and net response rates of the questionnaires. Gillham (2000) suggested that research questionnaire would typically require a response rate of 30% in order to produce high reliable and convincing research result. A total population of 100 qualified respondents was targeted for this research and 65% returned but only 59% come back with complete answer and valid. Thus 59% is exceeded that what have stated by Gillham and therefore this research is able to produce highly reliable and convincing research result.

Table 5.1 Response Rate for Questionnaires

Returned Rate			Invalid Rate		Net Response Rate	
Nos. Sent	Nos. Returned	% Returned	Nos Invalid	% Invalid	Nos. Net Responded	% Net Response Rate
100	65	65%	6	6%	59	59%

There were a few factors or reasons of this high response rate. Firstly, the researcher had been working with a few main contractors in Klang Valley particularly Kuala Lumpur. Along the researcher carrier with the main contractor, all main contractors are acknowledging each other as a competitor from the same classification Class G7 of CIDB. Colleague and ex-colleagues who have been working in a same circle in the construction

industry in Klang Valley is meeting each other in their carrier circle. By a reason of knowing each other with the respondent, at the same time colleague and ex-colleague who had been hoping form one company to another, some of them were able to fill in 2 or 3 questionnaires form the different companies at the same time. Since their background is a project manager or site quantity surveyor that based at site and handling directly with the foreign labour welfare, ie accommodation, wages, safety & health, renewal of passport etc. The researcher summarise that the response on the questionnaire on behalf of a few company that they are working with before is reliable. In another situation, the researcher was having difficulties to get respond form the company that not knowing anyone inside. The reasons given by them were very busy and no time to fill in lengthy questionnaire. Another reason was company data is confidential and they are not able to release out. The researcher can summarise that respondent form high level executives do not normally respond like people in the general population (Hunt and Chonko 1987). This is may be due to their sense of higher responsibility and liability in whatever information that may be given to the researcher.

5.2.2 Non response bias

In the survey, is important that the sample collected should represent the population under study. This is crucial as interferences are made to generalize the findings of this study. The existence of a good response rate in this research provides some confidence that the response bias is not a significant problem (Weiss and Heide 1993). Nevertheless non response bias was tested by accessing the different between the early and late respondents with regard to the mean value of the variables (Amstrong and Overton 1997; Menon et. al. 1999; Weiss and Heide 1993).

5.3 Missing data

5.3.1 Screening of missing data

Missing data were reduced as much as possible by checking the entire questionnaire at the time of collection. When any questions were found unanswered it was either brought to attention of the respondent by telephone or discarded. Since all the data entered into SPSS, before any test were conducted using the data set, frequency distribution for each variable in the study as well as missing value analysis were run to ensure the data were clean. The result indicated that there was no missing data.

5.3.2 Detection of Outliers

Hair et. al (1998) defined outliers as an observation with a unique combination of characteristic identifiable as distinctly different from the other observations. It is important to make a distinction between outliers that ought to be deleted and those that ought not to be. Outliers that required deletion are recorded missing, incorrect data entry, unusual data and data from respondents who are not members of the intended population (Tabachnick and Fidell 2001). For this study, five maximum and minimum extreme values for all study variables were produced using SPSS. A visual inspection of the data revealed that the data were free from outliers.

5.4 Respondent demographic analysed using frequency analysis

This section described the findings of the survey about the demographics characteristics of the respondents and their organizations. The first part provides information regarding respondent designation, work involvement for that particular project selected as a case study, years of company establishment (company age), confirmation of CIDB qualification to be Class G7, contract value of the selected project and type of development of the selected project.

5.4.1 Respondent background

Section A of the questionnaire is to find out brief information about the respondents' background by identifying respondent designation in the company.

Table 5.2 Job title of respondent

Job Title	Frequency	Percentage (N=59)
Site Project Manager/ Site Contract Manager	27	46
Site QS/ Engineer / Supervisor	21	36
Managing/Project Director	6	10
Others	3	5
General Manager	2	3
Total	59	100

Table 5.2 indicated that the respondents of the questionnaire survey comprised of site project or contract managers, site quantity surveyor or supervisors, general managers, managing or project director and others. Based on the data obtained through the survey, some of the respondents, who selected the category of "others", were either project coordinator or quantity surveyor or project executives that based in the office and not fully time on duty at site. Majority of the respondents were site project or contract managers, which covered 46 percent. Then, it was followed by 36 percent of site quantity surveyor/engineer or supervisors. In addition, the managing or project director, general manager, and category of "others" covered low percentage overall, which were 10.0

percent, 5.0 percent and 3.0 percent respectively. Usually, site project manager or contract manager and site quantity surveyor or supervisor are the personnel who involve in recording and monitoring labourers attendance at site to update the fortnightly project progress reports. In other words, they are the experts and having updated data or status in monitoring attendance and movement of labourers allocation at site, taking care welfare of the foreign labour, monitoring validity of their passports, etc.. Therefore, the researcher may summarise that the response on the questionnaire was reliable. Others designation like supervisors and site quantity surveyors ia also reliable and acceptable as they are stationed at site and able to witness the foreign labour involvements and allocations at site while during evaluation of project workdone and subsequently payment to foreign labour wages.

5.4.2 Nature of business

Table 5.3 Nature of business

Job Title	Frequency	Percentage (N=59)
Main Contractor	56	95
Main Contractor cum Developer	3	5
Total	59	100

Table 5.3 indicated the nature of business of the respondent. The purpose of this identification is basically to identify their status of business registration. Majority of the respondents were main contractor, which covered 95 percent. Then, it was followed by 5 percent of main contractor cum developer.

Targeted respondent is preferably form Main Contractor as there are the main players in the construction industry that engaging most of the foreign labour. Therefore, the researcher may summarise that the response on the questionnaire was reliable. However many developer is also having their own in house contractor and they identify their status as main contractor cum developer. Their response is also acceptable.

5.4.3 Work involvement

Table 5.4 Work involvement

Job Title	Frequency	Percentage (N=59)
Private	57	97
Government	2	3
Total	59	100

Table 5.4 indicated the work involvement of the respondent. The purpose of this identification is to identify their status of project selected for this case study. The respondent is required to select only one project as a case study and to identify whether that is a government or private project. Majority of the respondents selected their project as a case study were involved in private project, which covered 97 percent. Then, it was followed by 3 percent of government project.

5.4.4 Year of establishment

Table 5.5 Year of establishment

Years of establishment	Frequency	Percentage (N=59)
<6 years	0	0
6-10 years	3	5
11-15 years	10	17
>15 years	46	78
Total	59	100

Table 5.5 showed the working experience of respondents. Basically, the working experience was reflected by the number of years that the respondents had been involved in construction industry. The respondents who had more than 15 years involvement were 78 percent, which were the majority. Meanwhile, 17 percent of the respondents had working experience between 11 to 15 years. Then, minority of the respondents had working experience of less than 10 years, which were only 5 percent.

Number of years of establishment is significantly important in evaluating their experience of selecting foreign labour. The longer the respondent experience in construction management, the better is their understanding in allocation of foreign labour into a correct trades based on their type of expertise and level of expertise. Based on Table 5.5, respondents that had been involved in construction industry for more than 15 years and above covered 78 percent overall. Hence, their data input was deemed to be reliable and accurate.

5.4.5 Registration with Construction Industry Development Board

The respondents is required to confirm their value of project selected as a case study. In view of the requirements that respondents must be registered with CIDB, all respondents are required to confirm that they are a Main Contractor registered under Class G7. Therefore all the 59 of respondents has confirmed that they are registered under CIDB Class G7 which represented 100 percent. Therefore they are qualified to proceed to fill in other sections of the questionnaire.

5.4.6 Contract Value

Table 5.6 Contract Value

Contract Value	Frequency	Percentage (N=59)
10-30 million	3	5
31-50 million	3	5
51-70 million	12	20
71-90 million	14	24
>90 million	27	46
Total	59	100

Table 5.6 indicated the value of project selected for this case study. Each respondent is required to identify only one of their project as a case study. The purpose of selection of only one particular project is so that they are able to focus to a specific project to gauge the project performance instead of in general and taking an average performance for all their previous projects undertaken.

Majority of the project value undertaken by the respondents were above 90 million, which covered 46 percent. Then, it was followed by 24 percent of project value between 71 to 90 million then 20 percent of project value of RM51 to 70 million. However, project value between RM31 to 50 million and RM10 to 30 million covered low percentage overall, which were 5.0 percent and 5.0 percent respectively.

Usually, project which is indicating higher contract value means there would be many specialise sub-trades involved. Project with higher contract value is engaging more foreign labour involves in many specialise sub-trade. In other words, the proper selection and allocation of labourers into their specialise sub-trade is vital and required proper selection and allocation. Therefore, the researcher feels that the project sample which is having a contract value that more than 90 million is a right sample to be selected as a case study that will produce accurate and reliable analysis.

5.4.7 Type of development selected for this case study

Table 5.7 Type of development

Type of development	Frequency	Percentage (N=59)
Condominium/apartment	30	51
Commercial building	14	24
Hotel	7	12
Others	4	6
Education Centre	3	5
Hospital	1	2
Total	59	100

Table 5.7 indicated the types of development selected for this case study. Each respondent is required to identify only one of their development as a case study. The purpose of selection of only one particular project is so that they are able to focus to a specific project to gauge the project performance instead of in general and taking an average performance for all their previous project undertaken.

Majority of the project value undertaken by the respondents were condominium or apartment, which covered 51 percent. Then, it was followed by 24 percent of commercial building, then 12 percent of hotel. However, others, education centre and hospital covered low percentage overall, which were 6.0 percent, 5.0 percent and 2.0 percent respectively.

Usually, development which is indicating highrise service apartments, condominium, hotel and highrise commercial building means there would be many specialise and more complete sub-trades involved. Project with more sub-trade involves is the more reliable and accurate the result to be.

5.4.8 General Information of employing Foreign Labour

Table 5.8 Frequency of employing foreign labour

Frequency of employing foreign labour	Frequency	Percentage (N=59)
Not at all	0	0
Seldom	14	24
Regular	32	54
Very often	13	22
Total	59	100

Table 5.8 showed the frequency of respondents of employing foreign labourer. The respondents who had answered regular were 54 percent, which were the majority. Meanwhile, 24 percent of the respondents clarify themselves as seldom employ foreign labour. Followed by the respondents who had answered very often in employing foreign labour, which was 22 percent.. Percentage on the frequency of employing of foreign labour is a indicator that this research should be more accurate to those are very often in employing foreign labour. However the answer of regular in employing of foreign labour is also acceptable and reliable in producing accurate result.

5.4.9 Percentage of foreign labour involved to the selected project as a case study

Table 5.9 : Percentage of foreign labour

Percentage of foreign labour involved	Frequency	Percentage (N=59)
less than 20%	8	14
21-40 %	1	1
41-60 %	8	14
61-80%	25	42
81-100%	17	29
Total	59	100

Table 5.9 showed the percentage of foreign labour involvement as identified by respondents. Basically, the percentage of foreign labour involvement is showing how high is their dependency to foreign labour. The respondents who had 61% to 80% involvement of foreign labour at site were 42 percent, which were the majority.

Meanwhile, 29 percent of the respondents had 81% to 100% of foreign labour at site. Followed by the respondents who had less than 20% and 41% - 60% involvement of foreign labour are both 14 percent. Then, one of the respondent indicated 21% to 40% percentage of involvement of labour at site, which was only 1 percent. Percentage of foreign labour involvement at site is a indicator that this research should be more accurate compare to those having lesser percentage of foreign labour involvement at site.

5.4.10 Status of finding local labour before engaging foreign labour.

Table 5.10 : Status of finding local labour

Status of finding local labour	Frequency	Percentage (N=59)
Not at all	3	5
Seldom	32	54
Regular	19	32
Very often	5	9
Total	59	100

Table 5.10 showed the frequency of respondents to find out availability of local labourers. The respondents who had answered seldom were 54 percent, which were the majority. Meanwhile, 32 percent of the respondents clarify themselves as regular in finding out availability of local labour. Followed by the respondents who had answered very often and not at all, which were 9 percent and 5 percent respectively.

At the end of this questionnaire under section B, an open ended question was provided for all the respondent to explain why their answer was as such. A few respondent feedback was they are very seldom finding local labour due to the shortage of local labour from Akademi Binaan Malaysia especially for wet trade, bricklayer, carpenter and barbender. Most of the manpower that they have is only for preliminaries works such as operator for excavator, site supervisor.

5.5 Categorise foreign labour involvement by country of origin and type of expertise using descriptive analysis

5.5.1 Data collected for foreign labour involvement to all trades

The 2nd aim and objectives of this study is to categorise the foreign labour involvement in construction industry by type of expertise and origin & level of expertise using descriptive analysis.

Table 5.11 Foreign labour involvement for preliminary works

Preliminaries works includes initial works carried out before commencement of physical works of the construction project. Preliminaries works includes earth leveling, construction of access road, construction of workers kongs house, tapping for an electric & water supply, mobilisation of plant & machineries, etc. Most of the trades involved are as listed below.

Table 5.11 Foreign labour involvement for preliminary works

Preliminary works	Mean, n=59	Mode n=59
Trades		
Operator	1.64	1
Technician	1.47	1
Lorry driver	1.54	1
Safety officer	1.14	1
QA/QC	1.00	1
Supervisor	1.02	1
Engineer	0.98	1
Foreman	1.42	1
General labour	3.90	5
Origin & level of expertise		
Indonesia	1.80	2
Bangladesh	0.92	2
Myanmar	0.19	1
China	0.14	0
Others	0.12	1

Notes :

Trades : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for preliminaries works sub divided into 9 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 27. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Table 5.11 Shows the involvement of foreign labour for the preliminary works.

Mode with reading 1 shows that no involvement of foreign labour. Reading 5 for general labour shows 81 to 100% of general labour at site are foreign labour. Reading 2 shows low skill of Indonesian & Bangladesh, very low skill labour from other countries and no labour from China for preliminary works. *Mean* score of 3.9 shows high involvement of foreign workers for general labour only and low for other trades. This pattern of foreign labour distribution is due to the controlled trades imposed by the Government. All labour for all types of machinery operators, supervisory and managerial staff, etc. must be a local labour.

Table 5.12 Foreign Labour involvement for structure works

Structure works are consists of the skeleton or frame of the buildings. These includes concrete slab, column, beam, etc. Items for structure consists items as listed in table 5.12

Table 5.12 : Foreign labour involvement for structure works

Structure works	Mean, n=59	Mode n=59
Trades		
Carpenter – metal	3.15	3
Carpenter – aluminium	3.27	3
Carpenter – sawn	3.86	4
Bar bender	3.86	4
Concretor	3.78	4
Pre stressed / post tension rebar	3.08	4
Steel truss	3.24	2
Origin & level of expertise		
Indonesia	3.53	3
Bangladesh	3.07	3
Myanmar	0.10	1
China	0.27	0
Others	0.14	1

Note :

Trades : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for structural works sub divided into 7 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 21. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Mode highest reading of 4 identified by respondent for carpentry works using conventional sawn formwork, bar bender, concreter and pre-stressed/post tension rebar. That means 61 to 80% of labourers doing conventional formwork, bar bender, concreter and pre-stressed/post tension rebar are foreign labour which are mostly from Indonesia and Bangladesh which is having scale of 3 for expertise that means of moderate skilled in average. Carpentry for metal and aluminium works is showing a reading of 3 which is 31 to 60% using foreign labourer.

Usually metal and aluminium works is a pre arrange components according to the shop drawing submitted, approved and endorsed by the professional engineer under employment of Main Contractor. *Mean* shows high involvement of foreign labour for carpenter (sawn), bar-bender and concreter. Mostly foreign labours involved are from Indonesia and Bangladesh. This pattern of foreign labour distribution is due to type of expertise required for structure works.

Arrangement of metal and aluminium formwork is like a lego and jigsaw puzzle with a proper coordination with tower crane to hoist, assemble and strike those upon concrete proper setting. Less labourers required compare with the conventional formwork and it is not necessary to have skilled labourers to arrange a pre designed lego, unskilled labourers is sufficient. Usage of metal and aluminium formwork is also partially Industrial Building System (IBS) that contractor is qualified to get some discount for levy fees from CIDB.

Table 5.13 Foreign labour involvement for architecture works

Architecture works normally starts after completion of structural works. Architecture works includes completion of the building envelope that contributes to the aesthetic value of the building. Most of the trades required are as listed below.

Table 5.13 Foreign labour involvement for architecture works

Architecture works	Mean, n=59	Mode n=59
Trades		
Bricklayer	4.00	4
Plastering	3.86	4
Skim coating	3.47	4
Painting	3.47	3
Metal / wood door frame installer	3.54	4
Cement rendering / screeding	3.86	4
Floor hardener	3.64	5
Ceiling works	3.02	4
Floor & wall tile	3.03	3
Marble & granite	3.03	3
Aluminium & glazing works	2.71	3
Mild steel railing	2.78	2
Stainless steel	2.44	2
Roof tiles	3.31	2
Metal decking roof	2.93	2
Timber floor	2.73	2
Origin & level of expertise		
Indonesia	3.78	4
Bangladesh	2.83	3
Myanmar	0.34	1
China	0.27	4
Others	0.15	1

Note :

Trade : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for architecture works sub divided into 16 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 48. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Table 5.13 Shows the involvement of foreign labour for the architecture works. *Mode* highest reading of 5 for floor hardener means 81 to 100% of labourer for floor hardener is a foreign labourer. Almost all trades shows a reading of mode at 4 that means 61 to 80% involvement of foreign labour for bricklayer, plastering, skim coating, door installation, rendering and ceiling works. Reading of 3 that means 31 to 60% involvement of foreign labour for painting, tiles and aluminium works. Origin and level of expertise shows 4 (skilled labour) for Indonesia and China and 3 (moderate skill) for Bangladesh and 1 (very low skill) for Myanmar and others. Skilled labours from China usually doing the laying of floor tiles. Most of the trades for architecture works are carried out by foreign labour because local labour for architecture works is limited and not enough. At the same time Main Contractor are able to source for foreign labour that specialised in doing architectural sub-trades.

Highest reading of 5 for floor hardener shows most of the respondent use high skilled of labourer for floor hardener works. This is because floor hardener sometimes combined with water proofing elements. Usually developer require 10 years joint warranty from the supplier and applicator (labourer) for waterproofing works, thus main contractor require highly skilled worker for floor hardening works. *Mean* highest score shown for 'bricklayer' which is 4.0. This shows that high expertise of foreign labour for bricklaying, plastering, cement render / screed and floor hardener. Foreign labour were mostly from Indonesia and Bangladesh. This pattern of foreign labour distribution is due to high level of expertise required for architecture work.

Table 5.14 Foreign labour involvement for Mechanical & Electrical works

Mechanical & Electrical (M&E) works is a specialist sub-trade which is require different consultant than architecture and structure works. M&E trades includes electrical, telephone system, TV system, LPG, lift, fire protection, air condition, plumbing, sanitary, water tank, water pump, etc.

Table 5.14 : Foreign labour involvement for M&E works

M&E works	Mean, n=59	Mode n=59
Trades		
Electrical	2.47	2
Telephone	2.39	2
TV System	2.31	2
LPG	2.25	2
Lift	2.34	2
Fire	2.46	2
Air Condition	2.42	2
Plumbing	2.59	2
Sanitary	2.63	2
Water Tank	2.66	2
Water pump	2.53	2
Origin & level of expertise		
Indonesia	3.34	3
Bangladesh	1.90	1
Myanmar	0.20	1
China	0.15	0
Others	0.10	1

Note :

Trades : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0 = not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for M&E works sub divided into 11 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 33. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Reading range between 1 to 5, M & E reading shows only 2 as identified by respondent. That means it is between 1 to 30% of labourers for M&E works are foreign labourers which is having a moderate skilled from Indonesia. *Mean* shows moderate involvement of foreign labour for overall trades. Foreign labours are mostly from Indonesia. This pattern of foreign labour distribution is due to the controlled trades imposed by the Government. All labour for all types of electrician, wireman, chargeman, air condition installer, lift & escalator installer, welder etc. must be a local labour.

Table 5.15 Foreign labour involvement for Interior Design works

Interior design works normally starts nearly to the completion of the project. Not all projects require interior design contractors. Many of the lower and medium cost apartment or condominium is without interior design works. Interior design works includes water feature / swimming pool system, pebbles, acoustic wall, fit out works which is consists of kitchen cabinet & wardrobe, carpet, wallpaper, glass block, mirror, etc.

Table 5.15 : Foreign labour involvement for interior design works

Interior design works	Mean, n=59	Mode n=59
Trades		
Water feature / swimming pool system	2.17	2
Pebbles	2.34	2
Acoustic wall	2.08	2
Fit out : kitchen cabinet & wardrobe	2.12	2
Carpet	2.31	2
Wallpaper	2.15	2
Glass block	2.10	2
Toilet cubicle	2.29	2
Origin & level of expertise		
Indonesia	2.93	3
Bangladesh	1.36	1
Myanmar	0.05	1
China	0.15	1
Others	0.14	1

Note :

Trades : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for interior design works sub divided into 8 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 24. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Reading range between 1 to 5, interior design works reading shows only 2 (1 to 30%) as identified by respondent, foreign labourers from Indonesia is having a moderate skill. This pattern of foreign labour distribution is due to the type of expertise required for interior design works. Interior design works is usually carried out by local labour due to a clean and easy installation.

Table 5.16 Foreign labour involvement for External works

External works means works outside the building but within the development boundary and necessary to be completed for the purpose of handing over of the project. External works consists of roadworks, drainage, sewerage, sewerage treatment plant, etc.

Table 5.16 : Foreign labour involvement for external works

External works	Mean, n=59	Mode n=59
Trades		
Roadworks	3.00	2
Drainage	3.12	2
Sewerage	3.02	2
Sewerage Treatment Plant (STP)	2.83	2
Origin & level of expertise		
Indonesia	2.80	3
Bangladesh	2.24	3
Myanmar	0.15	1
China	0.17	0
Others	0.20	1

Note :

Trade : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for external works sub divided into 4 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 12. To evaluate feedback from the respondents and to identify & recode into 5 likert scale. This likert scale is not shown in the questionnaire but evaluated separately in the SPSS data.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Reading range between 1 to 5, all external works items shows reading of 2 that means 1 to 30% of labour involved for external works use foreign labour. Foreign labourers with reading of 3 shows having a moderate skill from Indonesia and Bangladesh. *Mean* shows low to moderate involvement of foreign labour to overall sub-trades. Foreign labours are mostly from Indonesia and Bangladesh. This pattern of foreign labour distribution is due to the type of expertise required and the Government restriction for all labour for all types of operator for excavator, backhoe, lorry, plumber etc. are reserved for local. Therefore more local labourers involvement for this trade.

Table 5.17 Foreign Labour involvement for others miscellaneous works

Other miscellaneous works consists of fixing of scaffolder, tower crane operators, installation of tower crane, termite treatment, etc.

Table 5.17 Foreign Labour involvement for others miscellaneous works

Other miscellaneous works	Mean, n=59	Mode n=59
Trades		
Scaffolder	2.85	2
Tower crane operators	2.14	2
Installation of tower crane	2.25	2
Termite treatment	2.49	1
Origin & level of expertise		
Indonesia	2.80	3
Bangladesh	1.73	1
Myanmar	0.05	1
China	0.05	0
Others	0.07	1

Note :

Trades : Interpretation for mode 0 = not relevant, 1= 0% (none), 2 = 1 to 30% (low), 3 = 31 to 60% (moderate), 4 = 61 to 80% (high) and 5 = 81 to 100% (very high)

Origin & level of expertise : Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high. From the questionnaire the level of expertise was evaluated according to origin. Involvement of foreign workers for miscellaneous works sub divided into 4 different sub-trades x 3 different category of skilled, semi-skilled and unskilled = 12. We have to consider feedback given by the respondents and evaluate and identified them again into 5 likert scale.

Mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

Reading range between 1 to 5, interior works reading shows only 2 for scaffolder, tower crane operator and installation of tower crane. Reading of 1 for termite treatment as identified by respondent. That means it is between 1 to 30% labourers for scaffolder, tower

crane operator and installation of tower crane are foreign labour. While no foreign labourer to spray termite treatment. This pattern of foreign labour distribution is due to a the Government restriction that scaffolder, tower crane operator and installation of tower crane, etc. are reserved for local labour. Therefore more local labourers involvement for this trade.

5.5.2 Foreign labour involvement to all trades

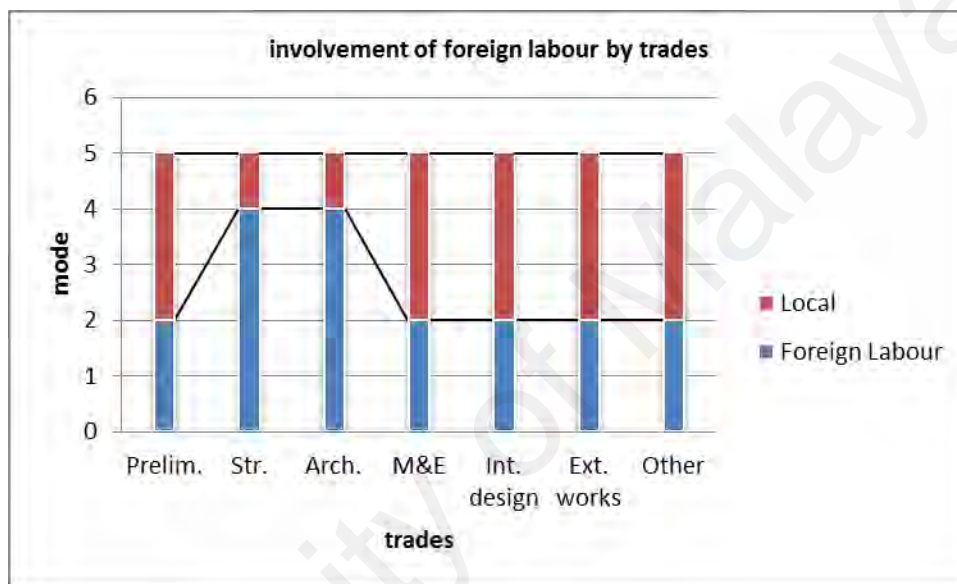


Figure 5.1 Foreign labour and local labour involvement by trades

Figure 5.1 shows involvement of foreign labour is higher for structural and architectural works; legend for mode; 0= not relevant; 1= 0% or none; 2= 1 to 30% (low); 3 = 31 to 60% (moderate); 4 = 61 to 80% and 5 = 81 to 100% (high).

More local labour involvement for preliminaries, M&E works, interior design, external works and other miscellaneous trades.

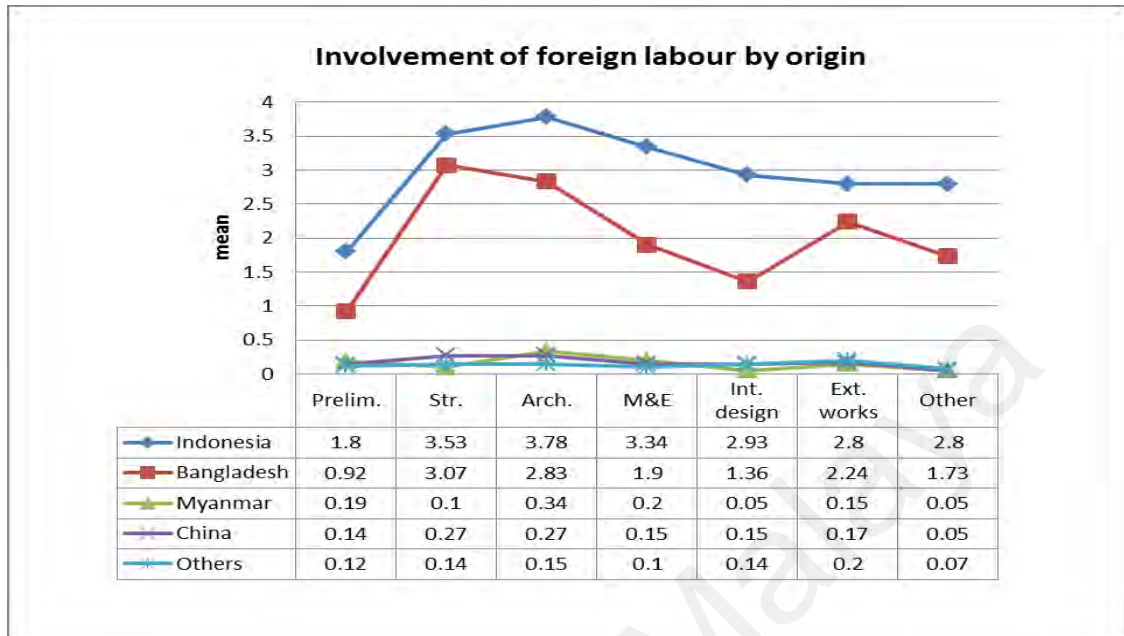


Figure 5.2 Involvement of foreign labour by origin

Figure 5.2 shows the involvement of foreign labour to all trades – foreign labour from Indonesia has the highest involvement followed by Bangladesh and low involvement of foreign labour from other countries. Mean reading of less than 1.66 is rated ‘low’, 1.67 to 3.33 is rated ‘medium’ and 3.34 to 5.0 is rated ‘high’.

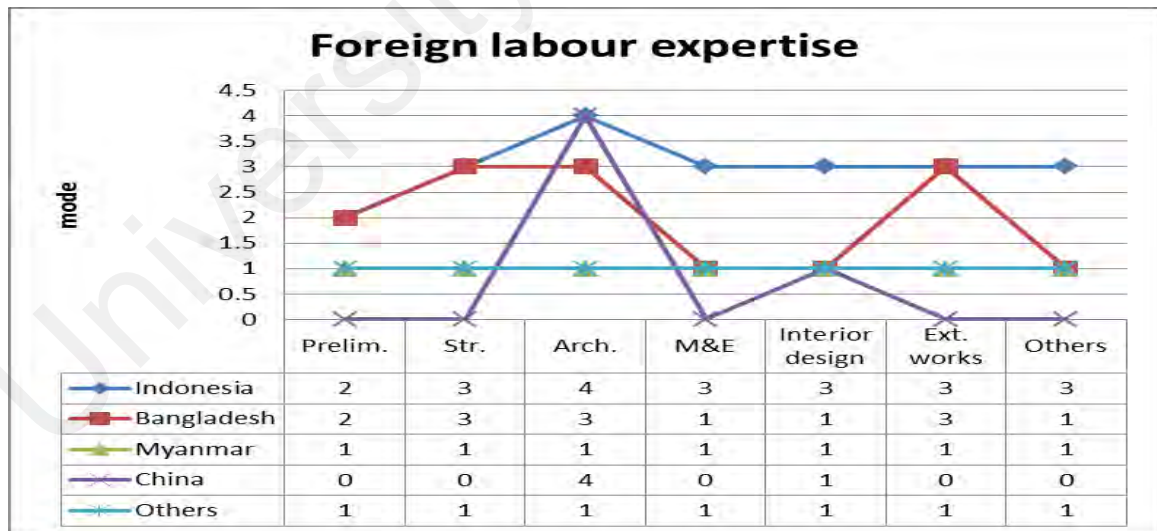


Figure 5.3 Foreign labour expertise by origin

Figure 5.3 shows the level of expertise of foreign labour to all trades – Architectural works shows the higher expertise involved. Interpretation for mode 0=not available or not relevant, 1= very low 2 = low, 3 = moderate, 4 = high and 5 = very high

Preliminary Works

Low to very low level of expertise of foreign labour involved for preliminary works. This pattern of involvement is due to many local labour involved during preliminary works. Foreign labour is mostly involved as a general labour only.

Structural Works

Moderate level of expertise is required for structure works as many new innovation and technology invented for formwork system. Usage of metal formwork, aluminium formwork, plastic formwork, etc. has replaced the usage conventional timber formwork. Predetermined sizes of formwork has contributed to speeding up construction activities with less usage of labour. This system is also require just a moderate skill and not a high skill of foreign labour as all sizes of formwork has been predetermined according to shop drawing.

Architectural Works

Highest level of expertise for foreign labour from Indonesia and China shown for architectural works. Moderate level of expertise for foreign labour from Bangladesh and very low level of expertise for foreign labour from Myanmar and Others. The reason of this higher skill requirement and high involvement of foreign labour is because of poor participation from local labour for bricklaying and wet trades.

Mechanical &Electrical works, Interior Design works, External Works and Others

Only moderate level of expertise is required to all origin for M&E works, interior design, external works and others. The reason of this pattern is due to more involvement of local labour.

5.5.3 Foreign labour lateral relation

5.5.3. 1 Foreign labour from Indonesia

From the findings, foreign labour from Indonesia and Bangladesh are involved in all trades with high percentage of participation. Both of these origins were elaborated further by using application of lateral relations as below:-



Figure 5.4 Trend for the application of lateral relations between volume of foreign labour and Indonesian level of expertise.

The figure 5.4 above is presented in mean values, which can be categorised into three, high, medium and low categories. A mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

The patterns indicate that *low* involvement of foreign labour for preliminaries works with *low* level of expertise. *High* involvement of foreign labour for structure and architectural works with *high* level of expertise.

Medium involvement of foreign labour for M&E with *high* level of expertise. *Medium* involvement of foreign labour for external works, interior design works and others with *medium* level of expertise.

5.5.3. 2 Foreign labour from Bangladesh

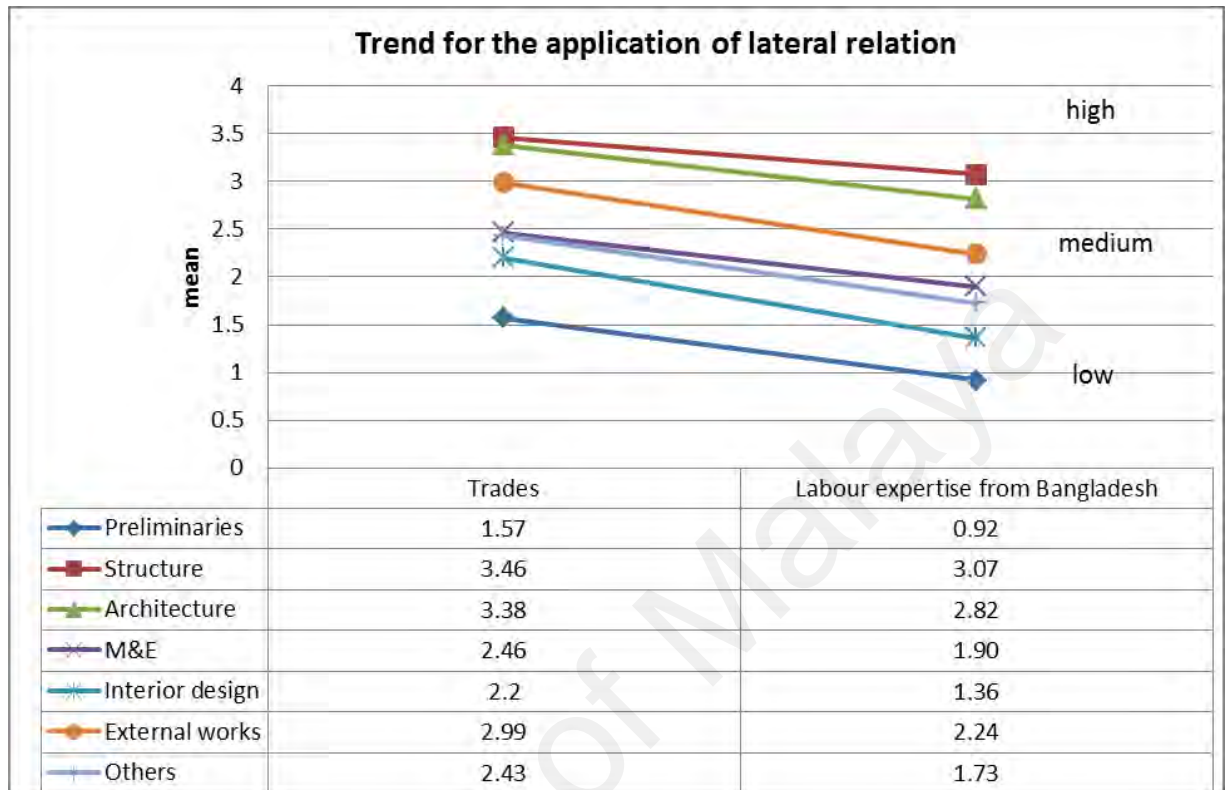


Figure 5.5 Trend for the application of lateral relations between volume of foreign labour and Bangladesh level of expertise.

The figure 5.5 above is presented in mean values, which can be categorised into three, high, medium and low categories. A mean reading of less than 1.66 is rated 'low', 1.67 to 3.33 is rated 'medium' and 3.34 to 5.0 is rated 'high'.

The patterns indicate that *low* involvement of foreign labour for preliminaries works with *low* level of expertise. *High* involvement of foreign labour for architecture and structure works with *medium* level of expertise. *Medium* involvement of foreign labour for M&E, external and other works with *medium* level of expertise. Medium involvement of foreign labour for interior design works with *low* level of expertise.

5.6 Establish relationship between foreign labour characteristics on construction project performance using Correlation Test

The foreign labour characteristics that correlates the project performance have been discussed in the Chapter 3. The foreign labour characteristics are used to measure the degree of correlations with project performance. According to Assaf & Al-Hejji, 2006, low labour productivity and shortage of labours were also been reported as a causes leading to project failure.

To improve the foreign labour performance, their type of expertise, level of expertise and origin needs to be identified and properly needs to be allocated to the correct position. Hemanta Doloi and Ming Y Lim 2009, has identified 12 critical factors that could affect the construction project performance and the individual including competency of key personnel or labourers is the third very important factors contributed to achieve project performance. It is useful for the main contractor to identify their foreign labour characteristic that correlates with project performance and to identify the solution that could improve the project performance.

Therefore the main objectives of this correlations test are:-

1. To determine whether any significant relationship exist among foreign labour characteristics variables and project performance.
2. To discuss implication of findings

5.6.1 Relationship between foreign labour characteristic (Origin & Level of Expertise) with project performance (PP).

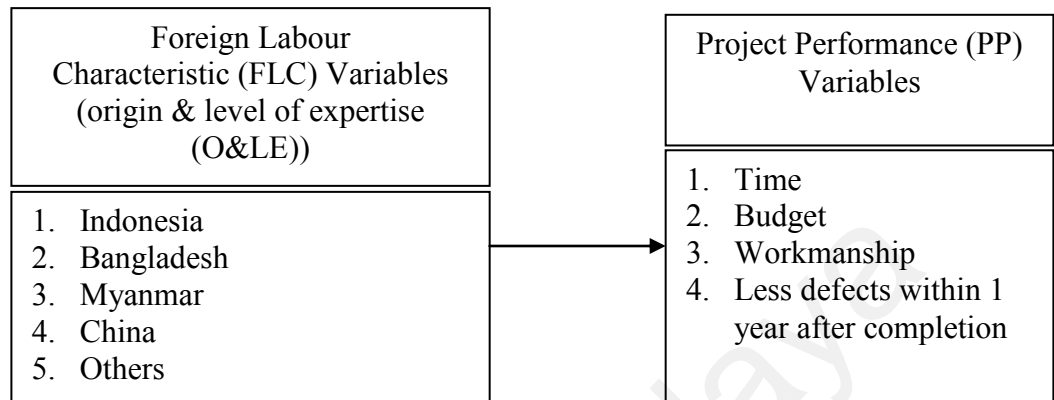


Figure 5.6 : Relationship between origin & level of expertise Vs project performance

The origin with their level of expertise were coded in *ascending* order from (1) very low to (5) very high. Project performance were coded in *descending* order from (1) very good to (6) worst. Therefore, more usage of higher expertise of foreign labour associated with higher project performance.

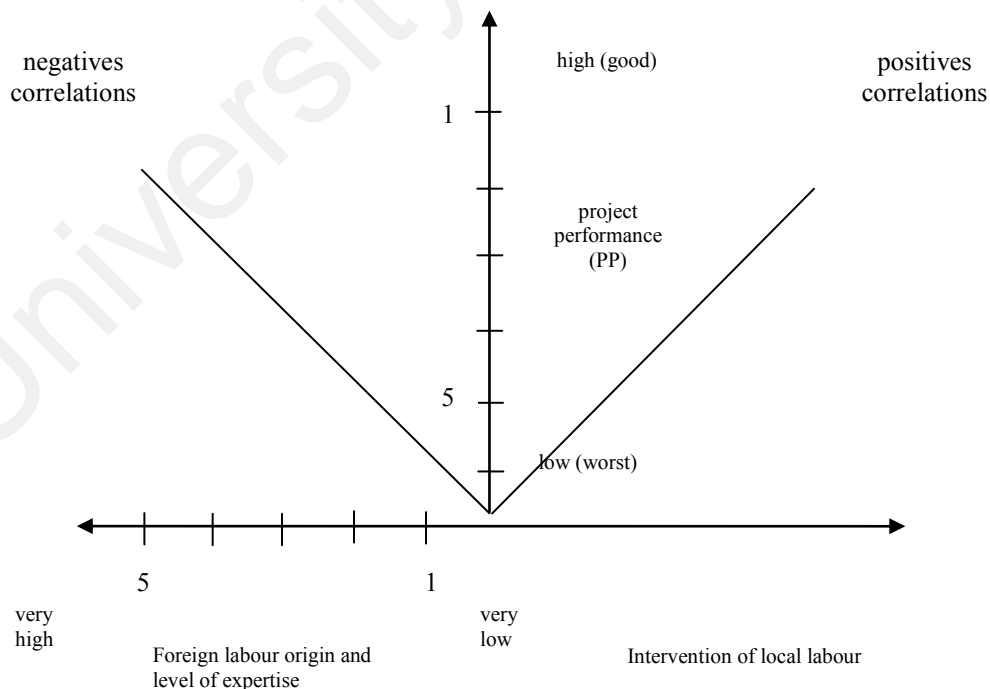


Figure 5.7 : The expected result diagram for correlations test between Origin & Level of Expertise and Project Performance. (Adapted and further expanded from Azlan, 2008).

Thus the result was expected to show a negative correlations that would indicate high level of expertise of foreign labour and their origin is associated with higher project performance. The result of correlations test are shown in Table 5.18

Table 5.18 : Correlations test result between Origin & Level of Expertise and Project Performance

FLC Variables (O&LE)	Time	Budget	Workmanship	Defects
Indonesia				
Preliminaries	.154	.084	-.151	-.107
Structure	-.310*	-.129	-.061	-.107
Architecture	-.311*	.039	-.209*	-.325*
M&E	.369**	.150	-.197	-.322*
Interior Design	.261*	.051	.040	-.168
External works	-.097	-.030	.203	.129
Others	.344**	-.007	.047	-.009
Bangladesh				
Preliminaries	.250	-.062	.086	.194
Structure	.191	-.030	-.104	-.044
Architecture	.127	-.021	.043	-.049
M&E	.192	.013	-.167	-.088
Interior Design	.281*	.080	.053	-.107
External works	.095	.038	-0.16	.017
Others	.096	-.127	.061	-.004
Myanmar				
Preliminaries	.074	.041	-.050	.046
Structure	-.246	-.113	-.040	-.027
Architecture	-.161	-.168	-.086	.033
M&E	-.009	-.018	.066	.206
Interior Design	.141	-.101	.066	.225
External works	-.009	-.101	.066	.266*
Others	.107	.015	.200	.013
China				
Preliminaries	-.054	-.155	-.168	-.036
Structure	-.133	-.164	-.127	.148
Architecture	.109	-.028	-.267*	.041
M&E	-.033	-.237	-.182	.174
Interior Design	.087	-.164	-.127	.089
External works	.038	-.140	-.068	.279*
Others	.107	-.203	-.157	.216
Others				
Preliminaries	-.008	-.044	-.127	.090
Structure	-.178	-.145	-.182	.108
Architecture	-.175	-.143	-.182	.110
M&E	-.133	-.164	-.127	.148
Interior Design	.087	-.164	-.127	.089
External works	.017	-.012	-.027	.006
Others	.058	-.185	-.109	.195

* correlation is at 5% significant level

** correlation at 1% significant level

Table 5.18 shows that generally more negative correlations were detected for overall origins and level of expertise. This indicates that the foreign labour origin and their level of expertise influence the project performance. However only 10 significant correlations were found. Discussions on the distribution of result are as follows: The correlations of foreign labour origin with their level of expertise to the project performance. The results in Table 5.18 shows that the involvement of foreign labour from Indonesia with their level of expertise has significantly correlated with works to be completed on time for structure works with less defects for M&E works. Meanwhile involvement of foreign labour from Bangladesh, Myanmar and other origins with their level of expertise has also no significant correlations to the project performance. Involvement of foreign labour form China with their level of expertise has significantly correlated to the project performance for architecture works.

5.6.2 Relationship between foreign labour characteristic (FLC) Type of Expertise (TE) with project performance (PP).

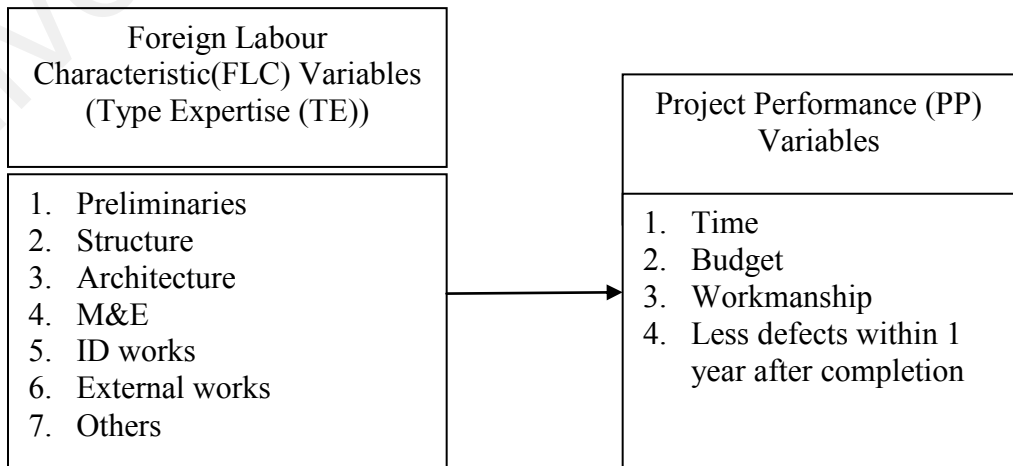


Figure 5.8: Relationship between type of expertise Vs project performance

The type of expertise were coded in *ascending* order from (1) very less to (5) very high involvement of foreign labour to each type of expertise. Project performance were coded in *descending* order from (1) very good to (6) worst.

Therefore, higher involvement of foreign labour to each sub-trade according to type of expertise will influence with the higher project performance.

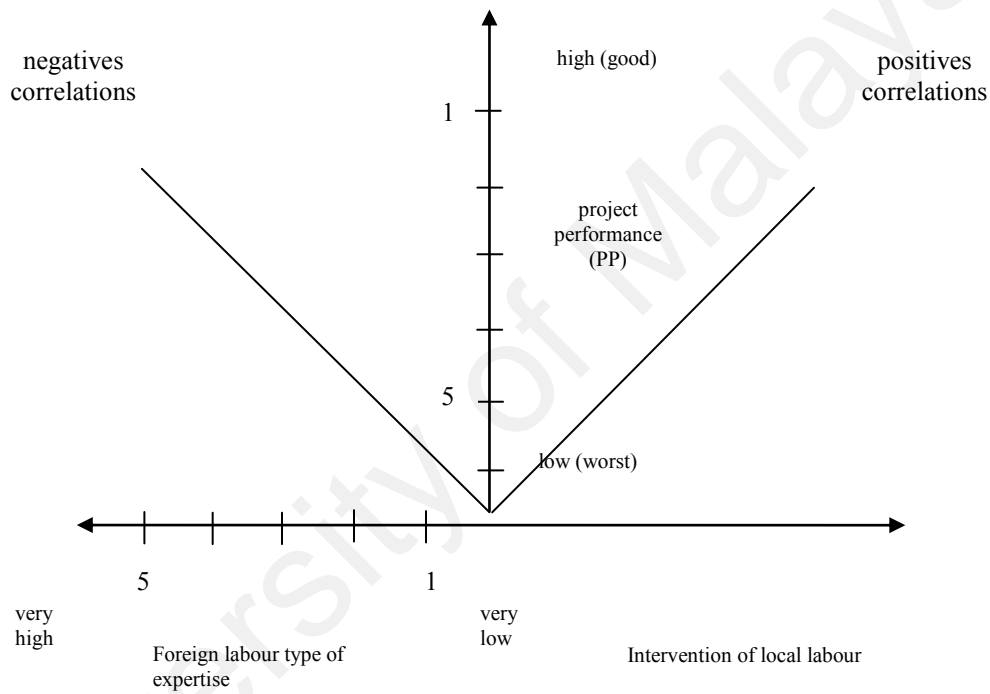


Figure 5.9 : The expected result diagram for correlations test between Type of Expertise and Project Performance (Adapted and further expanded from Azlan, 2008).

Thus the result was expected to show a negative correlations that would indicate greater certainty of the FLC variables is associated with higher project performance. The result of the correlations test are shown in Table 5.19

Table 5.19 : Correlations test between type of expertise and project performance

FLC Variables (TE)	Time	Budget	Workmanship	Defects
Preliminaries				
Operator	.081	.125	-.231	-.109
Technician	.176	.071	.109	.217
Driver	.127	.155	.145	.105
Safety	.102	.104	.124	.033
QA & QC	.000	.000	.000	.149
Supervisor	.061	.070	.089	.108
Engineer	.061	.070	.089	.108
Foreman	.121	-.094	.018	.249
Labour	.203	-.138	.156	-.026
Structure				
Carpenter (metal)	.294*	-.162	.260*	-.198
Carpenter (alum)	.235	-.124	.258*	-.156
Carpenter (sawn)	.383**	-.041	.228	-.220*
Barbender	.318*	-.129	.221	-.213
Concretor	.335**	-.025	.244	-.098
Prestressed	.217*	-.220	.392**	.264*
Architecture				
Bricklayer	.338*	.184	-.203*	-.221*
Plasterer	.217	.040	-.213*	-.213*
Skim Coating	.394**	.054	-.268*	-.206*
Painting	.324*	.057	.185	-.151
Installation of door	.338**	.288*	-.145	-.287*
Rendering	.343**	.181	.086	-.057
Floor Hardener	.423*	.109	.113	-.172
Ceiling works	.324*	.108	-.258*	-.184
Tiles	.464**	.143	.057	-.310**
Aluminium	.484**	.062	.242	.022
Mild Steel	.155	-.117	.277*	.118
Stainless Steel	.351**	-.067	.204	.135
Roof Tiles	.195	-.134	.011	-.059
Metal Decking	.316*	-.102	.172	.045
Timber Flooring	.274*	-.144	.227	.092
M&E				
Electrical	.415**	-.064	.294*	.277*
Telephone	.394**	-.034	.297*	.173
Tvsystem	.439**	.051	.205	.076
LPG	.364**	-.059	.385**	.229
Lift	.442**	-.099	.327*	.247
Fire	.426**	-.102	.392**	.221
Air Condition	.415**	-.060	.349**	.223
Plumbing	.349**	.032	.205	.125
Sanitary	.361**	.025	.208	.139
Water tank	.381**	-.021	.257*	.141
Water pump	.340**	.026	.254	.051
IDWorks				
Water feature	.337**	-.026	.178	-.091
Pebble wash	.316*	-.012	.257*	.125
Acoustic wall	.269*	.021	.137	-.077
Kitchen Cabinet	.358*	.011	.181	-.070
Carpet	.354**	.026	.211	.071
Wallpaper	.318*	.003	.207	-.011
Glass block	.306*	.002	.259*	.016
Toilet cubicle	.312*	.070	.148	.020

External Works				
Roadworks	.391**	.062	.403**	.267*
Drainage	.368**	-.065	.478**	.348**
Sewerage	.367**	-.048	.518**	.269*
STP	.400**	.000	.478**	.241
Others				
Scaffolder	.272*	-.039	.495**	.352**
Tower Crane operate	.432**	.164	.026	.029
Tower Crane Install	.318*	-.037	.387**	.341**
Termite spray	.344**	-.123	.472**	.257*

* correlation is at 5% significant level

** correlation at 1% significant level

Table 5.19 shows that generally more positive correlations were detected compare with negative correlations. Negative correlations can only be detected for budget and workmanship. However only 10 significant correlations were found.

5.6.2.1 The effect of foreign labour type of expertise with project completed on time

These results indicates that the foreign labour type of expertise does not have a significant correlations with project to be completed on time. Respondent generally answered their questionnaire that despite of allocations of foreign labour has been properly distributed to their type of expertise, their project generally completed later than their expected date of completion as stated in the letter of award due to many factors.

Project delay usually not solely due to the expertise of foreign labour but also depends on the extend or volume of variation order issued, unresolved authority matters, uncertainty of weather, unavailability of construction materials that had caused delay in delivery and etc.

5.6.2.2 The effect of foreign labour type of expertise with project completed within budget

These results shows that the foreign labour type of expertise does not have a significant correlations for project to be completed within budget. According to Farrow, 1991 that the lesser duration of project completion will correlate positively to the construction budget. Means, if the project is completed ahead of time, the lesser is the expenses would be and the construction company will enjoy higher profit margin.

However from the feedback from the respondent, most of the project selected as a case study is having many variation orders that means that could be a variation order omission or addition and most of the project identified by respondent is with a variation order addition due to changes of design, specifications, etc. Therefore the allocations of foreign labour according to their expertise in different sub-trade didn't have a significant correlations for the project to be completed within budget.

5.6.2.3 The effect of foreign labour type of expertise with project completed with high level of workmanship

There are four (4) significant correlations are detected under workmanship. These shows that foreign labour expertise has a contributed significantly to to high level of workmanship for bricklaying, plastering works, skim coating and ceiling works. It is also shown that many sub-trade with a positive correlations that can be intepreted that those items doesn't have any correlation with the foreign labour expertise. This is because these sub-trades are usually using more local labour. Sub-trade under Mechanical & Electrical, Interior designer and other trades related to external works, preliminaries works and other miscellaneous scope are carried out by local labour. As these are the controlled sub-trade allocated in the Government guideline.

5.6.2.4 The effect of foreign labour type of expertise with project completed with less defects during defects liability period of 12 months.

There are five (5) significant correlations are detected under defects after 12 months of completion. These shows that foreign labour expertise has a contributed significantly to less defects complaints for bricklaying, plastering works, skim coating, installation of door frame & leaf, tiles and sawn formwork.

It is also shown that many sub-trade with a positive correlations that can be interpreted that those items doesn't have any correlations with the foreign labour expertise. This is because these sub-trades are usually using more local labour. Sub-trade under Mechanical & Electrical, Interior designer and other trades related to external works, preliminaries works and other miscellaneous scope are carried out by local labour. As these are the controlled sub-trade allocated in the Government guidelines.

5.7 Discussions of findings

The data analyses has shown that the Malaysian construction industry is employing foreign labour with appropriate and practically acceptable level of expertise and positioned them according to their type of expertise. These analyses have also indicated that there are linkages between foreign labour involvement and project performance. From the descriptive analyses, the following sections present the discussion of findings and its implications to the result reported in the previous chapter.

Foreign labour involved in the preliminaries work is from Indonesia with non-skilled expertise. This is due to more local labour participation in this trades as an operator, lorry driver, technician etc.

Foreign labour involved in architecture works are mostly Indonesian and Bangladesh. Foreign labour from Indonesia and China are with high skills, moderate skills for Bangladesh and low skill for other origin.

Foreign labour involved in structure works are mostly Indonesian and Bangladesh with moderate skills. Lower participation of foreign labour from all origin for M&E works, Interior design works and other miscellaneous works with moderate skill required for Indonesia and Bangladesh. This is because more local labour participation for M&E works, interior designer and others.

5.8 Conclusion

From the data analysis and result, foreign labour involvement has significantly contributed to the project performance. However local labour has also contributed to project performance to certain sub-trade that is controlled and reserved by government. Research findings, revisiting research questions, contribution of study, conclusion and recommendation for further research is elaborated further in Chapter 6.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter presents the conclusion and recommendation on the results reported in the Chapter 5 of this dissertation. It provides information on the relationship between foreign labour involvement and their influence on the construction project performance, as this is pertinent in the study. This chapter answers the research questions whether the research achieved its objectives. It also discusses conclusions, recommendations and suggestions for the future research.

6.2 Research questions revisited

This study has raised five research questions in Chapter 1 and Chapter 4. This section is intended to answer the questions based on results and discussions highlighted thus far.

6.2.1 Research question 1: *What are the existing approaches implemented by the Government to reduce foreign labour involvement in Construction Industry?*

It was identified that the existing approaches implemented by the Government to reduce foreign labour in construction industries includes restriction of certain sub-trade or expertise which is allocated or reserved just for local labour and approval of foreign labour intake is depends on project value and project duration.

6.2.2 Research question 2: *In which trades are the most involvement of the foreign labour?*

The results revealed that mostly foreign labour for construction industry in Malaysia are from Indonesia and majority of them are doing architecture works (ie. bricklaying, concreting, plastering, skim coating, ceiling works, etc) followed by structure works, and less for other trades like preliminary works, M&E works, interior design works, external works and other miscellaneous works.

6.2.3 Research question 3: *To establish relationship between origin and level of expertise of foreign labour with project performance. Does the origin and level of expertise of foreign labour correlates with project performance?*

The result from the survey data in relation to this question shows that origin and level of expertise is having significant correlations and correlates with project performance. Spearman's rank and correlation coefficients result in table 5.18 (Page 121) shows that the involvement of foreign labour from Indonesia with their level of expertise has significantly correlated with works to be completed on time for structure works (-.310*) and architecture works at (-.311*), remarkable workmanship for architecture works (-.209*) and with less defects for architecture works (-.325*) and M&E works (-.322*). All readings shows * means all correlations are at 5% significant level.

Meanwhile involvement of foreign labour from Bangladesh, Myanmar and other origins with their level of expertise has no significant correlations to the project performance. This is due to their less percentage of foreign labour involvement from these origin compare to Indonesian.

Involvement of foreign labour from China with their level of expertise has significantly correlated to the project performance in terms of good workmanship for architecture works (-.267*). This is due to many main contractors getting their supply of tiles from China and at the same time they will bring in labourers from China who is skilful in laying tiles. Although their rate is more expensive than Indonesian labourers, it is worth employing as their workmanship is good. Readings shows * means correlations are at 5% significant level. There is no significant correlations between foreign labour origin & level of expertise with completion within budget.

6.2.4 Research question 4: To establish relationship between type of expertise of foreign labour with project performance. *Does the type of expertise of foreign labour correlates with project performance?*

The result from the survey data in relation to this question shows that type of expertise does not have significant correlations and affecting project performance in terms of time & budget but does have significant correlations and affecting project performance in terms of good workmanship & less defects.

6.2.4.1 The effect of foreign labour type of expertise with project completed on time

Spearman's rank and correlation coefficients result in table 5.19 (Page 124) shows that the foreign labour type of expertise does not have any significant correlations with project to be completed on time. Respondent generally answered their questionnaire that despite of allocations of foreign labour has been properly distributed to their type of expertise, their project generally completed later than their expected date of completion as stated in the letter of award due to many factors. Project delay usually not solely due to the expertise of foreign labour but also depends on the extend / volume of variation order issued, unresolved authority matters, uncertainty of weather, unavailability of construction materials that had caused delay in delivery of construction materials and etc.

6.2.4.2 The effect of foreign labour type of expertise with project completed within budget Spearman's rank and correlation coefficients result in table 5.19 (Page 124) also indicates that the foreign labour type of expertise does not have a significant correlations for project to be completed within budget. The lesser duration of project completion will correlations positively to the construction budget. Means, if the project is completed ahead of time, the lesser is the expenses would be and the construction company will enjoy higher profit margin.

However from the feedback from the respondent, most of the project selected as a case study is having many variation orders that mean that could be a variation order omission or addition and most of the project identified by respondent is with a variation order addition due to changes and upgrading of design, specifications, etc. Therefore the allocations of foreign labour according to their expertise in different sub-trade didn't have a significant correlations for the project to be completed within budget.

6.2.4.3 The effect of foreign labour type of expertise with project completed with high level of workmanship

Spearman's rank and correlation coefficients result in table 5.19 (Page 124) shows there are four (4) significant correlations are detected under workmanship. These shows that foreign labour expertise has a contributed significantly to high level of workmanship for bricklaying (-.203*), plastering works (-.213*), skim coating (-.268*) and ceiling works (-.258*).

It is also shown that many sub-trade with a positive correlations that can be interpreted that those items doesn't have any correlations with the foreign labour expertise. This is because these sub-trades are usually using more local labour. Sub-trade under mechanical & electrical, interior design and other trades related to external works, preliminaries works and other miscellaneous scope are carried out by local labour as these are the controlled sub-trade allocated in the Government's guidelines.

6.2.4.4 The effect of foreign labour type of expertise with project completed with less defects during defects liability period of 12 months.

There are six (6) significant correlations are detected under defects after 12 months of completion. These shows that foreign labour expertise has a contributed significantly to less defects complaints for bricklaying (-.221*), plastering works (-.213*), skim coating (-.206*), installation of door frame & leaf (-.287*), tiles (-.310**) and sawn formwork (-.220*).

It is also shown at Table 5.19 (page 124) that many sub-trades with a positive correlations can be interpreted that those items doesn't have any correlations with the foreign labour expertise. This is because these sub-trades are usually using more local labour. Sub-trade under mechanical & electrical, interior design and other trades related to external works, preliminaries works and other miscellaneous scope are carried out by local labour. As these are the controlled sub-trade allocated in the government guideline. Readings shows *means correlations are at 5% significant level and **means correlations at 1% significant level.

6.2.5 Research question 5: To establish relationship between the Government existing approach with project performance. *Does the Government existing approach correlates with project performance?*

The results from the survey data in relation to this question shows that existing approach implemented by government is having significant correlations and affecting project performance. Spearman's rank and correlation coefficients result in table 5.18 (Page 121) and 5.19 (Page 124) shows that more positives correlations appears whereby the involvement of foreign labour doesn't have significant correlations with the project performance. This is because more involvement of local labour compare with foreign labour for those trades. Therefore, the existing approached implemented by Government affect the project performance.

6.3 Research aim & objectives revisited

The overall aim is to find out the foreign labour involvement in construction industry and to investigate their performance in terms of project completed within time frame, within budget, good workmanship and less defects.

There are three objectives in this study as mentioned in Chapter 1.

1. The first objective is to identify the existing approached implemented by Government of Malaysia to reduce dependency to foreign labour and whether this approach affect the project performance. It was identified that restriction of certain sub-trade or expertise which is allocated just for local labour and approval of foreign labour intake is depends on project value and project duration has identified significant correlations with project performance. Therefore, this study has successfully achieved the objective no. 1.

2. The second objective is to categorise the foreign labour involvement by country of origin and type of expertise. The results revealed that mostly foreign labour for construction industry in Malaysia are from Indonesia and majority of them are doing architecture works (ie. bricklaying, concreting, plastering, skim coating, ceiling works, etc) and structure works, followed by Bangladesh and less for other origin. Thus, this study has achieved the objective no. 2.

3. The third objective is to establish relationship between foreign labour characteristic (origin & level of expertise and type of expertise) on construction project performance (time, cost, workmanship & defects). The result revealed that there is a significant correlation between foreign labour characteristics and project performance as elaborated in Chapter 5. Thus, this study has achieved the objective no. 3.

6.4 Contributions of the study

This thesis proposes to make the following contribution to the body of knowledge:-

1. There is a gap in the knowledge regarding contribution of foreign labour to the project performance. This study is trying to fill this gap.
2. The main purpose of this dissertation is to systematically identify important factors that need to be considered in selecting foreign labour, their allocation into different trades and to discuss how these factors affect project performance.
3. This dissertation provides information to the Main Contractors on the important factors that need to be considered during decision making of selecting foreign labour allocating them into trades. This would help the Main Contractor to improve effectiveness and making a right choice of selecting foreign labour.
4. With the Main Contractor in Malaysia being heavily dependent to foreign labour, the curiosity is arise why they prefer foreign labour and not local labour. This dissertation determines the most important factors in selecting foreign labour towards achieving remarkable and acceptable project performance.

6.5 Limitation of study

The findings of this study must be interpreted in the light of several limitations. An inherent limitation of this study pertains to its sampling frame. As the population of the study is limited to the Klang Valley's G7 companies, the result of this study cannot be generalized to the whole of Malaysia. However based on the study carried out by Norjaya (2004) the sample from Klang valley area would have more external validity in terms of generalising the findings.

The second limitation is non availability of published materials and research data in the area of allocation of foreign labour into the respective sub-trade as a comparison to the current trade of allocations.

6.6 Conclusion

Using real data from 59 Grade G7 Malaysian Main Contractors, the research presented in this dissertation has demonstrated that the Malaysia Grade Seven (G7) main contractors have allocated their foreign labour according to their type and level of expertise.

Main Contractor is very careful is selecting their foreign labourers. They have ensured that they have selected the right person in a right scope of works. Thus, foreign labourers in construction industry has contributed high standard of workmanship with less defects.

However this test/questionnaire was unable to find out whether how far the foreign labour has contributed to the project completion to be on time and within budget. This is due to the project completion on time and within budget is not solely contributed by the expertise of foreign labour but includes other factors such as change of drawing (constitute to variation

order omission or addition), local authority matters which is not related to foreign labour expertise, etc. Thus, the three research questions raised in this study have been answered in affirmative.

6.7 Significant of the study revisited

For many years Malaysia has been dependent to foreign labour to complete their construction project. It is undeniable that without existence of foreign labourers it is impossible to complete their project due to non existence of local labourers to carry out most of the trades. Curiosity arise when many Main Contractor is not aware of the existence of local labourers trained by Akademi Binaan Malaysia and during the personal interview conducted with them, almost all of them replied that they seldom find or they never have an initiative to find local labour before engaging foreign labour as they feel that they (local labourer) will never exist. From these reasons, the researcher is curious to find out what are the correlations of employing foreign labour on the project performance. From the result of data analysis, the advice to the Main Contractor is as follows:-

1. Local labour involvement for government controlled trades is successful

Government controlled trades ie. labourers involved in preliminary works, M&E works, interior design works and other miscellaneous trades is mainly local labour as many construction site is complying to these requirement. However the main contractor didn't feel the impact of participation of local labour as these scope of works and their quantity of workforce requirement is lesser than the architecture and structure works.

2. Foreign labour from Indonesia has conquered most of the trades

At this present moment, labour from Indonesia has conquered the construction industry compare with other trades. Thus, it is undeniable that they have contributed positively towards achievement remarkable project performance.

3. Foreign labour form China has prove their high quality of workmanship in laying tiles

Usually contractors is using labour from Indonesia for laying their homogeneous tiles but when comes to a special tiles ie. granite and marble, labour form China has proven a better workmanship compares with others.

4. Foreign labour from Bangladesh and Myanmar has proven their expertise

Foreign labour from these countries also has proven that they are a fast learner. They can be trained if opportunity is given to them to learn. Thus, their level of expertise has contributed the achievement of the targeted project performance.

From the reasons listed above, main contractor are still prefer to use foreign labour as they had proved their skills and had achieved a remarkable and acceptable project performance. The reason why government of Malaysia is still unable to produce trained local labour is because no demand from Main Contractor. Foreign labour from Indonesia is still easily obtained, available at all times and still affordable, therefore there is no urgency of searching local labour. This research is able to advise that foreign labour level of expertise has proven to contribute to achieve remarkable and acceptable project performance. Thus, the significant of the study has been achieved and explained.

6.8 Recommendations

This study has revealed that the foreign labour active involvement in construction industry in Malaysia has a significant influence to the project performance. This is the main reason why Malaysia is unable to get rid of foreign labour and to replace with local labour.

6.9 Suggestion for future research

There are number of topics that deserve further investigation in order to advance knowledge in this area.

1. Foreign labour from Indonesia towards significant correlation with project performance
From the research, it was found that majority of the labourers are from Indonesia. Most of the reason given why they prefer Indonesian is because their workmanship is better than others, willingness to learn, willingness to follow instruction, hardworking, diligent, similarity of language, religion, lifestyle, etc. Further research can be carried out how this characteristic will affect the performance in completing the project undertaken.
2. Possibilities of local labour to replace foreign labour for architecture and structure works
From the research, it was found out that no or less participation of local labour for architecture and structure works compare with other trades. Further research can be carried out what is a challenge of doing architecture and structure works that has caused elimination of local labourer interest. It could be the long working hour to work, working under the sun, difficult to learn that special skill, low pay, dirty, etc.

3. Local labour involvement and their correlations on construction project performance.

As for this research, the scope of study was limited to Klang Valley only as most of the construction activities actively performing in Klang Valley. Research can be carry out further to the states that less job opportunity. It could be anticipated that more local labour participation compare to foreign labour in construction activities to other states in Malaysia.

4. Long terms correlations on too much dependency to foreign labour

Further research can be carried out on long terms correlations if continually dependent to foreign labour. It could be less opportunity for the local to learn these skills, more Malaysian money transferred oversea, more foreign labour will settle down in Malaysia.

5. Development of associated areas

Research can be conducted in developing area associated with construction in relation to foreign labour involvement, such as foreign labour involvement in plantation, manufacturing, services, etc. and their correlations to their output or production.

REFERENCES

- Abdul, R. (2011). *Problem faced by Contractors in Managing Foreign Workers on Construction Sites*. Second International Conference on Construction and Project Management. IPEDR vo.15 (2011) @ IACSIT Press, Singapore.
- Ahmad, A. (2011). *Malaysian Institute of Economic Research Speech for "striking a balance in foreign labour"*. The Star online February 19, 2011.
- Ames, G. (2001). *Human Resource in Malaysia: An Overview*, Published in Corporate Relocation News.
- Ames, G. (2011). *Human Resource in Malaysia: update 2011*, Published by Pacific Bridge, Inc.
- Amstrong, J.S. & Overton, T.S. (1997). *Estimating non response Bias in Mail Surveys*. Journal of Marketing Research 16 (Aug): pp 396-400.
- Andy, N. J., Mills, K. P., Richards, H., Gregory, M., Bourne, M., (2000). *Performance measurement system design: developing and testing process a process –based approach*. International Journal of Operations and Production Management 20 (9-10) 1119-1145.
- Anon, I. (2007). *What are the Obligation of the Contractor During Defects Liability Period?* The Entrust Group, Master Builders, 1st quarter 2007
- Appel, V. & Baim, J. (1991). *Correcting Response Rate problems*. Journal of Advertising Research. 4 (March):14-16.
- Artkinson, D. (1999). *Measures of damages of defects*.
- Asrul Hadi (2010). *Malaysia wants review of foreign labour policy*. The Malaysian insider.
- Assaf, S. & Al-Hejji, S. (2006). *"Causes of delay in large construction projects"*. International Journal of Project Management, pp 1-9.
- Azizah, K. (1998a). *Profile of Foreign Migrant Workers in Malaysia*. Conference of Migrant Workers and the Malaysian Economy (19 to 20 May 1998:KL). Paper 6.
- Azizah, K. (2005). Master Builders Article (3rd Quarter) page 78 to 91.
- Azlan, S. A. (2008). *Integrative mechanism in the design process of building refurbishment projects*. Unpublished Phd thesis from University Technology MARA, Selangor, Malaysia.

- Babbie, E.R. (1998). *Survey Research Methods*. Wadsworth Publishing Company, Inc.
- Baccarini, D. (1999). 'The logical framework method for defining project success', *Project Management Journal*, vol. 30, no. 4, pp. 25-32.
- Bahrin, (1967). *The pattern of Indonesian Migration and Settlement in Malaysia*. *Asian Studies*, 5, 233-257. Entrepreneurship Symposium. Melbourne.
- Bailey, K.D. (1987). *Methods of Social Research*. New York : The Free Press.
- Barret, P. (2000). *System and Relationship for Construction Quality*. *International Journal of Quality and Reliability Management*. 17 (4/5):377-392.
- Best, J.W. (1989). *Research in Education*. 6th ed. NJ: Prentice Hill.
- Cain, C.T. (2004). *Performance Measurement for Construction Profitability*. Blackwell Publishing, Oxford.
- Cama, J. (2004). *Who Pays to Fix Building Defects?*. American Systems USA inc. Berrymans Legal Consultants.
- Carson, D. J. & Coviello, N. (1995). *Researching the Marketing/Entrepreneurship Interface*. Paper presented at the AMA Marketing.
- Castles, Stephen & Gondula Kosac. (1973). *Immigrant workers and Class Structure in Western Europe*. London: Oxford University Press, 1973.
- Chenail, R. (2000). *Navigating the Seven C's. Curiosity, Confirmation, Comparison, Changing, Collaborating, Critique and Combination*. *The Qualitative Report* :1-5.
- Cho, Y.J., Hyun, C.T., Lee, S. B., and Diekmann, J., (2006). *Characteristic of contractor's liabilities for defects and defective works in Korean public projects*. *Journal of Professional Issues in Engineering Education and Practice*. Volume 132, Issue 2, pp 180-186.
- Churchill, N.C. & Lewis, V. (1986). *Entrepreneurship research: Directions and Methods. In Art and Science Entrepreneurship*. Cambridge MA: Balinger.
- CIDB handbook manual (2007). *Permohonan Pekerja Asing Sektor Pembinaan*.
- CIMP (Construction Industry Malaysia Plan) 2006-2015.
- Cresswell, J.W. & Miller, G.A. (1997). *Research methodologies and Doctoral Process, New Direction for Higher Education*. 2 (3) : 33-36.

- Creswell, (2009). *Research design: Qualitative, Quantitative and Mixed Methods approaches*. 3rd ed. Thousand Oaks, CA: Sage 260p
- Crosby, P.B. (1972). *Quality is Free*. New York: McGraw Hill
- Davidson, C. (1995). *Social Research into Cream – a tool kit approach*. British Food Journal. 97 (7):18-21
- Deming, W.E. (1986). *Out of the Crisis*. 2nd Ed. MIT centre of Advanced Engineering Study: Cambridge
- Descloîtres, R. (1967). *The Foreign Workers*. Paris : OECD.
- Dillman, D.A. (2000). *Mail and Internet Survey: The Tailored Designed Method*. New York: John Wiley and Sons.
- Drucker, P.F. (1990). *The Emerging Theory of Manufacturing*. Harvard Business Review 80-93.
- Easterby, S. M. & Richard, T. (2008). *Management Research: An introduction*. London : Sage Publication.
- Economic report 2004/2005. Ministry of Finance Malaysia.
- Farrow, T. (1991). *Acceleration: Facing the Dilemmas*. Chartered Quantity Surveyor. August: 15-16
- Feigenbaum, A.V. (1961). *Total Quality Control*. New York: McGraw Hill
- Fienstein, A.H. and Vondrasek, D. (2006) : *A study of relationship between job satisfaction and organizational commitment among restaurant employees*. Retrieved 15th July 2006 from <http://hotel.unlv.edu/pdf/jobsatisfaction.pdf>
- Finance Ministry, economic report 2010/2011.
- Flaynn, B., Sakakibara, S., Schroeder, R.G., Bates, K.A. & Flynn, E.J. (1990). *Empirical Research methods in Operation Management*. Journal of Operations Management. 9 (2):250-284
- Fooks, J.H. (1992). *Profiles for performance: Total Quality Methods for Reducing Cycle Time*. MA: Addison-Wesley Reading.
- George, D. & Mallery, P. (2003). *SPSS for windows step by step a simple guide and reference*. 11.0 update (4th ed.). Allyn and Bacon, Boston.
- Gerald, D. (1996). *Migrants and Gate Keepers in Cities*. Vol 13, no. 1, 11-23.
- Gillham, B. (2000). *Developing a questionnaire*. Continuum London.

- Graves, A. & Rowe, D. (1999). *Benchmarking the Government Client : Stage Two Study*. London : HM Treasury.
- Grover, V. (1999). *A tutorial on survey research: forms constructs to theory*. <http://dmsweb.badm.sc.edu/grover/survey/MIS-SUVY.HTML>. 1-12
- Hair, J.F., Anderson, J.R., Rolph, E., Tatham, Roland, L., & Black W.C., (1998). *Multivariate data analysis*. 5th Ed NJ: Prentice-Hall International etc.
- Harban, S. (2003). *Engineering and Construction Contracts Management – Post Commencement Practice*. (Singapore LexisNexis) pp 695-696.
- Haryati S., Sharifah Meryam S. M., & Nadia M. G., 2009. *Masalah buruh asing dalam pembinaan dari perspective kontraktor. Kajian kes di Johor Bharu, Johor Malaysia*. Labour Review, 3(1),163-191
- Hemanta, D. & Ming, Y. L. (2009). *Measuring performance in construction projects - a critical analysis with an Australian perspective*. Proceedings in The Construction and building research conference. 6-7 September 2007.
- Hills, G.E. (1987). *Marketing and Entrepreneurship Research Issues: Scholarly Justification?* In Hills, G.E (Eds). *Research at the Marketing/Entrepreneurship Interface*. United States Association for Small Business and Entrepreneurship. Marietta, GA.
- Hong, T.J. (2005). *Statistical techniques in business research a practical approach*. Pearson Prentice Hall, Malaysia.
- Hunt, S.D. & Chonko, L.B. (1987). *Ethical Problems of Advertising Agency Executive*. Journal of Advertising 16:16-24
- Ibrahim, A.R. & Imtiaz, G. (2005a). *Lean Production System in Construction Industry*. Proceedings of University Malaya FBA-Asia Business Conference.
- ILO, (1995). *Social and labour issues concerning migrant workers in the construction industry*. Sectoral Activities Programme, Report For Discussion at the Tripartite Meeting on Social and Labour Issues Concerning Migrant Workers in the construction Industry.
- Imai, M. (1986). *Kaizen: the Key to Japan's Competitive Success*. NY: Mc Graw Hill Publishing Company.
- Jackson, J. & Hall, D. (1992). *Speeding up: New Product Development*. Management Accounting. October: 32-38
- Jackson, R. N. (1961). *Immigrant Labour and Development of Malaya. 1786-1920*. Kuala Lumpur: Government Printers.
- Janes, J. (1999). *Why a Column on Research Techniques*. Library Hi-Tech. 17 (12):211-216.

- Johnson, J. (1995). "Chaos: the dollar train of IT project failures". Application development Trends. Vol. 2, pp. 41-7
- Juran, J.W. (1989). *Leadership Quality an executive Handbook*. NY: The Free Press
- Kang, H. (2007). *Foreign labour inflows to Malaysia: trends & implications*. Unpublished dissertation. University Malaya.
- Kenneth, S.G. (2002). *Construction defects*. An analysis of SB 800. Reeves Journal. ABI/INFORM Trade & Industry, pg 8 London : Spon Press.
- Kog, Y.C., Chua, D.K.H., & Jaselskis, E.J. (1999). *Key Determinants for Construction Schedule Performance*. International Journal of Project Management. 17(6):351-9
- Kong, C.S. (1995). *Citizen and Foreign Labour in Singapore*. In Ong Jin Hui, Chan Kwok Bun and Chew Soon Bend (eds). *Crossing Borders : Transmigration in Asia Pacific*. Singapore : Prentice Hill.
- Kululanga, G.K., McCaffer, R., Price, A.D.F. & Edum-Fotwe, F. (1999). *Learning mechanisms employed by construction contractors*. Journal of Construction Engineering and Management 125 (4), 215–223.
- Kun, L.W. (2011). *Analysis on foreign labour exodus to spark labour crunch*. Research analyst at Credit Suisse. June, 22.
- Kwan, F.K. (2011). *Critical shortage faced by the construction sector on foreign workers*. MBAM president write up for MBAM bulletin.
- Redman, L. V., Mory A.V.H. (1923). *The romance of research*.
- Lai, M.Y. (2004). *Foreign workers issue in Malaysia : new government policy on employment of foreign workers*. Unpublished dissertation, University Malaya.
- Lan, K.E. (1992). *Demographic Characteristic*. Singapore Department of Statistics. Singapore Centre of Population 1990.
- Leedy, P.D. & Ormrod, J.E. (2005). *Practical research : Planning and design*. 8th ed. New Jersey: Pearson Prentice Hall. 319p.
- Lincoln, Y.S., & Guba, E. G. (2000). *Paradigmatic controversies, contradictions and emerging confluences*.
- Lind, D.A, Marchal W.G. & Wathan, S.A. (2003). *Basic statistic for business and Economics*. McGraw Hill, United States.
- Ling, S. P. (2006). *Manpower needs in construction industry – foreign labour issues & implications*. Unpublished Master thesis, University Technology Malaysia.

- Malhotra, N.K. (2004). *Marketing Research : An applied orientation*. 4th Ed. NJ : Prentice Hall
- Marianne, J. (2005). *Building defects spoil homeowners dreams*. Portland : The Oregonian News. The Aldrich Law Office. P.C. 522 SW 5th avenue.
- McGrath, J.E. (1984). *Dilemmatic: the study of research choices and dilemmas*. In McGrath, J.E. Eds. *Judgment Calls in Research*. Beverly Hills CA : Sage
- Menon, A., Bharadwaj, S., Adidam P. & Edison, S. (1999). *Antecedents and consequences of Marketing Strategy Making: a model and a test*. *Journal of marketing* 63:18-40.
- Mertens, D. M. (1998). *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches*. London: Sage.
- Miller, J. G. & Vollmann, T. E.(1985). *The Hidden Factory*. *Havard Business Review*. 142 – 150.
- Moha, A. A. (1999). *The inflow of foreign labour to Malaysia*. Some critical analysis of socioeconomic and political implication on the local.
- MOHR (2004). Ministry of Human Resources Malaysia : *Guidelines on the implementation of the induction course and issuance of certificate of eligibility for foreign workers intending to work in Malaysia*.
- Morokvasic-Muller, M. (2004). *Europe : a continent of immigration*. In Hernandez, C.G & Agenendt, S (eds.), *Foreign Workers, Refugees and irregular immigrants*. Council for Europe Cooperation, Asian Secretaries, Tokyo. Pp 29-70.
- MTUC, (2002). *Memorandum to YB Datuk Dr Fong Chan Onn Regarding Foreign Workers*. MTUC.
- Mukhtar, C. A. (2005). CIDB : *Understanding technical aspects in application of foreign workers by contractor-reported via Master Builders* (2nd quarter).
- Nigel, M.R. (1996). *Construction Law in Singapore and Malaysia*. “2nd Edition (Butterworths Asia Malaysia, 1996) pp. 160-162
- Norjaya, M.Y. (2004). *Marketing and non marketing mix factors and brand equity*. The case of Malaysian Household Electrical Appliances. Unpublished Ph.D. dissertation. University Sains Malaysia.
- Nurul Azita, S., Norazah, M. N., & Abdul Khalim, A. R. (2012). *The language problem issue among foreign workers in the Malaysian Construction Industry*. *International Journal of Business and Social Science*. Vol. 3, No. 11, June 2012

- Oakland, J. & Marosszeky, M. (2006). *Total Quality in the Construction Supply Chain*. Butterworth - Heinemann, Oxford.
- Pallant, J. (2001). *SPSS survival manual*. Open University Press, USA
- Pannirselvam, G.P., Ferguson, L.A., Ash, R.C. & Siferd, S.P. (1999). *Operations Management Research. An update for the 1990s*. Journal of Operations management. 18:95-112.
- Parmer, (1960). *Colonial Labour Policy and Administration: A history of Labour in the Rubber Plantation Industry in Malaya 1960-1949*. New York, J.J. Augustine.
- Patton, M.Q. (2002). *Qualitative Evaluation and Research Methods*. 2nd Ed. CA: Sage Publication.
- Philips, P. (2000). *A tale of two cities; The high-skilled, high wage and low skill, low wage growth paths in US construction*. Paper presented to the International Conference on structural change in building industries labour market, working relations and challenges in the coming years. Institute Arbeit and Technic, Gelsenkirchen, Germany, 19-20 Oct.
- Power, J. (1979). *Migrant Labour in Western Europe and the United States*. New York: Pergamon Press.
- Raymond, K. H. C. & Moha Asri Abdullah. (1999). *Foreign labour in Asia – issues and challenges*.
- Real Estate Housing Development (REHDA) press conference 21 May 2010.
- Remenyi, D., Williams, B., Money, A. & Swartz, E. (2002). *Doing research in Business and Management*. London : Sage Publications.
- Romano, C. & Ratnatunga, J. (1996). *The role of marketing : its impact on small enterprise research*. European Journal of Marketing. 29 (7):9-30.
- Roshana, T., & Hamimah, A. (2008). *Analysis of effectiveness measures of Construction Project Success in Malaysia*. Asian Social Science Journal Vol.4, No. 7.
- Salter, A. & Torbett, R. (2003). *Innovation and performance in Engineering design*. Journal of Construction Management and Economics, Vol 21, pp. 573-80.
- Sandhu, Kernial Singh. (1969). *Indians in Malaya: Some aspects of their immigration and Settlement (1786-1957)*. Cambridge University Press.
- Savido, V., Gribler, F., Paffitt, K. & Guvenis, M. (1992). *Critical success factors for construction project*. Journal of Construction Engineering & Management. 118(1) : 94-111

- Schroeder, R. G. (1993). *Operations Management: Decision Making in the Operations Function*. USA: Mc Graw Hill International.
- Scudder, G.D. & Hill. C.A. (1998). *A review and classification of empirical Research in Operations Management*. Journal of Operations Management. 16:91-101
- Sexton, D.L. (1994). *Advancing Small Business Research: Utilising research from other areas*. Entrepreneurship Theory and Practice. 2(4) : 25-34
- Sheikh, Y. (2011). *Industri pembinaan perlu cari cara kurangkan pekerja asing*. Labour Department Director General on utusan online 3 November 2011.
- Shiadri, A. (2008). *Causes of poor participation of local workers and strategies of improvement*. Unpublished Master dissertation, University Technology Malaysia.
- Shingo, S. (1998). *Non Stock Production: the Shingo System for Continious Improvement*. USA : Productivity Press.
- Sidewell, A.A. (1990). *Project management : dynamics and performance*. Journal of Construction Management and Economics, Vol8, pp.159-78.
- Stalk, G. (1998). *Time - The Next Source of Competitive Advantage*: Havard Business Review. 41-51
- Summerlin. & Ogborn. (2006). *Construction Defects*. Construction Law Attorneys, Thomson Business.
- Suriani, H. (2010). *The elements identification for sustainable formwork system*. Unpublished thesis, University Technology Malaysia.
- Sweet, J.J. (1993). *Avoiding or Minimizing Construction Litigation*. San Jose California: Wiley Law Publication.
- Tabachnick, B.G. & Fidell, L. S. (2001). *Using Multivariate Statistics*. Needham heights MA: Pearson Education.
- Thomas, B. (1968). 'Migration: Economic Aspects', in David L. Sills, ed. International Encyclopedia of Social Sciences Voice, Vol. 10, New York : Voice, New York , Macmicler, 292-300.
- Thomas, G. & Thomas, M. (2005). *Construction Partnering and Integrated Teamworking*. Blackwell, Oxford.
- Uma, S. (2010). *Research Methods for Business; a Skill-Building Approach*, 5th edition John Willey & Sons, Inc USA.

- Voytek, K.P., Lellock, K.L. and Schmit, M.A. (2004). *Developing performance metrics for science and technology programs: the case of manufacturing extension partnership program*. *Economic Development Quarterly*, 18, 174-185.
- Vonderembse, M.A. (1996). *Operations Management: Concepts Methods and Strategies*. Mark A Vonderembse. Minneapolis/St Paul: West Pub Company.
- Weiner, M. 1990. *Immigration : Perspective from receiving countries in Third World*. *Quarterly*, Vol 12, No. 1, January, 140-165.
- Weiss, A.M. & Heide, J.B. (1993). *The nature of Organisational Search in High Technology Markets*. *Journal of Marketing Research*. 30 (May):220-233.
- Worthen, B.R. Borg, W.R. & White, K.R. (1993). *Measurement and Evaluation in the School*. New York: Longman.
- Wright, J. (1997). *Time and Budget : The Twin Imperatives of a Project Sponsor*. *International Journal of Project Management*. 15 (3): 81-6.
- Yin, R.K. (2002). *Case Study Research : Design & Methods (3rd Edition)*. CA : Newbury Park.
- Zaleha, M.N., Noraini, Rusmawati & Suhaila. (2011). *The Impact of foreign workers on Labour Productivity in Malaysian Manufacturing Sector*. *Int. Journal of Economics Management* 5 (1) : 169-178
- Zehadul, K.A.H.M., Moha Asri Abdullah, Mohd Haji Isa (1999). *Foreign workers in Malaysia – issues and implications*.
- Zikmund, W.G. (2003). *Business Research Methods*. 7th Ed. USA: Thomson South Western.