The Sheffield Hallam University Built Environment Research Transactions

2014/15 Volume 6 Special International Edition ISSN 1759-3190

Purpose of the Series

The aim of this publication is to provide an opportunity for students to publish the findings of their undergraduate or postgraduate work. Guidance on publication will be given by staff who will act as second authors. It is hoped that by providing a guided transition into the production of papers that students will be encouraged throughout their future careers to publish further papers. Guest papers are welcomed in any field relating to the Built Environment. Please contact E.A.Laycock@shu.ac.uk. A template will be provided on request.

Acknowledgements

The editorial team would like to acknowledge and thank Will Hughes, Professor in Construction Management and Economics, University of Reading for permission to use the ARCOM template and the associated resources.

EDITORIAL

As Editor of this publication it has been a great pleasure to work with the students from Tunku Abdul Rahman University College (TAR UC, Malaysia. in the production of this third Special International Edition.

I would like to extend my thanks as always to the staff of Sheffield Hallam University Built Environment Division who work as part of the editorial team to provide helpful comments and feedback to the students. This is part of the support that we offer to new authors and I think it important that we continue to do this. It is my hope that by encouraging new graduates to publish early in their career with support that they will continue to do so and thus add to the body of knowledge. I would also like to extend my thanks to Dr Chua Ping Yong and Dr Sia Mal Kong of TAR UC who continue to play a role in this endeavour.

Prof. Elizabeth Laycock

Editor, Built Environment Research Transactions

CONTENTS

MALAYSIAN CONSTRUCTION EMPLOYERS' EXPECTATIONS TOWARDS QUALITY OF QUANTITY SURVEYING GRADUATES

Jenny Wong Siaw Yien[1]

Jenny Wong Siaw Yien is an Advanced Diploma Graduate of the Faculty of Engineering and Built Environment, Tunku Abdul Rahman University College, Malaysia.

The aim of this research is to study the quality of graduates 'offered' to the construction industry as opposed to what the industry needs. The unique structure of the construction industry, coupled with the challenges of global competitiveness and changing regulatory requirements have created the need for highly educated and competent quantity surveying graduates. This study looks into the transformation of the quantity surveying profession in view of the recent developments in the construction industry. The first part of the study identified the roles of quantity surveyors in different construction firms and identifies the traditional roles of quantity surveyors and subsequently their new scope of work. Questionnaires were sent to 120 respondents from different construction firms in Kuala Lumpur. Then the data analysis of the questionnaire was carried out to find out the satisfaction of the employers to the performance of the graduates and the skills and competencies identified by employers as important.

Keywords: quantity surveying, quality, graduates, construction industry, employers.

INTRODUCTION

"Malaysia's economic development and transformation process ... [has]… fuelled growth in construction development projects" (Zakaria et al. 2006). The construction industry has both direct and indirect links with many other industries such as those for basic materials manufacturing and plant machinery industry. It currently contributes 3-10% of nation's Gross Domestic Product (GDP) and employs 9.3% of the overall labour force. The Quantity Surveyor has played an important role in the construction industry.

This sustained growth has forced a number of colleges or universities to set up quantity surveying programs within their course offering due to the increasing demand for quantity surveying graduates at either degree or diploma level (Zakaria *et al*. 2006). As established by Samad *et al.* (2012), these "higher learning institutions are reaching out [to] their various communities, collaborating with employers, and developing innovative and successful ways of enhancing students' employability,

[1] jennyyien1992@gmail.com

enabling them to manage their careers, preparing them for lifelong learning and providing continuing professional development."

It has become more important to generate well qualified and competent graduates due to rapid changes and diversification in both the profession and the construction industry, in order to face the challenges and the increasing demand of the profession. It is therefore timely to study the quality of Quantity Surveying graduates entering the construction industry (Mahbub 2001). Through time, the quantity surveyors have developed into technical professionals with in-depth knowledge and expert skills in certain fields, to offer to their clients.

The employer of quantity surveyors can operate in very different fields as developers, contractors, architects, engineers, building owners, government, subcontractors and quantity surveyors themselves. Newly qualified graduates of quantity surveying are considered to be those who possess a Professional Certificate, Diploma or Degree in Quantity Surveying or other related discipline and have worked in the construction field for less than five years.

The aim of this research is to evaluate how well the quality of graduates 'offered' to the construction industry satisfies the industry requirements. The objectives include:

1. To present a critical review on the roles of quantity surveying graduates.
2. To review the employers' satisfaction on performance of recent graduates.
3. To evaluate employers' suggestions on how to improve the performance of quantity surveying graduates.

LITERATURE REVIEW

What is Quantity Surveyor?

Quantity Surveyors are given many different designations around the world, including cost manager, construction economist, building accountant, building cost consultant etc. The work of quantity surveyors covers most sectors of the construction industry worldwide. Fellows *et al.* (2003) say that the role of the quantity surveyor has developed from a measurer to a project cost consultant or financial manager of the project team. In addition to this the quantity surveyor also acts as an adviser to the client and to other members of the construction team on matters relating both to the contract and the form of procurement.

Ashworth (1996) asserts the quantity surveyor's role is three dimensional. Firstly the QS role is that of a cost consultant at the strategic and conceptual phase of pre-design, providing both on an initial cost and whole life costs. The second role relates to the preparation of tendering and contractual documentation for use by general and specialist contractors, whilst the third is an accounting role during the construction phase where reports are made for interim payments, financial progress and the control and adjudication of contractual claims and the preparation and agreement of the final project expenditure. The quantity surveyor may be employed on behalf of the client or the contractor.

Role of Quantity Surveyor

The basic role provided by quantity surveyor comprises of preparing and submitting feasibility study reports, preliminary estimates, cost planning, specification, conditions of contract, documents and reports for pre-qualification of contractors, Bills of Quantities (BQ) and other tender documents, tender estimates and reports, contracts documents and valuation of works for interim payments, valuation of variations and finally the preparation of the final accounts.

In addition to these basic services the quantity surveyor may also be engaged to provide additional services such as cost benefit analysis, value management, whole life costing, expert witness, arbitration/mediation, facilities management, post occupancy evaluation, insolvency services, due diligence reports, quality management, risk management, project management, premise audits, insurance valuation, tax advice and finally construction planning activities.

Professional Quantity Surveyor

The professional or consulting quantity surveyor is the quantity surveyor working in consultant firms and engaged by clients to perform professional practice. The form of agreement use for the appointment is published by the Board of Quantity Surveyors Malaysia (BQSM) with a mandatory scale of fees. Like other professionals, quantity surveyors owe a duty to the client to carry out his work with proper care and may be liable for damages for negligence if he fails to do so. Table 1 lists the duties of the Professional Quantity Surveyor at different stage of the contract:

Contractor's Quantity Surveyor

Contractor's quantity surveyors are seen as having a more commercial focus, in that the financial achievement or failure of a project or even a company may be dependent on the contractor's quantity surveyor. Contractors employ quantity surveyors to ensure that they receive the correct payment at the appropriate time for the work done on site (Ashworth 2007). The principle role of the quantity surveyor here is to look after the financial interests of the contractor. Table 2 lists the duties of the contractor's quantity surveyor at different stage of the contract:

Stage of Project	Services / Expertise
Pre-Construction	• Financial feasibility studies and the initial budget planning to find out whether the project is viable in terms of the client's financial budget • Preparation of preliminary estimates, cost planning and schedules during design stage • Advice on procurement methods • Preparation of Bills of Quantities (BQ), specifications and other tender documents for pricing by contractors • Preparing cash flow predictions • Monitoring the evolution of design to make sure it not exceed client's budget • Review tender drawings / documents for discrepancies • Negotiate contract sums with individual contractors on negotiated contractors • Evaluating the tender submitted by contractors and reporting on the suitability • Advise on contractor selection • Preparation of tender evaluation report • Pre-qualification, evaluation and registration of contractors • Preparation of all contract documents
During Construction	• Preparing cost reports at regular intervals • Valuation of the works in progress of the contractor for interim valuations including variations • Preparation of recommendation reports to Architect for the issue of interim payments • Evaluate Nominated Subcontractors • Assess variations and claims • Attendance to site meetings and preparing meeting reports • Preparation of financial statements
Post Construction	• Preparation of Final Account thus determining the final cost • Settlement of the final amounts with the contractor and sub-contractors

Table 1 Services provided by professional QS at different stage of project development

Stage of Project	Services / Expertise
Pre-construction	• Estimate and negotiate new contracts • Measurement and pricing for tender provided with an invitation to tender • Preparation of specifications and schedule of rates • Discuss with client's QS during a post-tender meeting regarding to the correction of errors in pricing, the procedures to be followed about re-measurement and financial control and the dates of interim valuations • Profitability and forecasting
During construction	• Carrying out site measurement • Site costing and bonus • Negotiate the material prices and construction costs with sub-contractors and suppliers • Valuation of work done by sub-contractor • Valuation of work completed for payment from the client and payment to sub-contractor • Determination of change due to variation from client or Architect • Cost accounting for labour, material and plant used • Preparation and agreement of claims
Post-construction	• Carry out project and contract administration duties for delivery of a scheme • Settlement of contractual disputes and claims • Preparation of final accounts

Table 2 Services provided by contractor's QS at different stage of project development

RESEARCH METHODOLOGY

This research was conducted by using a questionnaire survey. 120 questionnaires were distributed via postal, hand-delivery, facsimile and e-mail to organizations from the built environment sector around Kuala Lumpur. The questionnaire was administered to consultant firms, contractor firms, developer firms and also government agencies. This was facilitated by obtaining the mailing list from the Construction Industry Development Board (CIDB) website which list down the company name, address and title of the principal officer for each firm listed.

The questionnaire was divided into three main sections, Section A consists of five questions on the general information of the respondents and organization, Section B with six questions on quality of recent graduates entering the industry and their performance, and Section C with three questions on employers' suggestions to improve the quality of recent graduates. These three areas should reflect the current situation on the quality of graduates "offered" to the industry as opposed to what the industry needs. The following sections will discuss in detail the outcome of the survey

in each of the above mentioned sections. For the last question of this questionnaire survey, there is an open ended question that required the respondent to provide suggestions for the methods to improve the quality of the graduates.

Directors, managers, senior quantity surveyors who had the authority to employ or make recommendations on the recruitment of QS were the target respondents for the questionnaire. The respondent was also required to be in a position to review the performance or knowledge on the work performance of the employed QS.

Analysing Method for Questionnaire

The result of the data collected will be further summarized by using average index analysis. The average index analysis for each variable was calculated by using the similar classification of the rating scale proposed by Majid and McCaffer (1997) and Rating Scale as follow:

$$\text{Average Index (AI)} = \frac{x_1w_1 + x_2w_2 + x_3w_3 \ldots x_nw_n}{N}$$

Where,
w = weighting of answer choice by respondents;
x = frequency of the respondents;
n = total number of respondents.

RESULTS AND ANALYSIS

From the sample of 120 questionnaires administered a total of 42 responses were received, constituting a response rate of 35.8%. The type of firm and the number of quantity surveyors employed by the firm of the respondents are shown in Table 3. Of the 43 respondents, 20 respondents (46.5%) are from QS consultant firm, 17 respondents (39.5%) are from contractors and 5 respondents (11.6%) are from developers. The number of QS employed is summarised in Table 3.

Type of firm	Number of quantity surveyors employed					Total
	1 to 5	6 to 10	11 to 20	21 to 50	51 and above	
QS Consultant	7	2	4	4	3	20
Contractor	13	2	2	0	0	17
Developer	4	1	0	0	0	5
Others	1	0	0	0	0	1
Total	25	5	6	4	3	43

Table 3 Number of quantity surveyors employed

Table 4 illustrates the level of qualification of graduates entering the industry which was grouped under certificate, diploma, degree, masters and a combination of these. The largest group is the combination of Diploma and Degree holders, while Degree

holders only are second highest. This may indicate that Diploma and Degree graduates are generally hired by an organization as they have the required level of knowledge and skills for most jobs.

Level of qualification	Responses		Percent of Cases
	N	Percent	
Certificate	3	4.2%	7.0%
Diploma	20	27.8%	46.5%
Degree	37	51.4%	86.0%
Master	12	16.7%	27.9%
Others	0	0%	0%
Total	72	100.0%	167.4%

Table 4 Level of qualification of QS recent graduates

In this section, the employers were asked to appraise the skills and knowledge of the graduates. The analysis indicates that most employers feel graduates are competent with the use of spreadsheets to undertake tasks such as taking off with a mean value of 3.51 (see Table 5). On the other hand, most of the employers agreed that graduates are less competent in written and spoken English, and in communication and negotiation skills. Oral communication and negotiation, on the contrary, is a major problem of recent graduates nowadays especially in English.

When questioned, most employers believed that recent graduates do not have sufficient knowledge to handle their work (see Table 6). Only 37% of employers believe that the recent graduates have enough knowledge to carry out their tasks.

Table 7 shows the important criteria expected by the employers from recent graduates. The result shows that the most important criteria are previous working experience. It seems that academic qualification is not as important as previous working experience. In the QS field theory does not usually help, experience and knowledge in the workplace are much more useful for QS career.

All the respondents unanimously agreed that recent graduates require further improvement see (Table 8). Due to this, employers will always arrange the newly employed graduates under a senior quantity surveyor to guide them in their work.

Skills & Knowledge	Average index	Ranking	Rating Scale
Utilizing Spreadsheet and their application in QS	3.5116	1	Above average
Read the structural and architectural drawings	3.2791	2	Average
Team working	3.2558	3	Average
Be responsible for all works undertaken by him	3.0698	4	Average
Reading & interpreting surveys, survey maps/site plans	3.0233	5	Average
Knowledge of building and construction technology	3.0000	6	Average
Contribution to firm	2.9767	7	Average
Utilizing QS based programmes / MS Office and CAD	2.9535	8	Average
Be neutral in all decisions	2.9302	9	Average
Ability to deal with contract law	2.8140	10	Average
Presentation of works	2.7209	11	Average
Ability to write clear and precise reports	2.6744	12	Average
Level of spoken and written English	2.4651	13	Below average
Communication and negotiation skills	2.4186	14	Below average
Ability to handle jobs independently	2.2326	15	Below average

Table 5 Average index on skills and knowledge of graduates

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	16	37.2	37.2	37.2
No	27	62.8	62.8	100.0
Total	43	100.0	100.0	

Table 6 Employers' satisfaction on ability of recent graduates

Criteria	Responses		Percent of Cases
	N	Percent	
Academic qualification	16	22.9%	37.2%
Previous working experience	24	34.3%	55.8%
Posses with computer basic skill	17	24.3%	39.5%
Others	13	18.6%	30.2%
Total	70	100.0%	162.8%

Table 7Important criteria expected from recent graduates

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	43	100.0	100.0	100.0
No	0	0	0	0

Table 8 Improvement of recent graduates

Suggestions to Improve the Quality of Recent graduates

The last question was an open-ended question; respondents were free to express their comments or suggestions and a number identified that graduates were not able to understand the contractual relationship amongst the various parties involved in a construction project, thus they are less able to provide advice to the client. They also felt that graduates lacked a comprehensive understanding of the latest construction technology in the industry. Furthermore, one of the respondents stated that most graduates are not familiar with the cost of the materials. To be a quantity surveyor is essential that all graduates understand matters relating to cost.

Looking at the delivery of the course, one of the respondents suggested that the university should rebalance lecture and tutorial hours in the following proportions: construction technology (25%), measurement (25%), English (20%), pricing (10%), contract (20%) and others (10%). It was also suggested that the university should conduct seminars to improve the skills of the graduates. Others opined that recent graduates should be drilled in positive thinking, improve their CAD skills, increase their English proficiency and understand the pre- and post- construction phases as well as engage with lifelong learning (LLL).

According to one of the respondents, recent graduates themselves should take the initiative to ask for help from senior colleagues and learn how to search for information. Once assigned tasks completed, they should also request further tasks in lieu of idling until being called for new tasks. Most companies do not expect a recent graduate to work completely independently. A superior is usually assigned to guide them. Therefore, the graduate's willingness and attitude to learning is more of a factor than motivation by the employer. Furthermore, recent graduates are advised to handle every single task seriously and carefully. Even simple tasks such as arithmetical error checking should be treated as important and part of indentifying errors.

Besides that, graduates should have a commitment to professional practice, even though it may take a number of years of experience; graduates need to be able to persevere in order to become a professional quantity surveyor. Professional life can be seen as a video game - certain levels will appear to be hard but can only be overcome with hard work and determination. Once the graduates have achieved a higher level, things do not appear to be as difficult.

CONCLUSIONS

The second objective of the research is to review the employers' satisfaction on performance of recent graduates. Most employers currently prefer to employ Degree holders than those with the Certificate or Diploma qualifications. The results obtained from the questionnaire suggest that the majority of the employers are not fully satisfied with the performance of recent graduates. The employers mentioned that recent graduates do not have sufficient knowledge to carry out their work and unable to handle the jobs independently, although many of the deficits are not in technical knowledge. The recent graduates have to improve their level of spoken and written English, communication and negotiation skills and the ability to handle jobs independently. Employers surveyed also suggest that graduates should have more practice in the preparation of final accounts, the evaluation of contractual claims, the preparation of feasibility studies and the preparation of preliminary cost estimates.

All the respondents agreed that the recent graduates have to improve themselves. The top three methods agreed by employers to be useful to the graduates are exposing them to the site more frequently, developing professional expertise in the core competencies and learning and utilising the use of AutoCAD. As the conclusion, the aim and objectives of this research are met. The recent graduates have to make improvement themselves in order to achieve the expectation of the employers.

As this study is being conducted in Kuala Lumpur only, extensive research on other state of Malaysia is recommended. Due to the time and resource limitation, the number of respondents is not enough to present the expectation of the employers to the quality of the graduates. A more accurate result can be obtained if the response rate is more than 50%. Research did not include employers of quantity surveyors involved in heavy and industrial engineering includes such area as onshore and offshore oil and gas, petrochemicals, nuclear reprocessing and production facilities, process engineering, power stations, steel plants, and other similar industrial engineering complexes. Finally this research only focused on the employers' perspective, without finding out the opinions from the graduates. Therefore, it is recommended that anyone who is interested in this topic can prepare two sets of questionnaires, one for employer while another for the recent graduates. By comparing the responses from both employer and graduates, researcher is managed to understand about the transformation of the quantity surveyors offered to the construction industry nowadays. Hence, in-depth study on whether younger generation is ready in quantity surveying professional practice can be conducted.

REFERENCES

Abdullah, F (2005) "Preliminary findings of the research on the profile of the quantity surveying practice in Malaysia". [online]. QS National Convention 2005. Article from Hilton Kuala Lumpur last accessed 23 July 2013 at http://eprints.utm.my/

Abdul Rashid, K (ed.) (2003) "Quantity surveying: a new paradigm". Malaysia: Pearson Malaysia Sdn. Bhd.

Ashworth, A (1996) "Pre-contract studies: development economics, tendering and estimating". Pearson: Addison Wesley Longman Ltd.

Ashworth, A and Hogg, K (eds) (2007) "Willis's practice and procedure for the quantity surveyor ". UK: Blackwell Publishing Ltd.

Mahbub, R (2001) Perception and expectation of employers on the quality of quantity surveying graduates entering the construction industry. In Khairuddin Rashid.(eds). "Quantity Surveying: A New Paradigm". Kuala Lumpur: Prentice Pearson Publication. pp. 109-121.

Naoum, S G (2007) "Dissertation research & writing for construction students ". 2nd ed. London: Butterworth Heinemanm.

RICS (2013) Quantity surveying and construction surveying. RICS Built Environment Group. Last accessed 23 July 2013 at http://www.rics.org/my/.

Samad, A Z, Abdul-Rahman, H, Hassan, F, Md. Darus, Z, Zaharim, A and Fadhil Mohammad, M (2010) "Enhancing Employability of Graduates through Educational Collaborations with Professional Institutions: The Experience of the Faculty of Built Environment, University of Malaya". Unpublished PhD thesis, Faculty of the Built Environment, University of Malaya.

Seeley, I H (eds) (1997) "Quantity purveying practice". London: Macmillan Press Ltd.

Ukessays.n.d. "The specific role of the quantity surveyor". [online]. Last accessed 23 July 2013 at http://www.ukessays.com/dissertations/construction/role-of-the-quantity-surveyor.php.

Willis, C J, Wills, A, Trench, W and Lee S (eds) (2005) "Willis's elements of quantity surveying". UK: Wiley-Blackwell.

Zakaria, N, Che Munaaim, M E and Iqbal Khan, S (2006) "Malaysian quantity surveying education framework", Unpublished PhD thesis, Faculty of the Built Environment, University of Malaya.

A STUDY ON CONSTRUCTION DELAYS IN MALAYSIA WITH SPECIFIC REFERENCE TO PRIVATE CONSTRUCTION PROJECTS

Soo Poey Yong[2]

Soo Poey Yong is an Advanced Diploma Graduate of the Faculty of Engineering and Built Environment, Tunku Abdul Rahman College Malaysia.

In the construction industry problems with delays are common phenomena which lead to negative impact to the project and to the parties who are involved in construction. The parties who involved in construction project may cause the delay which is Employer, Consultant, Contractor or the result of an Act of God. The objectives of this work were to identify the causes of delays, the effects due to delays and propose suitable methods of minimizing delays during construction stage. Literature review and questionnaire survey were chosen as research methods for this work. Moreover, total seventeen (17) factors and four groups that contributed delay to construction project, seventeen (17) effects of delays and nine (9) methods to minimizing the delays were identified from literature review. Furthermore, in the finding were identified five (5) major factors of delays in the research. In addition, the significant groups of the causes of the delays which are Contractor related factors followed by Employer related factors, Consultant related factors and external factors. In conclusion, all the parties involved in the construction project should give cooperation to the construction project in order to reduce the probability of delay occur. Other researchers can perform the similar study by looking on government project, overseas project or specified in parties.

Keywords: Causes of Delay, Construction Project, Effects of Delay, Minimizing Delay

INTRODUCTION

In the past five years, the Malaysian construction industries have been fast growing, especially in the private sector. With economic recession, construction activity slowed down there were problems in delay of construction projects. The government used the construction industry as a major regulator of the national economy by implementing government projects as to the construction industry has direct or indirect links with

[2] Soo_py92@hotmail.com

142 industries. Fundamentally, construction activities are derived from the local economic activities in Malaysia. In the years of 2006 to 2009 the construction of non-residential and residential buildings contributed 40 to 55 percent of the construction market. The major two essential condition of construction is complete on time and within the cost limit. However, many projects experience extensive delays and thereby exceed initial time and cost estimates (Sweis et al, 2008). Construction delay is one of the most common, costly, complex and risky problems encountered in construction projects (Alaghbari et al, 2005). Projects which are experiencing delays of more than 30% difference compared to actual work progress schedule or where the project has failed to be completed in the time frame are termed a "sick project".

A construction project failure to complete on targeted time can have a number of changes in a project such as late completion, increased costs, lost productivity and contract termination. By definition, a delay is the slowing down of the progress of the work but without stopping it completely.

This research seeks to identify ways in which project delays in the construction industry can be minimised. And the research can propose suggestions to help reduce the construction project delayed in the private sector of Malaysia.

The purpose of the study was intended to identifying the factors, effects and ways to minimize or solve the problem construction delay in Malaysia private project.

1. To identify the main contributory causes of construction delay in Malaysia private construction project.
2. To analyses the effects of Malaysia private construction project delay.
3. To propose the ways of minimizing or preventing construction delay.

Research was conducted in four stages, comprising the literature review, data collection, data analysis and conclusion.

RESEARCH METHODOLOGY

Quantitative research allows analysis by statistical methods and a questionnaire was usually used to collected data for statistical analysis. A set of questionnaires was prepared for allocation to the target respondents who are working in construction industry positions such as engineers, quantity surveyors, project managers, site managers, site supervisors and other related persons. One hundred sets of questionnaire were sent and the number of response targeted as 30 sets of questionnaire.

Questionnaire Design

This questionnaire was designed based on the research topic which is related to the causes, effects and methods of minimizing construction delay. This set of questionnaire are consists of four sections which are section A is background of respondent, section B is causes of delay in private construction sector, section C is effects of construction delay and lastly section D is methods of minimizing construction delay.

Literature Review

Naoum (2007) stated that incorporation of previous researcher's information and results to be very helpful as research based on previous researcher design or questionnaire can enable the researcher to study more effectively. In addition, to fulfil the objectives of this research dissertation, all the information related to the causes, effects, and methods of minimizing the construction delay were collected from various sources of literature. The limitation of secondary data is time constraint due to the need to study a lot of related articles or journals.

Analysis Tool

After the researcher has been completed collection of data, the obtained data will be analyzed to achieve the objectives. Descriptive statistic will be adopted in this dissertation project which is easiest method of analysis research result (Naoum, 2007). Furthermore, pie chart and bar chart was adopted in this analysis to shown the proportion of the respondents and shown in percentages.

According to (Chan, 1997) was adopted 'relative important index' to analysis the data collected through questionnaire to determine the rank of each question. The formula to calculate each item as below:

$$\text{Relative Important Index, RII} = \frac{5n5 + 4n4 + 3n3 + 2n2 + 1n1}{5(n1 + n2 + n3 + n4 + n5)}$$

$$(0 < \text{index} > 1)$$

Where n1 = No. of respondents who answered '1'

n2 = No. of respondents who answered '2'

n3 = No. of respondents who answered '3'

n4 = No. of respondents who answered '4'

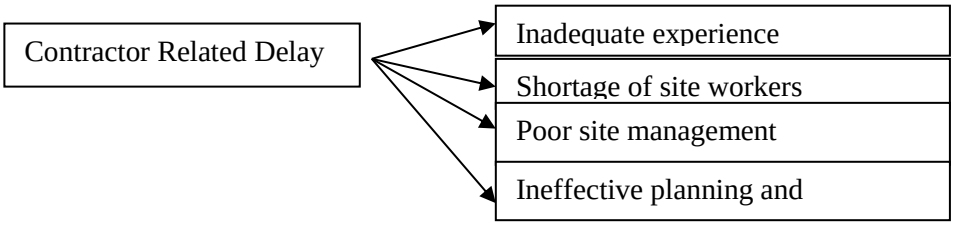
n5 = No. of respondents who answered '5'

LITERATURE REVIEW

Causes of Delays

Causes of delay in construction industry have been attributed to a number of reasons. According to (Abdul-Rahman, H et al., 2009) the top five most significant of construction delay as seen by Project Management Consultants (PMC) are presented in Figure 1.

Figure 1: Five most significant cause of construction delay (Source: Adapted from Abdul-Rahman et al., 2009)



Identify Causes of Delays

Material Shortage Related Delays

In the actual construction industry, the contractor must have good planning skills to order their required materials at the right time. During planning stage the contractor may have to forecast the inflation of price of the materials and the availability of supply to prevent materials shortage causing delay problems during the construction. Furthermore, according to research of (Sambasivan and Yau 2007) causes and effects of delays in the Malaysian construction industry the result rank shortage of material as number six in. That research involved 150 respondents from clients, consultants and contractors.

External Related Delays

According to (Odeh and Battaineh 2002) unforeseen weather condition as the contributors to causes of delays. Other than that, the high inflation or prices fluctuation will influence the probability to cause the delay (Wiguna. and Scott, 2005).

According to the previous literature studies, there are seven factors of external related delays were identified as shown in Table 1.

Party	Factors
External Factors	Lack of materials on the market Lack of equipment and tools on the market Poor weather condition (Act of God) Poor site conditions (location, ground, etc.) Poor economic condition (currency, inflation rate, etc.) Changes in laws and regulations Problems with neighbour External work due to public agencies (roads, utilities and public services)

Table 1: Factor of delays due to external factors (Sources: Odeh and Battaineh 2002; Wiguna and Scott 2005)

Effects of Delays

Time Overrun

Sambasivan and Yau (2007) stated that project time overrun may be caused by a contractor with inadequate experience in planning or other factors. Furthermore, time overrun can be classified into three groups which are; reasonable delay with compensation, reasonable delay without compensation or unreasonable delay. Failure to maintain timely progress ultimately causes delay to the finishing of the works (Table2).

Effects of Delay	Rank
Time overrun	1
Cost overrun	2
Dispute	3
Arbitration	4
Litigation	5
Total Abandonment	6

Table 2: Rank of Effects of Delay (Source: Aibinu and Jagboro (2002)

Rescheduling

In the construction industry of Malaysia delay is very common event. When a delay is happening in an ongoing project simultaneously the extension of time and reschedule the work progress will come together. The meaning of rescheduling is the change of original schedule of time in order to respond to disruption and problems which have occurred (Vieira et al., 2003).

Methods of Minimizing Delays

The literature review identified ways of minimizing or reducing the probability of construction delays in Malaysia. Besides, the project must be awarded to reliable contractors with enough expertise to take over the site and have no problems with materials supply to ensure the project can be completed before the construction period elapses.

Recommendations for Employers

- The obligation of employer is to pay the contractor every months of interim claim. The employer has to prepare a fund for the contractor claim.
- The employer should not always change the design requirements as this may cause disturbance to the original work progress.

Recommendations for Consultants

- All the building plan and infrastructure plan must be approved by the authority before the work is commenced.
- The consultant's team must strive to be fair to employer and contractor especially in terms of disputes.

Data Analysis

Categories	Factors	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
Contractor	1. Shortage of materials in market	2	8	6	14	1	0.63	5	0.73	1
	2. Lack of manpower or poor workmanship	0	1	7	16	7	0.79	2		
	3. Inefficient of equipment and tools	0	4	17	9	1	0.65	4		
	4. Contractor facing financial problems	0	3	9	15	4	0.73	3		
	5. Poor planning and scheduling of project	1	0	5	10	15	0.85	1		

Table 3: RII Result of Contractor related Factors. Causes of Construction Delay in Malaysia Private Construction Project

The contractor related factors is highest overall RII which have 0.73. The poor planning and scheduling of project with RII, 0.85 is the most significance factor of cause of delay in this group. The reason may be the Contractor does not employ the capable site agent to manage the site programme in a good manner. Abdul-Rahman et al.(2009)supported this need for effective planning and scheduling. The lowest RII is shortage of materials in the market with RII, 0.63 is the fifth factor. The possible

reason for this change may be historical, in that during 2008 China Olympic there was an increased need for steel to build their stadium and infrastructure (bridges, roads, drains etc). Research by Sambasivan and Yau (2007) also supported materials shortages as being ranked number six in. Therefore, this cause occurs less frequently in the Malaysian private construction industry.

Categories	Factors	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
External Factors	1. Exceptionally inclement weather	1	9	6	13	2	0.64	2	0.52	4
	2. Unforeseen site condition	0	4	7	17	3	0.72	1		
	3. Force majeure	1	4	19	5	2	0.62	4		
	4. Civil commotion	2	1	20	7	1	0.63	3		

Table 4: RII Result of External related Factors Causes of Construction Delay in Malaysia Private Construction Project

External factors was the lowest overall RII which only 0.52. The first factor was unforeseen site condition with RII, 0.72. The possible reason is most of the time is that of unstable soil conditions which cause the Contractor to have to cut out and backfill. The lowest RII factor was force majeure 0.62. The possible reason for force majeure is natural disaster, and while such flood frequently happen in Malaysia they are not as critical as those in Thailand in 2011. This two factors are supported by (Odeh and Battaineh 2002)and (Wiguna and Scott 2005) in Table 3.1.

Categories	Effects	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
Time Overrun	1. Project failure to complete on time	0	4	3	10	14	0.82	1	0.79	1
	2. Required Extension of Time to complete the project	1	0	6	16	8	0.79	2		
	3. Poor quality of work due to time constraint	0	1	8	17	5	0.77	3		

Table 5: RII Result of Time Overrun Effect Effects of Construction Delay in Malaysia Private Construction Project

The time overrun effect is highest overall RII which have 0.79. The first effect was project failure to complete on time with RII, 0.82. Where an Employer frequently changes design or the consultant is late in issuing drawing for the Contractor to carry

out their works time delays can result. The lowest RII effect was required poor quality of work due to time constraint with RII, 0.77. The reason can lead this effect can be due to the contractor not having enough time to find local skilled labourers to supervise the semi-skilled labourers or unskilled labourers. This effect is rank number one supported by (Aibinu and Jagboro 2002).

Categories	Effects	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
Rescheduling	1. Change the original date of construction activities	0	1	5	21	4	0.78	1	0.52	6
	2. More tight construction activities schedule	0	1	8	16	6	0.77	2		

Table 6: RII Result of Rescheduling Effect Effects of Construction Delay in Malaysia Private Construction Project

The rescheduling effect has lowest RII at 0.52. The first effect was change the original date of construction activities with RII, 0.78. Employer delays in giving site possession can cause the project manager need to reschedule all the activities. This statement was supported by (Vieira, G.E. et al., 2003). The second effect was more tight construction activities schedule with RII, 0.77. The reason can lead may due to Employer not allow extension for the Contractor, therefore, has to reschedule to tighter construction activities to meet the completion date.

Categories	Recommendation	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
Consultant	1. Ensure the construction drawing is complete with detail	0	1	4	7	19	0.88	2	0.87	1
	2. Consultant's must be fair to Employer and Contractor in dispute	0	0	5	17	9	0.83	3		
	3. Provide quick response to any unexpected incident	0	0	3	11	17	0.89	1		

Table 7: RII Result of Consultant ways to Minimizing Delays Ways to minimizing Delays in Construction Industry

The consultant ways to minimizing delays has highest overall RII which have 0.87. The first recommendation for Consultant was provide quick response to any unexpected incident with RII, 0.89. Delays may be caused where consultants do not provide timely responses to the contractor for whatever reason. The lowest RII was consultant must be fair to Employer and Contractor in dispute with RII, 0.83. The importance of maintaining parity and fairness in the event of a dispute was highlighted.

Ways to minimise Delays in Construction Industry

Categories	Recommendation	Rate					Likert Scale		Overall	
		1	2	3	4	5	RII	Rank	Mean	Rank
Employer	1. Employer pays the interim claim on time	0	0	4	11	16	0.88	1	0.86	3
	2. Employer reduce the possibility of change order	0	0	6	10	15	0.86	2		
	3. Choose a competent contractor but not only consider low-bid contractor	0	0	8	10	13	0.83	3		

Table 3.8: RII Result of Employer ways to Minimizing Delays

The employers ways of minimizing delays highest overall RII which have 0.86. The highest RII recommendation for Employer to pay the interim claims on time with RII,

0.88. The Contractor needs the interim claim payments to provide cash flow for their construction activities. The lowest RII recommendation was choosing a competent Contractor but not only consider low-bid Contractor with RII, 0.83. The possible reason may be the tender sum of Contractor can directly show their quality of work and workman used. Therefore, the Employer should choose the Contractor submitted tender sum is near to the contract sum work out by consultant quantity surveyor.

CONCLUSION AND RECOMMENDATION FOR FURTHER STUDIES

First Objective- To Identify the Main Contributing Causes to Construction Delay in Malaysia Private Construction Project

The first factor was (Rank 1) poor planning and scheduling of project and (Rank 2) lack of manpower or poor workmanship. From the findings, poor planning and scheduling of project and lack of manpower are most significant causes of delay in Malaysian private construction. This was can be prevent by Contractor employing a competent site manager to plan and schedule all the works properly.

Second Objective- To Analyses the Effects of Malaysia Private Construction Project Delay

The top ranked of effect of delay are Failure of the project to complete on time (Rank 1) and Requirements for extension of time to complete the project (Rank 2) . The research findings found that a contractor having any delay cannot complete on time or requiring extension of time to complete the project should put in more work forces or work over time to catch up the progress.

Third Objective- To Propose the Ways of Minimizing or Prevent Construction Delay

Methods of minimizing or preventing delays found were to provide a quick response to any unexpected incident (Rank 1) and (Rank 2) to ensure that the construction drawing is complete with detail. From the findings of this research, the consultant is encouraged immediately to reply any enquiry of contractor within 3 working days to prevent delay. Other than that, the consultant must ensure all the drawing are complete and reduce the possibility of revised drawing.

Recommendation of Further Studies

In the construction industry, there is a very wide area for future researchers to investigate on the delay of construction projects. In this dissertation is mainly focus on construction delay in Malaysian private construction projects. Moreover, there are some others type of projects like government projects, overseas projects and infrastructure projects which haven't been discussed in this research.

Therefore, some of recommendations are proposed to the future researchers who are interest in this topic as below:

1. Identify the causes and effects of government projects compared to private projects.

2. Compare the causes of delay with overseas projects.
3. Compare the duration of delay between infrastructure project and building projects.
4. Identify the causes and effects of delay cause by Contractors, Consultants and Employers.

REFERENCES

Abdul-Rahman, H et al., 2009. Financial-related causes contributing to project delays. Journal of Retail & Leisure Property, pp. 225-238.

Aibinu, A. A. and Jagboro, G. O., 2002. The Effects of Construction Delays on Project Delivery in Nigerian Construction Industry. International Journal of Project Management, pp. 593-599.

Alaghbari W.A.M. et al, 2005. Factors affecting construction speed of industrialized building system in Malaysia.

Chan, D. a. K. M., 1997. A study of Causes of Time Overruns in Hong Kong Construction Projects. International Journal of Project Management, pp. 55-63.

G. Sweis et al, 2008. Delays in construction projects. s.l.:s.n.

Naoum, S., 2007. Dissertation Research and Writing for Construction Students. s.l.:2nd Edition. Oxford: Elsevier Ltd..

Odeh, A. M. and Battaineh, H.T., 2002. Causes of Construction Delay: Traditional Contracts. International Journal of Project Management.

Sambasivan M. and Yau W.S., 2007. Causes and effects of delays in Malaysia construction industry. International Journal of Project Management, pp. 517-526.

Vieira, G.E. et al., 2003. Rescheduling manufacturing system: a framework of strategies, policies, and methods. Journal of Scheduling, pp. 39-62.

Wiguna, I.P.A. and Scott, S., 2005. Analyzing the Risks Affecting Construction Delay and Cost Overruns in Indonesia Building Projects. Innovation in Architecture, Engineering and Construction .

STUDY ON THE FACTORS AND EFFECTS OF DELAY OF MATERIALS IN CONSTRUCTION INDUSTRY

Lee Hui Kee[3]

Lee Hui Kee is an Advanced Diploma Graduate of the Faculty of Engineering and Built Environment, Tunku Abdul Rahman University College, Malaysia.

The problem of delays of in materials often occurs in the construction industry field. Delays are always measured as expensive to all parties concerned in the projects and it will always result in slowing the growth of construction sector. The aim of research is to investigate the causes and impacts due to the delay of materials in the construction industry. The objective of the work was to identify the types of material and to examine the factors that contribute the delay of materials and to analyse whether delay of materials has a significant effect on the construction industry. This study was carried out based on a literature review and a questionnaire survey sent to about 50 participants. The essential materials that consume in construction and lead the serious problems of delay are concrete, masonry materials, steel and related products. The literature identified eleven factors which were related to the delay of materials and that the six main effects of delay were time overrun, cost overrun, dispute, arbitration, litigation and abandonment. Some suggestions for solving materials delay in construction industry are made which include sourcing, supplier responsibilities, delivery and material protection and adequate supervision.

Keywords: construction industry, delay of materials, effects, factors, significant materials

INTRODUCTION

Many construction industries suffer from the common experience of delays. Delay in materials causes significant slowing down of work, increases disturbance to the work program and results in a loss of productivity on the project progress. The result is late completion of work and increased time-related costs, additional costs such as third party claims and termination of the contract. Frequent changes in the ordering of materials, poor management skills on site for the protection of materials and divergence of orders may also lead to delay of materials.

Inefficient communication is an issue which may cause the delay of materials to the site. Misunderstandings between contractors and suppliers will sooner or later impact

[3] lhuik_130@hotmail.com

on materials delivery to the construction site, an unreliable supplier should be avoided and neither engaged nor nominated. Problems with quantities of the materials delivered by the supplier being less than the quantities ordered previously by the contractor may occur, in some cases suppliers are reluctant to supply materials when there is no credit received by themselves from contractor or employer (Ali *et al* n.d.). Client responsibilities play an important role in preventing the problems of delay of materials and the availability at the right time and of the right amount of materials is directly related to the capability of the client. Liquidity problems make procurement of materials difficult for contractors. Changes to the design by client, changes of order and slow decision making by client also leads to the delay of materials.

The survey conducted for this work was focused on the construction industry in the Kuala Lumpur and Selangor area. This study was to investigate the causes on delay of materials and how the impacts would be controlled by the parties involved or in other aspects on construction industries. This study also provided the information of material's types which are currently adopted in construction industry, which is significant.

The questionnaire survey was developed to assess the problems faced by contractors and consultants on the relative of causes and effects of delay of materials in construction industries. The questionnaire also applied to evaluate the contractors' perception of factor, effects and solution contributing to delay of materials. Multi-choice questions were designed using the ranking technique. The questionnaires were distributed via e-mail to different firms such as contractor firms and developer firms as the target respondents.

LITERATURE REVIEW

Construction Delay

Construction delay describes a failure of an activity of work to be completed within a schedule and there are four basic ways to categorize delay; Critical or non critical, Excusable or inexcusable, Compensable or non-compensable and Concurrent or non-concurrent. Delays that effect the project completion or a milestone date are considered critical delays whilst delays that do not cause the project completion or a milestone date are termed non critical delays (Trauner *et al* 2009). According to Rubin *et al (*1999) non-excusable delays are means as those that are the contractor's fault whilst excusable delays mean those that are not the contractor's fault and these fall into two subcategories which are compensable and non-compensable delays. Compensable delays are those where the contractor is entitled to claim damages from the owner. These delays are generally caused through the fault of the owner. Those deemed to be one's fault are generally those non-compensable delays. The concurrency argument is not from the standpoint of determining the project's critical delays but from the standpoint of assigning responsibility for damages related with delays to the critical path. Basically concurrent delays are separate delays to the critical path that occur at the same time (Trauner *et al* 2009).

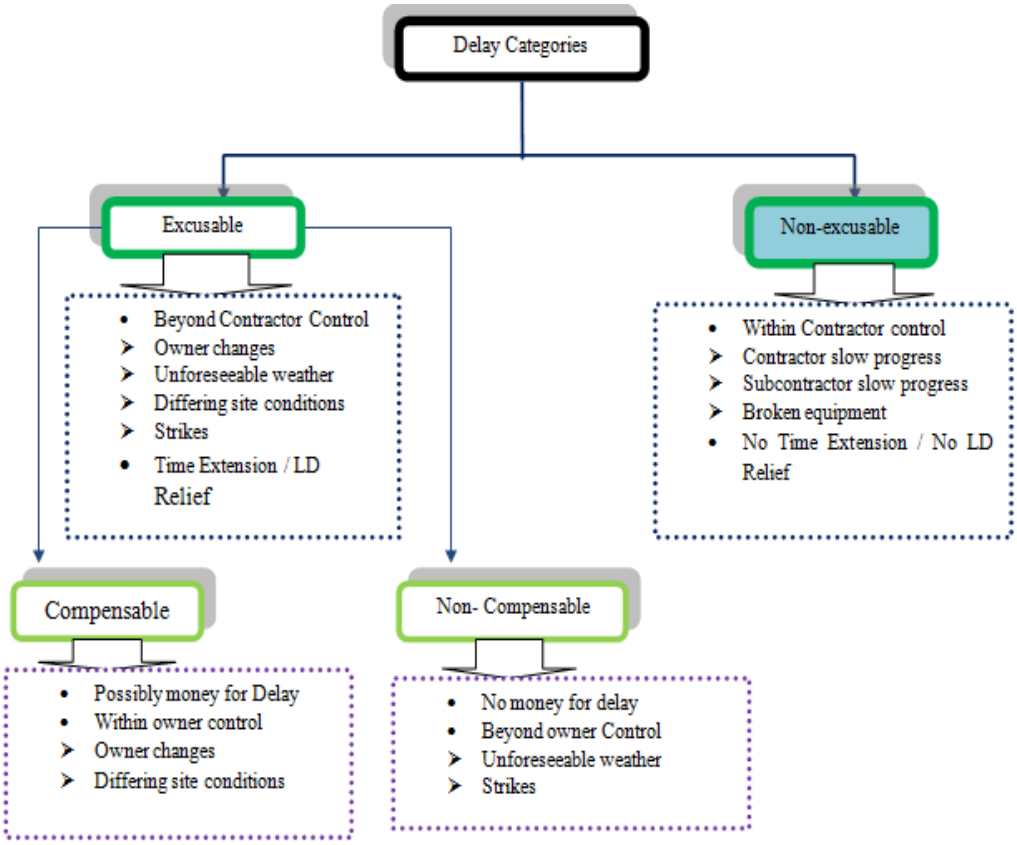


Figure 1 Types of Construction Delays (Trauner et al 2009)

Types of Materials Used in Construction Industry

Materials such as concrete, brick, stone, clay tile, woods, steel and others are used with different specified sealants and adhesive, insulation, exterior and interior wall, floor coverings, trims, paints, finishes and roof coverings. Concrete is a construction material the qualities of which can depend on the composition of the aggregates such as sand or stones, chemical composition and physical properties of the cement and the strength of the concrete is determined by water- cement ratio. Stone may be used as a finish material, as roofing, or as a decorative material and is of various types including granite, sandstone, slate, limestone and marble. Bricks are available in many different sizes and types, classified as common building brick, custom brick, face brick and special brick. Wood is divided into categories of hardwood and softwood for construction industry purposes, although these terms do not directly pertain to the relative hardness of the woods. Glass is used in functional design used in numerous places to create better and brighter living condition (Landers 1976).

Factors Contribute to Delay of Materials

A shortage of construction materials is the foundation of many construction delays. Demand exceeding supply is a major factor of materials shortage as a project cannot construct with a scarcity of material (Majid and McCaffer ,2003;Wiguna and Scoot

,2003). Majid and McCaffer (2003) showed the late delivery of materials contributes to project delays as there are no materials for the labourers who are ready for work to use. Constructing a building using poor quality of materials is often suspected of the contractor where there is an intention to cheat the owner or consultant to earn more profit by changing the quality of construction materials. An example may be the change in diameter of reinforcement and grade of concrete. If these discrepancies are found during inspection, the contractor would be asked to demolish the column and rebuild. This therefore results in a project delay for which an extension of time to complete the work is required.

Wiguna and Scoot (2003) stated that a factor causing of delay is escalation of material prices. Escalating material prices may lead to a shortage of construction material. If the market rate is changing and increasing a contractor may be reluctant to buy the materials. The project will be affected as a construction process without materials cannot proceed. A contractor may be reluctant to make any order for materials early and later the materials are in shortage as market demand is higher leading to delays.

Dada et al. (Ali *et al* n.d, p. 3) emphasized an unreliable supplier as one of the factors. For example an unreliable supplier may deliver a lower quantity of material than the quantity ordered by contractor. Material shortage will obviously be incurred because the quantity of materials originally ordered is not available.

Factors that causes Non- Excusable Delays		
Delay of materials	1.	Shortage of construction materials in market
	2.	Late delivery of materials
	3.	Poor quality of construction materials
	4.	Escalation of material prices
	5.	Unreliable suppliers
	6.	Late procurement of materials or Poor procurement of construction

Table 1 Causes of Delay by Materials (Ibironke et al 2013)

Factors that causes Non- Excusable Delays	
Delay of materials	1. Late in selection of finishing materials due to availability of many types in market
	2. Changes in materials types and specifications during construction
	3. Damage of sorted material while they are needed urgently
	4. Delay in manufacturing special building materials
	5. Imported construction materials

Table 2 Other Causes of Delay by Materials (Ibironke et al 2013; Desai and Bhatt 2013

Effects of Delays of Materials

Aibinu and Jagboro (cited by Ibironke *et al* 2013, p. 519) define the effects of delay on project delivery in the Nigerian construction industry. They identified six effects of delay as being time overrun, cost overrun, dispute, arbitration, abandonment and litigation. Sambasivan and Soon (2006) also showed time overrun, cost overrun, dispute, arbitration, litigation and total abandonment are the six major essential effects of delay in the Malaysian construction industry. The two most significant effects of delay in the Malaysian construction projects are said to be time overrun and cost overrun (Memon *et al* 2011).

Whatever the reasons for the construction project delays, these lead to time overruns as the project experience extension of time (EOT). Extra financial expenditure is involved when the extension of time leads to cost overruns. Dispute may be one of the effects of the delay, normally between contractor and client where a claim is involved. To satisfy all the parties to a certain extent, arbitration is preferred to solve the dispute. Litigation is to be taken by all parties if there is a deadlock (Memon *et al* 2011). Based on the study by Memon *et al*. (2011), the least frequent effects of construction delays are disputes, arbitration, total abandonment and litigation.

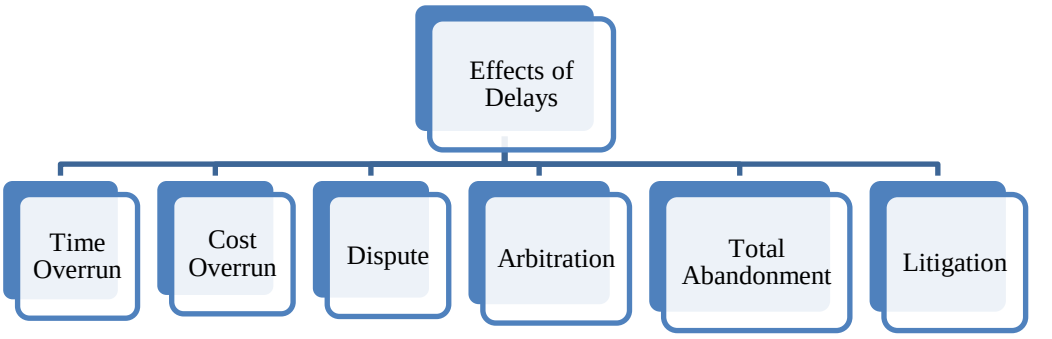


Figure 2 Effects of Delays in Construction Industry (Taher and Pandey 2013)

RESEARCH METHODOLOGY

Literature review and questionnaire were conducted. The questionnaire was designed based on aim and objectives of the research and it consists of 13 questions. There had four (4) sections which are Section A, Section B, Section C and Section D.

a) Section A: Respondent's Information

This information is important to assess the experience and knowledge that the respondent holds.

b) Section B: Opinion of Respondents and Knowledge Regarding the Materials

This section is to collect and receive the opinion from respondents about the delay of materials whether they have encounter in construction industry and to evaluate the important materials which are consumed in construction industry. The questionnaire is mainly based on Likert's scale of five (5) ordinal measures from one (1) to five (5) according to level of importance.

c) Section C: Factors of Delay of Materials

There are in total of eleven (11) causes of delay of materials identified in construction industry by the literature. The questionnaire is using Rating's scale of two (2) ordinal measures from one (1) to five (5) according to level of importance.

d) Section D: Effects of delay of materials

This section is designed to assess the effects of delay of materials in the construction industry. From the literature review the six (6) impacts re:

a) Time Overrun
b) Cost Overrun
c) Dispute
d) Arbitration
e) Litigation
f) Abandonment

One hundred questionnaires were distributed by e-mail or distributed by hand. Fifty (50) sets of questionnaire returns were required as a response rate. The questionnaires were distributed and send to respondents who have qualified requirement and experiences in the construction industry scope. This research was focus on the Kuala Lumpur and Selangor area. The analysis be carry on after the questionnaires had successful collected from the target respondents. Statistical method was used to analyze the data collection from the questionnaire feedback.

RESULTS

Responses on whether the construction industry faces the problem of delay of materials are shown in Table 3, of the responses there are 43 people (86%) who selected "Yes" and identified issues in shipping problems of materials in huge qualities, encountering of bad weather or any unforeseen factors. Only 7 out of 50 respondents (14%) do not believe that the construction industry is subject to this problem.

Construction industry facing problem of delay of materials	Frequency	Percentage (%)
Yes	43	86%
No	7	14%

Table 3 Respondents Opinion according to Construction Industry Facing Problem of delay of Materials

Table 4 demonstrates that 40 out of 50 respondents (80%) agree the adoption of materials as prerequisite to the whole progress of project in construction industry. In turn the minority of respondents with 20% or 10 respondents firmly believe that there is not the primary condition to the progress of project. Through the majority respondent's opinion, the adoption of materials as prerequisite is essential to a project because the quality and characteristics of the materials as stated in the specification control the success of the project.

Adoption of materials as prerequisite to the whole progress project in construction industry	Frequency	Percentage (%)
Yes	40	80%
No	10	20%

Table 4 Adoption of Materials as Prerequisite

Type of Likert's scale question is to rate out each suitability range from 1 to 5 by Likert's scale method. The analysis would base on the highest ranking which content highest mean by working out the average index analysis calculation. 1 (first) is the highest ranking and 6 (last) is the lowest ranking. The results on the importance of materials that are consumed in construction industry and which lead to the serious problems of delay are shown in table 5. Concrete is very important material which is most likely to lead to delay. Respondents also indicate that steel and related products are important materials. Masonry materials such as stone, brick and concrete block showed the third highest mean which was 3.82 of the total mean. The following materials are wood followed by doors and windows.

Materials	Frequency					Total	Mean	Rank
	1	2	3	4	5			
Concrete (e.g. Aggregates, Reinforcement and Cement)	1	4	5	14	26	50	4.20	1
Masonry Materials (e.g. Stone, Brick and Concrete Block)	1	3	12	22	12	50	3.82	3
Woods (e.g. Hardwoods and Softwoods)	1	6	15	22	6	50	3.40	4
Steel and related products (e.g. Pipe and Wire)	2	5	8	14	21	50	3.94	2
Windows (made by class)	8	12	22	6	2	50	2.64	6
Doors (combination of woods, metal and glass)	7	15	17	8	3	50	2.70	5

Table 5 Important Materials

Category	Factors	Frequency					Total	Mean	Rank
		1	2	3	4	5			
Materials	Shortage of construction materials in market	2	10	8	15	15	50	3.62	3
	Late delivery of materials	1	6	8	23	12	50	3.78	1
	Poor quality of construction materials	1	6	22	17	4	50	3.34	5
	Escalation of materials prices	3	10	19	12	6	50	3.16	10
	Unreliable supplier	2	11	19	11	7	50	3.20	9
	Late procurement of materials or poor procurement of construction	4	7	21	13	5	50	3.16	10
	Other Factors								
	Late in selection of finishing materials due to availability of many types in market	3	10	12	23	2	50	3.22	8
	Changes in materials types and specifications during construction	1	6	13	18	12	50	3.68	2
	Damages of stored material while they are needed urgently	2	7	19	13	9	50	3.40	4
	Delay in manufacturing special building materials	2	7	22	11	8	50	3.32	6
	Imported of construction materials	1	8	21	15	5	50	3.30	7

Table 6 Factors of Delay of Materials

Table 6 shows factors causing delay of materials. The purpose of this question designed is to identify and understand which factors are seen as most highly contributing to delays. The late delivery of materials is seen as the most important factor. This may due to the non-payment by employer to contractor and argument encounter between them. The second higher contribution factor is changes in materials types and specification during construction with 3.68 of total mean. Changes to design

specification during the construction period due to the requirements of any appropriate authority and service provider or whatsoever were also causes of delays. The third higher and fourth highest means are the shortage of construction materials in the market and damage to the stored material (when they are needed urgently). On the other hand, the lowest contributing factor is an escalation of materials prices and late procurement of materials or poor procurement of construction.

The results of the decision on whether materials have a significant effect to the whole progress of project are given in Table 7. The majority of respondents (47 or 94%) agree that delay of materials has a significant effect to the whole progress of project in the construction industry. Nevertheless 6% or 3 person disagree with this statement. Almost all of the respondents consider that the delay of materials can affect the whole progress of the project.

Materials have a significant effect to the whole progress of project	Frequency	Percentage (%)
Yes	47	94%
No	3	6%

Table 7 Delay of Materials has a Significant Effects

Effects	Frequency					Total	Mean	Rank
	1	2	3	4	5			
Time Overrun (because resources for the next job are tied up on delayed projects in construction project)	0	2	15	19	14	50	3.90	2
Cost Overrun (during the construction period)	0	2	5	26	17	50	4.16	1
Dispute (involved in claim)	0	6	18	19	7	50	3.54	3
Arbitration (to solve the dispute)	0	6	22	17	5	50	3.42	4
Litigation (is taken if there is a deadlock)	1	4	26	14	5	50	3.36	5
Abandonment (of whole construction project halfway through construction works)	4	6	16	17	7	50	3.34	6

Table 8 Effects of Delay

Based on the result in Table 8, the highest rate of effect of delay is cost overrun. Most of the project will face with cost overrun during construction period while delay is encounter because a lot of unexpected events. With the analysis on Table 5, it shows that the steel as an important materials. The 2nd highest ranking is time overrun having 3.90 of total mean. Every part of the work must follow the Works Programme prepared before commencement of any works. If delay is occurred, the work progress cannot run according to the schedule and more time is needed to complete the works compared to original master plan.

The third effect to be considered is dispute, either between employer and contractor or contractor and nominated supplier due to failures of making payment or claim in progress payment.

The following effects to be considered are arbitration and litigation, and finally abandonment. There are very few projects be abandonment while the delay of materials is occurred.

CONCLUSION

Based on the survey result and data analysis, all of the research objectives have been successfully achieved. The first objective is to identify the types of material which are significant in construction industry. Form the survey, it is fully understand that there are many types of the materials in construction industry is essential such as concrete, steel and related products, masonry materials, woods and et cetera. All the materials act an important role. Materials used in construction works should be of the respective quality and standards described in the Contract Document. The materials used should be in accordance with the provision of the contract; any alternatives are considered a variation and may cause losses to the contractor and delay of project.

The second objective which is to examine the factors that contribute the delay of materials in construction industry has been identified. There are eleven the factors found through literature review. From analysis of questionnaire result, most common of the contribution factors are late delivery, changes in materials types and specification during construction and shortage of construction materials in the market. The changes of requirements by any appropriate authority and services provider are to be treated as a primary and compulsory factor. Material requirements should always available in every time to prevent shortage of material.

The third objective of this study is to analyse whether delay of materials have a significant effect on construction industry has been fully recognized. The results of analysis show cost overrun, time overrun and disputes were three most common effects of delay in construction project. Time overruns because resources for the next job were tied up on delayed projects in construction projects. The work cannot finish on the completion date and extra cost is incurred due to the longer time to hiring the machines etc. In addition, dispute, arbitration and litigation also cannot be precluded. Disputes will happened when there is failure to settle any outstanding fees and it may be referred to arbitration or litigation.

Further recommendation is given into this area in order to complement this research. Some recommendations are given as follows:

- make sure all the materials are delivered on time, properly stored at the site and protected against loss, damage or deterioration and be in accordance with the contract
- materials shall contain proper characteristics, quality and quantity which are specified
- avoid to utilize the imported materials
- ensure the supplier take their full responsibility and allow no delay in material delivery

- make sure the appointed parties such as contractor are fully paid to meet supplier commitments
- hire an professional and experience consultant and contractor to secure the construction project
- ensure that during the construction stage the contractual parties are not facing any financial difficulties
- make sure client do not interference those contractual parties
- organize some training programs for contractors in order to update their knowledge and improve their management skill

REFERENCES

Ali, A Smith, A Pitt, M and Chan, H C (no date). Contractors' perception of factors contributing to project delay: case studies of commercial projects in Klang Valley, Malaysia. [online]. Lasted accessed 17 May 2013 at: http://fbe.um.edu.my/images/fab/Files/JDBEVOL7/vol7-04.pdf

Crossman A(2014). Types Of Sampling Designs. [online]. Lasted accessed 18 January 2014 at: http://sociology.about.com/od/Research/a/sampling-designs.htm

Desai, M and Bhatt, R (2013). Critical causes of delay in residential construction projects: Case study of Central Gujarat Region of India. [online]. International Journal of Engineering Trends and Technology (IJETT). Last accessed 7 July 2013 at: http://www.ijettjournal.org/volume-4/issue-4/IJETT-V4I4P250.pdf

Ibironke, OT Oladinrin TOa, Adeniyi O and Eboreime I (2013). Analysis of non-excusable delay factors influencing contractor's performance in Lagos State, Nigeria. [online]. Journal of construction in developing countries. Journal from penerbit university sains Malaysia last accessed 2 June 2013 at: http://web.usm.my/jcdc/vol18_1_2013/art4_jcdc18-1.pdf

Landers, JM (1976). Construction materials, methods, careers. The Goodheart-Willcox Company, Inc, South Holland.

Majid and McCaffer (2003) UK essays.com. (2003). [online]. Lasted accessed 6 July 2013 at: http://www.ukessays.com/dissertations/construction/causes-and-effects-of-delay-of-projects.php

Memon, AH, Rahman, IA, Abdullah MR & Azis, AAA (2011). Assessing the effects of construction delays on Mara large projects. [online]. Lasted accessed 10 July 2013 at: http://academia.edu/2472043/Assessing_the_Effects_of_Construction_Delays_on_MARA_Large_Projects

Rubin, RA Fairweather V and Guy SD. (1999). Construction claims: Prevention and resolution. John Wiley & Sons, Inc, Canada.

Sambasivan, M& Soon, YW (2006). Causes and effects of delays in Malaysian construction industry. [online]. International Journal of Project Management. Last accessed 2 June 2013 at: http://www.google.com.my/url?sa=t&rct=j&q=causes%20and%20effects%20of%20delays%20in%20malaysian%20construction%20industry%20(pdf)&source=web&cd=1&cad=rja&sqi=2&ved=0CC4QFjAA&url=http%3A%2F%2Fwww.researchgate.net%2Fpublication%2F222429558_Causes_and_effects_of_delays_in_Malaysian_construction_industry%2Ffile%2F9c960514fa3750da81.pdf&ei=MSTcUb3hBtHtrQeojoGwCA&usg=AFQjCNE65v24duCD-Pa2Av3kMfUEpMRWCw&bvm=bv.48705608,d.bmk

Taher, EF and Pandey, RK (2013). Study of delay in project planning and design stage of civil engineering projects. [online]. International Journal of Engineering and Advanced Technology (IJEAT). Last accessed 7 July 2013 at: http://www.ijeat.org/attachments/File/v2i3/C1111022313.pdf

Trauner, TJ. Manginelli, WA. Lowe, JS Nagata MF. and Furniss BJ. (2009). Construction delays understanding them clearly, analysis them correctly. Elsevier Inc, London.

Wiguna and Scoot (2003) UK essays.com. (2003). [online]. Lasted accessed 6 July 2013 at: http://www.ukessays.com/dissertations/construction/causes-and-effects-of-delay-of-projects.php

A STUDY ON THE EMPLOYMENT OF FOREIGN LABOUR IN THE MALAYSIAN CONSTRUCTION INDUSTRY

Sim Chun Hui[4]

Sim Chun Hui is an Advanced Diploma Graduate of the Faculty of Engineering and Built Environment, Tunku Abdul Rahman College Malaysia.

This study investigates and identifies the factors of employment of foreign labour in the Malaysian construction industry. All the data was gathered through interviews from related professionals including consultants, project managers and contractors. Data was analyzed through quantitative and qualitative methods. The shortages of skilled workers in the construction industry has become a worldwide issue and is one of the greatest challenges facing employers in the Malaysian construction industry. The three main issues in the large influx of foreign labour to the Malaysia Construction Industry are to identify the factors of, the impacts of and ways to reduce dependency on foreign labour. The factors contributing to foreign labour inflow are categorized into three aspects, namely political, economic and social. Malaysia's policies on foreign workers are related to legislation, regulations and an administrative system which based on Portal Jabatan Immigration Department Malaysia. Malaysia is developing rapidly and striving towards becoming a developed country by the Year 2020. Therefore the already large number of employment opportunities will further increase. The present influx of foreign labour creates a number of major issues and has economic, social and political implications on local communities.

Keywords: foreign labour, factors, impacts, Malaysia

INTRODUCTION

The growing presence of foreign workers in Malaysia can be explained by excess demand for labour combined with rapid economic growth, as well as the cheaper cost of foreign workers. The 2nd International Conference on Construction and Project Management IPEDR (Abdul Hamid *et al.* 2011) opines that for over three decades, Malaysia has relied heavily on the use of foreign labour either legally or otherwise

[4] dx_5961@live.com

The government has attempted to reduce the number of foreign workers in the country but this is confounded by the low price of the labour combined with demand caused by rapid economic growth. There is a labour crisis in the construction industry in Malaysia and the quantity of the foreign labour is not only the main issue impinging on the manpower development of the construction industry. Local workers are less interested in work in the construction industry and foreign workers are preferred by employers because they are generally diligent, docile and willing to work under poor working conditions. The low salaries of foreign workers translate into larger profits for the employers as well as filling labour shortages. SinChew (2012) stated that there was no doubt that foreign workers had contributed to Malaysia's economic growth, especially in sectors where there are acute shortages of workers such as construction and plantation. However foreign labour brings potentially harmful security problems and social consequences, leading to large impacts on the image of the Malaysian construction industry. The concentration of foreign workers living in flats meant for lower income groups has exacerbated a wide range of social problems. Changing skill requirements for locals is seen as critical; providing better conditions for workers and increased profitability. Unemployment or labour shortages will hinder future construction developments. In conjunction with the aim, the following objectives are set up and achieved in order to complete the research:

To identify the factors of foreign labour employment in the Malaysian Constriction Industry

To investigate the impacts of foreign labour employment with regards to issues and problems in the Malaysian Construction Industry.

To ascertain the ways of mitigating the negative impacts of foreign labour employment in the Malaysian Construction Industry.

The widespread problem of foreign workers in the short term is difficult to solve. Accordingly, the scope of this research study will narrow the factors that influence, negative impacts and measures to mitigate the employment of foreign workers in Malaysia, the negative impact of the construction industry and dependence.

RESEARCH METHODOLOGY

This research is generally based on legal foreign labour in construction industry as obtaining information that involves the undocumented ones poses difficulties. The lists of the populations of respondents are obtained from the relevant professional boards such as Construction Industry Development Board (CIDB) and the Malaysia Builder Directory. The literature review was framed around understanding the existing Malaysian Construction Industry foreign labour issues which enabled the development of a semi-structured interview. Semi-structured interviews were chosen allow a clear understanding into the topic. Twelve questions were designed to guide the interviews carried out on five respondents from different profession. Finally, recommendations to reduce or solve on massive influx of unskilled foreign labour in Malaysian Construction Industry were given by respondents.

1 Initial Study and Formulating Research Problem

By initial study, to identify issues related to employment of foreign labour in Malaysian Construction Industry and determine the problems caused.

2 Extensive Literature Review

Review all the related literature including articles from journals, books, government reports to analyse and evaluative the problems to refine the objectives.

3 Developing Research Objectives

Three objectives were established to narrow down the scope of study, the main framework of study was set and investigations proceeded.

4 Preparing the Research Design

Research design was set to define the concept structure for the research to be conducted, to allow the maximum amount of information within the minimum of time, money and labour. This step involved the consideration of the objectives of the research study, data collection and date analysis.

5 Collecting the Data

Interview with professional persons in related fields was seen as the best way to understand the real life problem and most appropriate method to collect primary information.

6 Analysis, Generalization and Interpretation of Data

After the data has been collected, the next task was to analyzed the data accordingly and using qualitative approaches.

7 Conclude

Conclusions were based on literature review and research findings. Recommendation for future research were given.

Primary data was gathered through interviews, collecting qualitative data by setting up a situation that allowed the interviewees to talk about their opinions on a particular subject. In semi-structured interviewing, the questions and topics that must be covered within the related field. Twelve questions guided the interviews done with five respondents of different professions.

Part 1: Background information of respondent

1. What kind of job position do you have in the Construction Field?
2. How long have you been involved in the Malaysian Construction Industry?

Part 2: Personal opinions on foreign labour issues

3. Do you agree that there is a reliance on foreign labour in order to develop the Malaysian Construction Industry?
4. What are the factors that contribute to the employment of foreign labour in Malaysian Construction Industry?
5. Do you think we need a lot of foreign labour to satisfy the demand in Malaysian Construction Industry?
6. If the number of foreign workers was a significant reduction in, do you think is conducive to the construction industry in Malaysia?

7. Who are the parties that suffer and benefit when reduction is made to foreign labour employment in the Malaysian Construction Industry.
8. Can you point out the pros and cons of hiring foreign workers in the Malaysian Construction Industry?
9. There are lots of existing measures and policies implemented to tackle this problem. Unfortunately the problem still exists and eventually getting worse. Therefore the recently policies implemented able to tackle this problem and successful in reducing reliance on foreign labour? (6P Amnesty Programme, Dependency ceiling , renewal of work permits and others)
10. Do you think it is necessary of Malaysia to follow another country as role models?
11. Do you have any suggestion to reduce reliance on employing foreign labour in Malaysian Construction Industry? Name a few measures or policies.

LITERATURE REVIEW

Construction skilled shortage workers have become worldwide issue. It also becomes the greatest challenge facing Malaysian construction industry.

Factors Contributing to Foreign Labour Inflow

The growing presence of foreign workers in Malaysia's can be explained by excess demand for labour combined with rapid economic growth, as well as the cheaper cost of foreign workers. Malaysia's policies on foreign workers are related to legislation, regulations and an administrative system which is based on Portal Jabatan Immigration Department Malaysia. Some countries encourage labour migration as they are facing serious unemployment problem. Malaysia's advanced transportation allows a substantial rise in temporary migration. MoU have been signed between Malaysia and labour source countries to protect the foreign labour, needs and treatment for example the "Memorandum of Understanding on the Recruitment of Indonesian Workers Between the Government of Malaysia and Indonesia", from the Ministry of Foreign Affairs, Malaysia.

The construction industry is one of the largest industries in most growing countries, which Azani Yahya (2011) explained includes Malaysia. The Malaysian government has attempted to solve the issue by choosing to use foreign workers. Foreign workers in Malaysia do not enjoy the same social security and welfare, for example they are not entitled to enjoy the Malaysian national pension savings plan blueprints.

As employers in Malaysia have preferred foreign workers, the long-term attitude of local residents has created a more hostile environment than to local workers. It is undeniable that foreign workers have contributed a lot in the construction industry of Malaysia. Castles & Miller (1998) said that this also led to foreign workers enthusiastically moving to Malaysia, whether legal or illegal foreign workers. This influx of foreign labour created a number of major issues and has economic, social and political implications for local communities. The availability of the large number of foreign workers caused locals and recent graduates to stay away from the construction industry because of the 3D (dirty, difficult and dangerous) image which

has long been associated with the industry. Local people are not willing to participate in the construction industry because the image of the construction industry is already unpleasant.

Adverse Impacts of Employing Foreign Workers

The influx of illegal foreign workers is seen by some to have damaged the country's image. Malaysia can punish those illegal foreign workers who make trouble, using large-scale crackdowns on illegal migrants. While most countries have abolished judicial caning, Malaysia has expanded the practice. In some area foreign workers have illegally occupied land and housing causing overcrowding and unsanitary living which has led to lower standards of living. This is concentrated in in the vicinity of industrial areas where foreign workers gather in search of employment opportunities. The construction industry is already unattractive due to the overwhelming number of low skilled and poorly educated foreign workers already engaged in the industry. Moreover, the willingness of foreign workers to accept low wages and poor working conditions has aggravated the problem by further depressing the wages of local workers and increasing deterrents to enter the industry and increasing dependence on foreign workers for many years. Labour shortage in Malaysian construction industry is due to certain causes such as poor participation by local labour. Shiadri (2008) explained that in Malaysia, local youth would rather be unemployed rather than working in the construction industry. The Malaysia Country Report (2009) showed that foreign machine operators earned lower than the average local worker, but for foreign workers these wages are considered high..

	Category of Machine Operators	Skilled Workers				Semi-skilled Workers			
		Local		Foreign		Local		Foreign	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1	Excavator Operator	55.00	120.00	41.00	115.00	n.a.	n.a.	n.a.	n.a.
2	Pile Rigger	50.00	120.00	45.00	100.00	40.00	95.00	37.50	77.00
3	Off Road Truck Operator	50.00	110.00	40.00	90.00	45.00	90.00	35.00	75.00
4	Backhoe Loader Operator	54.00	130.00	40.00	100.00	n.a.	n.a.	n.a.	n.a.
5	Roller Operator	50.00	110.00	40.00	100.00	40.00	82.00	35.00	80.00
6	Roller / Compactor Operator	50.00	110.00	35.00	90.00	40.00	90.00	35.00	82.00
7	Scrapper Operator	50.00	130.00	40.00	100.00	45.00	92.00	35.00	87.00
8	Motor Grader Operator	55.00	130.00	40.00	92.00	n.a.	n.a.	n.a.	n.a.
9	Wheel Loader Operator	50.00	120.00	40.00	90.00	45.00	85.00	38.00	72.00
10	Paver Operator	60.00	125.00	45.00	100.00	45.00	100.00	38.00	82.00
11	Mobile Crane Operator	70.00	190.00	51.00	140.00	45.00	103.00	45.00	92.00
12	Crawler Crane Operator	70.00	150.00	51.00	120.00	45.00	120.00	45.00	92.00
13	Tower Crane Operator	70.00	180.00	50.00	120.00	45.00	110.00	40.00	92.00
14	Forklift Operator	50.00	100.00	36.00	92.00	40.00	92.00	35.00	82.00
15	Slinger/Dogger	50.00	120.00	36.00	100.00	45.00	100.00	31.00	82.00
	Average wage	56.00	130.00	42.00	103.00	43.00	97.00	38.00	83.00

n.a. = Not Available

Source: CIDB Malaysia

Note : Data as at July 2009

Figure 1

Existing Measures to Reduce Reliance on Foreign Labour

Government must ultimately adopt and improve existing measures to reduce the dependence on foreign labour. By improving the image of the industry and improving the living facilities for employees to provide infrastructure to attract local workers. Ensuring a higher quality of employees within the construction industry, such as diploma certification will emulate positive action taken by other countries and also improve the current level of education. It is undeniable that foreign workers contribute significantly to the growth of the construction industry in Malaysia at local and the national level. However, research shows that there are still local residents requiring work and the Government should give priority to local residents rather than foreign workers.

RESEARCH STUDIES, DATA AND FINDINGS

Due to the limited time given to complete this task, five interviews were successfully conducted. Parties with contacts with foreign labour including Developers, Consultants and Construction firms were chosen.

1. Verification on need to rely on foreign labour in the Malaysia Construction Industry

Different players in the construction industry express almost same concern regarding foreign labour issue in the Malaysian Construction Industry. The main concern is focused on the supply of foreign labour. Manpower is the main resource required in the construction industry. Based on the opinions from the respondents, the lack of manpower seriously affects the completion time and work progress. As the Contractor may suffer losses, work progress is more of a concern than the labour issues. Attention is drawn only when daily life and safety was threatened.

2 Factors Contributing to the Employment of Foreign Labour

The entire respondent gave the same answer namely that foreign labour accepts low wages. Local resident refuse to work with low wages. Cost of operation is the main factor, Contractors are more willing to offer low pay to foreign labour rather than local residents. Contractor has no choice because of price competitiveness even if foreign labour brought negative issues.

3 Demand of foreign labour in Malaysian Construction Industry

All the respondents gave a consistent answer, that a lot of foreign labour was needed to satisfy the demands of the Malaysian Construction Industry. In both unskilled jobs and skilled jobs there is a reliance on foreign workers. Developer and contractor would not conform to government initiatives and put the company profit firs in order to ensure the job can be completed.

4 Consequences of significant reduction of foreign workers

In the long term, local resident could replace the foreign labour in construction industry. However the conditions have to change to suit the local residents such as an increase in wages and benefits. Therefore, a long period to adjust is needed.

5 Impacts to Various Parties for Reduction of the Foreign Labour Employment

Reduction of the foreign labour in Malaysia construction industry may cause 2 types of situation. When reduction of foreign labour occurs, contractors and developers will suffered by paying higher cost to employ local worker due to the insufficient manpower. In this case, construction cost will increase. In the end, end uses have to pay higher price to buy a property which may reduce net demand. Reduction of foreign labour can bring benefits to local residents. Local workers can receive higher pay for construction jobs and increases the chance to find a job. However a long time is needed to effect these changes. Because this change may make everyone suffers in the short run, especially in the market of the Malaysian construction industry.

6 Role Model for Malaysia

All respondents agree that in Malaysia it is necessary to follow another country as a role model to improve on policies and ways of implementation. Our neighbour country, Singapore is a good example for us. Malaysia was on an equal footing with Singapore but now Malaysia is a distant away behind Singapore. Therefore, it is very important for Malaysia to study through their policies to better understand and to solve the problems.

RECOMMENDATIONS

The focus for change needs to be on government policies. It is the main condition that we should co-operate with government to improve our construction industry image. For example, suggestion by a respondent is to provide training to school leaver to become skilled worker. Private sector such as developer can co-operate with government to develop human resources capability and capacities in the construction industry. Malaysia is still on the track of developing the Malaysian Construction Industry, and there is a need to rely on foreign labour even it causes issues. A long time is needed to make changes to the construction industry. First of all, cost and budget will be the main factor. Government and private sector should co-operate to solve the problem. Improve the benefit such as wages for local workers. Provide some programs such as to promote vocational education is in line with Construction Industry Master Plan strategic thrust to encourage local resident join the construction industry. Therefore, government must work hard to lead our country towards developed nation by improve existing policies

CONCLUSION

This work found that the main factor causing the large influx of foreign labour in the Malaysian Construction Industry is the economic aspect. Foreign workers coming into Malaysia and working here is essential to the economy to allow the continuation of a successful nation. Ramesh Kumar (2012) defined that at the same time, the government should regulate the number of foreign workers entering the country as it reduces employment opportunities for the locals as employers prefer hiring foreigners. Foreign labour can accept low wages and bad working conditions. This will be the main reason why developer and contractor prefer to hire foreign labour than local workers. Work with higher currency exchange rates so that there can attract Malaysians to work in Singapore. This situation is same to the foreign labour; they are in order to get a better reward to work in Malaysia. Even the foreign labour can satisfy

the demand in Malaysian Construction Industry. But Malaysia's policy cannot effectively control the number of foreign workers and lead to excessive influx of foreign workers in Malaysia especially in the construction industry. This leads to a dependence on foreign labour in Malaysia which brings a lot of negative impacts. Therefore, the Malaysian government must adopt appropriate policies to address the excessive influx of foreign workers in Malaysia.

In view of the current trend in the construction industry in Malaysia, we still have to rely on foreign labour to meet the human resource requirements, whether it is skilled or unskilled labour. But the government must take effective measures to solve the problem which excessive negative foreign labour and illegal foreign labour has brought. Malaysia is still developing country which can refer to Singapore as a model for how their policies have effectively controlled the number of foreign workers. There are only 20% of foreign workers in Singapore and this does not affect the welfare of local residents. Malaysia has to go through numerous stages to reduce over reliance on unskilled foreign labour in construction industry. The implementation of minimum wages will ultimately reduce Malaysia's dependence on foreign workers in certain sectors which can be filled by local workers. A reduced dependence on foreign workers and the implementation of the minimum wage policy will make employers think of an alternative way to continue their business. This may effectively control the number of illegal foreign workers and reduce the negative issues brought illegal foreign workers.

Recommendation for Future Research

By successfully proposing recommendations for reduction of reliance on foreign labour in Malaysian Construction Industry, the next research proposed to be conducted is to study the education systems other country and compare to Malaysia’s for improvement. Malaysia should improve the school education system during secondary school level such as add in addition subject like wiring and welding. Ramesh Kumar (2012) defined that these basic skills in the construction industry are a must and instil proper knowledge to young people to avoid over-reliance of the country and rely on foreign workers to practice the skills involved which may require vocational secondary schools within the Malaysian education system. .

REFERENCES

2nd International Conference on Construction and Project Management IPEDR (2011)

Abdul Hamid, AR, Singh, B, Wan Yusof, WZ. Yusof AM and Mustafa, N (2011) 2nd International Conference on Construction and Project Management IPEDR vol.15 (2011) © (2011) IACSIT Press, Singapore

Azani Yahya, AM (2011) Foreign Professionals Involvement in Malaysian Construction Industry [online]. Last accessed 1 July 2013 at: http://academia.edu/585327/Foreign_Professionals_Involvement_in_Malaysian Construction_Industry

Castles S and Miller MJ. (1998) The age of migration : international population movements in the modern world, pp. 2-32

Kumar, R & Mohamed, MH (2012) The Impact of Employment of Foreign Workers: Local Employability and Trade Union Roles in Malaysia [online]. Last accessed 10 December 2013 at: http://www.hrmars.com/admin/pics/1252.pdf

Malaysia Country Report (2009) Housing and Real Estate Market Development– Worldwide Experience and Options for Vietnam, pp.1-22

Shiadri, A (2008) Saleh @ Causes of poor participation of local workers in Malaysia construction industry and strategies for improvement. Pp i-vi

SinChew (2012). Does Malaysia need to be too dependent on foreign labour? 8 December

MOTIVATION AMONGST OFFICE EMPLOYEES IN THE MALAYSIAN CONSTRUCTION INDUSTRY

Wei-Yew Tan[5]

Wei-Yew Tan is an Advanced Diploma Graduated of the Faculty of Engineering and Built Environment, Tunku Abdul Rahman University College, Malaysia.

In recent years, the size and complexity of construction projects in Malaysia has increased rapidly but the growth rate of workers' productivity remains low. This research studies the motivation amongst office employees in the Malaysian construction industry by using Vroom's expectancy theory. The objectives of this research are to identify the factors which contribute to motivation of Malaysian office employees and investigate the effects of expectancy, instrumentality and valence on office employees' motivation. A critical review of literature has illustrated the background of motivation and expectancy theory as well as some other researchers' findings to underline these research objectives. A postal questionnaire method has been adopted and sent to registered construction companies to collect the information. From the data analysis, the top three motivators are salary, high bonuses and recognition by employer. In addition, it also showed the expectancy will lead to improvements in job performance and productivity if employees work harder. Furthermore, employees believed performance will lead to extrinsic instrumentality rather than intrinsic instrumentality. However, the results indicated both intrinsic and extrinsic valences are valuable to the office employees.

Keywords: expectancy theory, expectancy, instrumentality, motivation, valence.

INTRODUCTION

Motivation can be defined as "the driving force within individuals that drive them physiologically and psychologically to pursue one or more goals to fulfil their needs or expectation" (Lam and Tang, 2003). Halepota (2005) viewed motivation as 'a person's active participation in and commitment in achieving the prescribed results'. A person who is highly motivated is willing to work harder than others in order to achieve the goals. As workers are known as the main asset of an organisation, the success of an organisation can be attributed to the motivation of its employees

[5] tanwy-wt10@mail.tarc.edu.my

(Thwala and Monese, 2012). Vroom and Deci (Parkin, Tutesigensi, and Büyükalp, 2009, p.107) stated that motivation is one of the factors that contributes to the productivity of workers. In addition, numerous studies have shown that there is a direct relationship between productivity of workers and their motivation (Lam and Tang, 2003). In fact, Warren (1989) opined that 'productivity and motivation are interdependent; an increased motivation can cause increased productivity. Increased productivity causes increased motivation and that motivation is in turn dependent upon productivity.'

In the construction industry too, motivation of workers is important as it could affect work productivity. According to Smithers and Walker (Dainty, Green, and Bagilhole, 2007, p.243), motivation plays a part in enhancing construction labour productivity. When workers are unsatisfied with their jobs, an unsatisfactory result will be produced. Latham's study (Thwala and Monese, 2012, p.625) revealed that when workers were satisfied they would strive to achieve the company's goals and aims. Nowadays the size and complexity of construction projects in Malaysia have increased rapidly. However, according to the Productivity Report 2011/2012 (Malaysia Productivity Corporation, 2012), the productivity of the construction sector in Malaysia grew 3.1% to RM24,635 in 2011 from RM23,898 in 2010. In order to improve the productivity of construction sector in Malaysia, it is necessary to motivate the workers to improve their job performance, and to unravel what are the motivators of Malaysian construction workers. There are a few consequences that could result from low productivity of works, such as delay of works which could further cause additional cost like liquidated damages being imposed on the projects. This research studied motivation among office employees in the Malaysian construction industry by using Vroom's expectancy theory. The following objectives were formulated:

a) To study the factors contributing to the motivation of Malaysian office employees.

b) To investigate the effects of expectancy on office employees' motivation.

c) To investigate the effects of instrumentality on office employees' motivation.

d) To investigate the effects of valence on office employees' motivation.

LITERATURE REVIEW

Motivation

According to Adjei (2009), the study of motivation is used to figure out why people behave in a certain way. Numerous researchers have found out that behaviours of people in motivation are influenced by various factors. In accordance to research done by Thwala and Monese (2012) on motivators in South African construction sites, shelter, job security, rest, protection against danger, recognition and praise were the most important needs by the workers. However, according to Mullins (2007), motivation itself is a very personal thing and could be influenced by various factors. Currently there are a number of construction companies facing the problems of low productivity of employees. Many psychologists have studied about motivation of people in the past and tried to find out why people are motivated to work and what are

the motivators for them to work harder than others. According to Naoum (2001), various psychologists have arrived at the following assumptions:

a) There is a 'cause' for all human behaviour, which itself is the consequence of the combined effects of heredity and environment.

b) There are 'needs' at the root of human behaviour.

c) There are 'objectives' which people try to achieve in order to satisfy their needs.

d) Achievements of needs and goals are related to job satisfaction and performance.

Motivation Theory

In fact, numerous motivation theories have been put forward to explain motivation and what motivates an individual. There are two categories of motivation theories namely content theories and process theories.

Content Theory
Content theories are also known as 'needs theories'. According to Naoum (2001), content theories try to explain those issues which motivate an individual at work. Content theories are mainly concerned with what people's needs, relative strengths and goals are in order to fulfil these personal needs. Naoum (2001) listed the following examples of content theories of motivation to include:

a) Maslow's hierarchy of needs model (Maslow, 1943),

b) McClelland's achievement motivation theory (McClelland, 1961),

c) Herzberg's motivation-hygiene theory (Herzberg et al., 1959),

d) Alderfer's ERG theory (Alderfer, 1972), and

e) McGregor's theory X and theory Y (Douglas McGregor, 1960).

Process Theory
Naoum (2001) explained process theories as 'how to motivate'. Process theories provide a better understanding of the relationships between the dynamic variables which contribute to motivation and how it affects an individual's behaviour and action. Process theories also provide further understanding on the complex nature of work motivation. Examples of the most well known process theories (Naoum 2001) of motivation include:

a) Vroom's expectancy theory (Vroom, 1964),

b) Adam's equity theory (Adam, 1965), and

c) Locke's goal-setting theory (Locke, 1968).

Vroom's Expectancy Theory

Vroom's expectancy theory of motivation was developed and published by Victor Vroom in 1964 (William, 2010). The concept of expectancy theory was then expanded and refined by Porter and Lawler (1968) to develop a theoretical model (Isaac et al,. 2001). In Fudge and Schlacter's study (Issac et al., 2001, p.214) it was mentioned that

expectancy theory is classified as a process theory, which concentrates on the outcomes rather than the needs of individual.

This expectancy theory focuses on the relationship between 'effort' and 'reward'. The concept of the theory is based on the fact that people will be motivated if they believe that strong effort will lead to good performance and good performance will lead to desired rewards (Lunenberg, 2011). According to Vroom (1964), expectancy theory is based on four assumptions. The four basic assumptions of expectancy theory according to (Fiore, 2004) are:

a) Expectancy theory assumes that people join the organisation with expectations about their needs and wants.

b) There is an assumption that the needs and wants people have are individual and varied.

c) Expectancy theory holds that an individual's behaviour is the result of conscious choice.

d) People will make choices at work that will lead to optimal situation for themselves.

The four assumptions mentioned above form the three key elements in expectancy theory namely 'expectancy', 'instrumentality' and 'valence'. According to Issac, et al. (2001), an individual feels motivated if these three conditions are fulfilled:

a) The personal expenditure of effort will result in an acceptable level of performance (expectancy),

b) The performance level achieved will result in specific outcome for the person (instrumentality), and

c) The outcome attained is personally valued (valence).

In Vroom's expectancy theory, there are relationships between motivation, expectancy, instrumentality and valence, which are represented as follows:

Motivation = Expectancy x Instrumentality x Valence

Due to the multiplication of elements in the formula, any weakness in any of the elements will affect an individual's motivation. According to Lunenburg (2001), when any one of the elements has the value of zero, the motivation level of employees will also become zero.

According to Ebrahim Abadi *et al.* (2011), among the three elements of expectancy theory, instrumentality and valence are related to outcomes. Thus, it could be divided into extrinsic and intrinsic parts. Figure 1 shows the modified expectancy theory model for employees motivation by Chiang and Jang (2008), where it best explains the process of motivating employees (Ebrahim Abadi *et al*., 2011). In accordance to Ryan and Deci (2000), a number of studies have agreed the quality of experiences and performance can be different if one's behaviour is based on intrinsic while another one is based on extrinsic motivators. Therefore by dividing instrumentality and valence into extrinsic and intrinsic parts it is possible to examine the relative contribution in motivation.

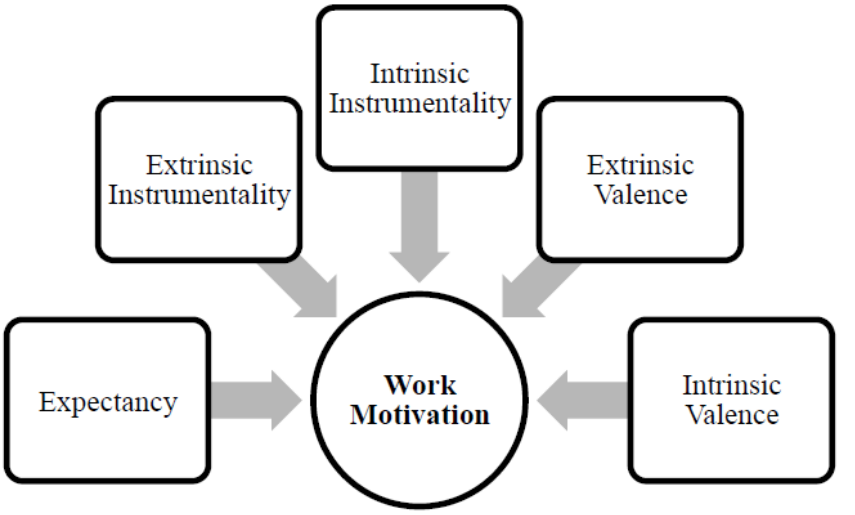


Figure 1: Modified expectancy theory model for employees' motivation (Chiang and Jang, 2008)

Expectancy

Expectancy is defined by Armstrong (2006) as 'a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome' (cited in Adjei, 2009, p.41). Expectancy is the perception of likelihood that a particular outcome will result from a particular behaviour or action. However, whether or not one's effort will lead to the desired performance is dependent on a number of factors such as self-confidence, past experiences, goal difficulty etc. According to Lunenburg (2011), performance of expectancy is measured within the range from 0 to 1. When an employee found there are no chances for his effort to lead to the desired performance level, the expectancy is 0. However, once the employee feels that the desired performance level is achievable, the expectancy has a value of 1.

Instrumentality

Instrumentality can be explained as the probability that an achieved task will lead to value rewards (Lunenburg, 2011). The modified expectancy theory model by Chiang and Jang (2008) extracted instrumentality into extrinsic instrumentality and intrinsic instrumentality, which allowed studying the contribution of both extrinsic and intrinsic factors. Lunenberg (2011) mentioned the measurement of probabilities of instrumentality over the range from 0 to 1. As example, when an employee found out that a good performance rating will result in increase in salary; the instrumentality has a value of 1. On the other hand, once the employee knows there is no direct relationship between the performance rating and salary, the instrumentality is 0.

Valence

Adjei (2009) defined valence as 'the feelings on the outcomes or an anticipated satisfaction from an outcome'. In other words, valence is the value of rewards to the employee based on their needs for a particular reward. Thus, rewards such as salary increases, job promotion, recognition by employer, cash bonuses or any other rewards

might have different values to different employees. According to Lunenburg (2011), valence is different from expectancy and instrumentality, as it can be either positive or negative. A positive outcome would occur if a person views it as being good and also being a more valued outcome while a negative outcome occurred with something that a person feels would lead to dissatisfaction. Moreover, if an employee is indifferent to a reward, the valence will be zero. Hence the total range for valence is from -1 to +1.

RESEARCH METHODOLOGY

Research Design

In this research a postal questionnaire was used as the research technique for data collection. Naoum (2007) stated that the postal questionnaire is the most widely used data collection technique in conducting surveys. The advantages of using postal questionnaires are that they are economical, able to collect large amount of information in a short time while respondents remain anonymous without the presence of researcher. Furthermore, postal questionnaires also provide a high validity of results because of wide geographic coverage and save a lot of time where face to face interview can be avoided.

Structure of Questionnaire

In this research, closed-ended questions and Likert scale type of questions have been adopted in designing the questionnaire. The structure of the questionnaires was designed based on literature by Chiang and Jang (2008), and consisted of six main sections:

Section A: General Information
Section A is the preliminary analysis of respondents because of information given by the respondents will affect the outcome of the data analysis. Therefore, in this section it requested the respondent to answer eight questions included gender, age, nationality, academic level, position, working experience, opinions on importance of employees' motivation in the construction industry as well as understanding on motivation.

Section B: Individual Factors Contributing to Workers' Motivation
The purpose of this section is to determine the individual factors and identify which factors contribute most to the workers' motivation. In this section, closed-ended question have been adopted for respondents to choose the answers and multiple answers are allowed.

Section C: Effects of Expectancy on Workers' Motivation
A list of situations was provided to ask the respondents on the belief of appropriate efforts will lead to performance goals. This section is designed in conjunction with the second objective, to investigate the effects of expectancy on office employees' motivation. There are total of four situations in this section and the outcome can determine the expectations of office employees for their efforts put into job. *Section*

D: Effects of Instrumentality on Workers' Motivation
Section D is designed according to the third objective, where the researcher aims to investigate the effects of instrumentality on office employees' motivation. This section

helped to identify the probability that the achieved task will lead to value rewards. Respondents are asked to evaluate each situation by using a 5-point Likert scale to indicate the degree of agreement for each situation, where there are a total of eleven situations provided in this section.

Section E: Effects of Valence on Workers' Motivation

A list of possible rewards was provided under Section E, which was designed in conjunction with the fourth objective in the research. The purpose of this section was to investigate the effects of valence on office employees' motivation and identify the value of rewards based on office employees' personal opinions. Respondents were asked to evaluate the value of each reward by using a 5-point Likert scale to indicate the degree of agreement for eleven rewards provided under this section.

Section F: Consequences from Workers' Motivation

The purpose of this section was to evaluate what are the actions when office employees are highly motivated. In this section, a 5-point Likert scale was used to design the question where the respondents were required to evaluate the four consequences provided. Furthermore, the outcome of this section enabled the researcher to know which actions have the highest possibility and also the lowest possibility that respondents will carry out after being highly motivated.

Research Sample

Naoum (2007) defined the term 'sample' as a specimen or part of a whole population which is drawn to show what the rest is like. The purpose of sampling is to obtain a part of the whole population where it is almost impossible to study the entire population. A non-probability sampling technique, convenience sampling ,was adopted in this research study. Convenience sampling provides a cheap, easy and convenient sampling method, but it may lack generalisability at the same time. Construction companies located in Peninsular Malaysia were chosen as the target population due to the time constraint for this research study.

A total of 300 questionnaires were sent to Malaysian office employees working in 57 construction companies, including both contractor and consultant firms chosen from the companies listed under the Construction Industry Development Board (CIDB) and respective board of professional such as the Board of Quantity Surveyors Malaysia (BQSM) and Board of Architects Malaysia (BAM). Furthermore, every company was given 5-7 sets of questionnaires and required to respond within three weeks time and to send back the questionnaires in stamped self-addressed envelope provided. Table 1 shows the list of companies selected as the representative of study population in this research. A total of 84 number of completed questionnaire were received, which has a respond rate of 28% (84/300) of the total response rate.

State	Company Name	
Johor	Gain Glass Construction Jaya Constructions JSC Construction Sdn. Bhd. Kean Leng Building Construction Keat Hong Glass & Aluminium Kimlun Sdn. Bhd. Laubros Holdings (M) Sdn. Bhd. Lee Brothers Earhworks & Construction Lee Tat Engineering & Construction MRCB Engineering Sdn. Bhd. Nakano Construction Sdn. Bhd. PJD Construction Sdn. Bhd.	Prosmier Construction Sdn. Bhd. Psycon Sdn. Bhd. Putra Binabangun Sdn. Bhd. Reaplite Industry Sdn. Bhd. Samm Construction & Renovation Sun-East Builders Malaysia Sdn. Bhd. Tay Hup Brothers Construction Sdn. Bhd. TSK Construction Sdn. Bhd. Woon Brothers Construction Sdn. Bhd. Yat Seng Construction Sdn. Bhd.
Selangor	EDP Consulting Group Sdn. Bhd. Ilham Consult Sdn. Bhd. Jurutera Konsult Maju Sdn. Bhd.	KL Prima Consult Sdn. Bhd. T & T Konsult Sdn. Bhd. Total Project Solution Consultant Sdn. Bhd.
Kuala Lumpur	Ang Yoke Lian Construction Sdn. Bhd. Arah Jitu Sdn. Bhd. Builder Enterprise Buildtrend Construction C & S Engineering Management Sdn. Bhd. Cheong How Construction Chew Kiong Lam Construction Sdn. Bhd. ESA Jurutera Perunding Sdn. Bhd. Hing Loong Construction Jurukur Bahan Utama Koh Mun Wun & Sons Construction Co Sdn. Bhd. L.A. Architect LCL Design Architect Lim Hoo Seng Construction Sdn. Bhd.	Nam Fong Development Sdn. Bhd. Pembinaan C W Yap Sdn. Bhd. Poh Construction & Trading Co Precept Construction Sdn. Bhd. Rasco Wangsa Resources Sim Nam Housing Development Co Sdn. Bhd. Sin Heap Lee Construction Sdn. Bhd. Song Pang Seng Construction (M) Sdn. Bhd. Soon Seng Construction Super Seal Builders Sdn. Bhd. T & B Construction Team Builders & Traders WFC Development Sdn. Bhd. Woon Construction
Pahang	TYL Construction	

Table 1: List of companies

RESULTS AND ANALYSIS

Of the 84 respondents all were from Malaysia and there are no foreign respondents involved in this research. Table 2 shows the job position of respondents in this survey. Based on the table shown, majority of respondents involved are Quantity Surveyors, which accounts for 41.7%, whereas Others accounts for 16.7%. The other designations included Accountants, Trainees, Purchasers and Operating Officers as well as Architects, Contract Administrators, Engineers, Estimators and Project Managers.

Job Position	Frequency	Percent	Cumulative Percent
Architect	5	6.0	6.0
Contract administrator	8	9.5	15.5
Engineer	4	4.8	20.2
Estimator	7	8.3	28.6
Project manager	11	13.1	41.7
Quantity surveyor	35	41.7	83.3
Others	14	16.7	100.0
Total	84	100.0	

Table 2: Job position of respondents

Table 3 indicated respondents' working experience in construction industry. From the table, a total of 94% of the respondents involved are experienced in the construction industry.

Working Experience	Frequency	Percent	Cumulative Percent
Less than 1 year	5	6.0	6.0
1 - 5 years	20	23.8	29.8
6 - 10 years	27	32.1	61.9
11 - 20 years	21	25.0	86.9
20 years and above	11	13.1	100.0
Total	84	100.0	

Table 3: Working experience of respondents

Figure 2 shows the importance of motivation in the construction industry by the 84 respondents. Based on the figure shown, the majority of the respondents (76 respondents, 91%) agreed with motivation is important in construction industry while 7 respondents (8%) disagree with the statement.

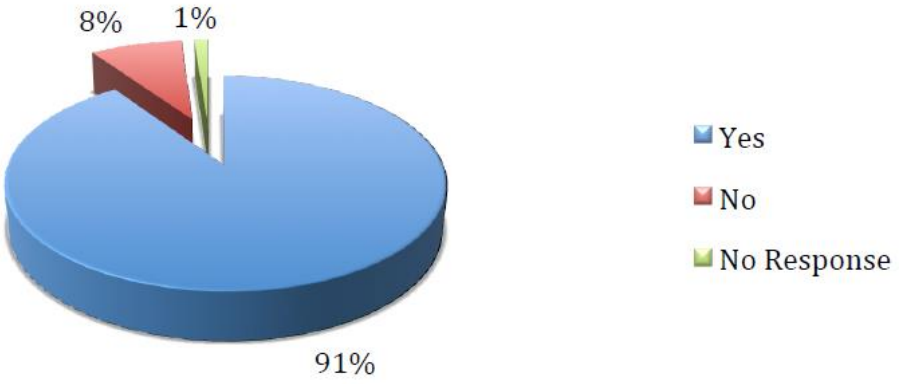


Figure 2: Importance of motivation in construction industry

Figure 3 shows the basic understanding of motivation of respondents in the research. There are overall 37 respondents (44%) totally understand and 27 respondents (32%) understand what motivation is. However 18 respondents (22%) have a neutral opinion and 2 respondents (2%) do not understand motivation.

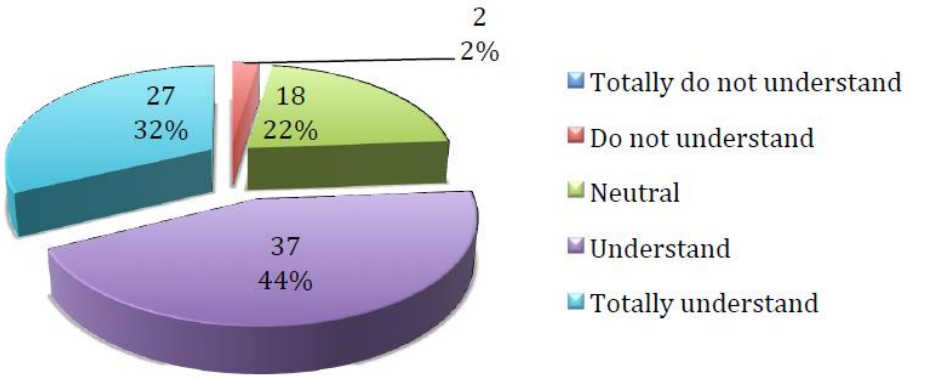


Figure 3: Understanding on motivation

Based on Table 4, the first three factors contributing to motivation are salary (96.4%), high bonuses (89.3%) and recognition by employer (67.9%). From the table, monetary factors dominated the responses (salary and bonuses). Moreover, over half of the 84 respondents also agreed with achievement in working (65.5%), enjoyment (60.7%), working environment (58.3%) and job security (50.0%) as factors contribute to motivation.

Rank	Factors	Responses	
		N	Percent (%)
1	Salary	81	96.4%
2	High bonuses	75	89.3%
3	Recognition by employer	57	67.9%
4	Achievement	55	65.5%
5	Enjoyment	51	60.7%
6	Working environment	49	58.3%
7	Job security	42	50.0%
8	Prospect of getting promotion	36	42.9%
9	Responsibility	35	41.7%
10	Flexible work schedule	34	40.5%
11	Equality	31	36.9%
12	Challenging occupation	19	22.6%
13	Management pressure	16	19.0%

Table 4: Factors contributing to motivation

Effects of Expectancy on Workers' Motivation

The results on effects of expectancy on workers' motivation are shown in Table 5, ranked according to the mean of the 5-point Likert scale used. The majority of respondents (77.38%) agreed and strongly agreed that working hard will improve performance significantly, with a mean of 3.95.

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Expectancy								
If I work very hard, my job performance will significantly improve.	0	4	15	46	19	84	3.95	1
If I work very hard, I will get a lot more accomplished.	0	7	17	34	26	84	3.94	2
If I put more effort into my job, my productivity will improve significantly.	2	5	19	30	28	84	3.92	3
If I put more effort into my job, I will definitely be regarded as an effective employee.	6	8	33	25	12	84	3.35	4

Note: [SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree]

Table 5: Effects of expectancy on workers' motivation

Effects of Instrumentality on Workers' Motivation

The results on effects of extrinsic instrumentality on workers' motivation are shown in Table 6, in which 71 respondents (84.52%) either agreed or strongly agreed that

achieving tasks will lead to getting good pay, with a mean of 4.05. Items ranked 2 and 3 are very close and also relate to monetary rewards.

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Extrinsic Instrumentality								
Getting good pay.	0	3	10	51	20	84	4.05	1
Getting monetary bonuses.	1	3	10	52	18	84	3.99	2
Getting pay increases.	1	2	19	41	21	84	3.94	3
Having more opportunities for promotion.	1	3	20	40	20	84	3.89	4
Having chances to learn new things.	0	6	29	32	17	84	3.71	5

Table 6: Effects of extrinsic instrumentality on workers' motivation

The results on effects of intrinsic instrumentality on workers' motivation are shown in Table 7. In this 60 respondents (71.43%) agreed and strongly agreed that achieving a task will lead to personal growth and development, with a mean of 3.94. However, less than 50% of respondents agreed that achieving a task will lead them to more challenging work tasks, whereas 41 respondents are neutral and 4 respondents disagreed with it.

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Intrinsic Instrumentality								
Personal growth and development.	2	0	22	37	23	84	3.94	1
Having a sense of accomplishment.	0	1	31	26	26	84	3.92	2
Feeling very good about myself.	1	5	20	34	23	83	3.88	3
Full use of my skills and abilities.	2	3	24	37	18	84	3.79	4
Having more responsibility and control over the job.	2	10	28	24	20	84	3.60	5
Taking more challenging work tasks.	0	4	41	24	15	84	3.60	5

Table 7: Effects of intrinsic instrumentality on workers' motivation

Effects of Valence on Workers' Motivation

The results of effects of extrinsic valence on workers' motivation are shown in Table 8. There are 67 respondents (79.76%) who agreed or strongly agreed that opportunities for promotion are valuable, with a mean of 4.11 followed by having chances to learn new things which was agreed or strongly agreed by 60 respondents (71.43%).

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Extrinsic Valence								
Opportunities for advancement/promotion.	0	2	15	39	28	84	4.11	1
Having chances to learn new things.	0	2	22	28	32	84	4.07	2
Good salary.	0	3	20	38	23	84	3.96	3
More pay increase.	0	4	20	37	23	84	3.94	4
More monetary bonuses.	1	2	21	41	19	84	3.89	5

Table 8: Effects of extrinsic valence on workers' motivation

The results of effects of intrinsic valence on workers' motivation are shown in Table 9. Based on the table, there are 60 respondents (71.43%) who agreed and strongly agreed with full use of their skills and abilities are valuable to them, with a mean of 4.11 followed by personal growth and development, which was agreed or strongly agreed by 57 respondents (67.86%).

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Intrinsic Valence								
Full use of my skills and abilities.	2	1	21	22	38	84	4.11	1
Personal growth and development.	2	2	23	22	35	84	4.02	2
Feeling very good about myself.	3	4	19	22	36	84	4.00	3
Having a sense of accomplishment.	2	4	17	31	30	84	3.99	4
Having more responsibility and control over the job.	0	2	24	33	25	84	3.96	5
Taking more challenging work tasks.	0	3	35	29	17	84	3.71	6

Table 9: Effects of intrinsic valence on workers' motivation

Possible Outcomes of Employees after Highly Motivated

The results of possible outcomes of employees after being highly motivated are shown in Table 10, ranked according to the mean of the 5-point Likert scale used. These attitudes, in descending order of percentage of agreement, are enhanced quality of job performance, increased productivity, putting more effort into the job, and willingness to get involved in the job.

Measurement Items	Frequency					Total	Mean	Rank
	1	2	3	4	5			
	SD	D	N	A	SA			
Work Motivation								
Enhance quality of my job performance.	0	2	15	36	31	84	4.14	1
Increase productivity in my job.	0	1	18	33	32	84	4.14	1
Put more effort in my job	0	3	15	35	31	84	4.12	3
Be willing to get involved in my job.	0	0	22	34	28	84	4.07	4

Table 10: Possible outcomes of employees after highly motivated

CONCLUSION AND RECOMMENDATION

In this piece of research, although the factors contributing to office employees and effects of expectancy theory on motivation have been identified, these are still insufficient to help to improve the productivity of the local construction industry. Therefore, future research is recommended to evaluate the opinion of site labourers as a subset of construction industry workers. Thus, a comparison could be made between the motivation of office employees and site labours in order to identify the best method to motivate construction workers, which would enable a further boost to the overall performance of the local construction industry.

As a conclusion, this research study showed the importance of motivation, because office employees understand if they work hard, their performance will significantly improve, and when they are highly motivated, they will put more effort into the job and enhance their productivity. In addition, the researcher discovered the motivators which contribute to motivation of the Malaysian office employees throughout this research. In order to improve the productivity in the Malaysian construction industry, it is important for the employer to know what their employees need. The findings indicated that extrinsic rewards are more preferable to office employers but the value of both extrinsic and intrinsic rewards are nearly the same. The findings also indicated that salary, high bonuses and recognition by the employer are good motivators for office employees. Thus the employers should also pay the employees based on their ability and skills, praise and complement employees and recognize employees who do well.

REFERENCES

Adjei, E. A. 2009. Motivational strategies to improve productivity in the construction industry in Ghana. Unpublished Masters Thesis. Degree of Master of Science in Construction Management. Faculty of Architecture and Building Technology. Kwame Nkrumah University of Science and Technology. Office employees' motivation

Chiang, C. F. and Jang, S. C. 2008. 'An expectancy theory model for hotel employee motivation'. International Journal of Hospitality Management, 27(1), pp. 312-322.

Dainty, A., Green, S., and Bagilhole, B. 2007. People and culture in construction: a reader. London: Taylor & Francis.

Ebrahim Abadi et al. 2011. 'A study of influential factors on employees' motivation for participating in the in-service training courses based on modified expectancy theory'. International Business and Management. 2(1), pp. 157-169.

Fiore, D. 2004. Introduction to educational administration. Larchmont, NY: Eye On Education.

Halepota, H. 2005. 'Motivational theories and their application in construction'. Cost Engineering, 47(3), pp. 14-18.

Isaac, R. G., Zerbe, W. J., and Pitt, D. C. 2001. 'Leadership and motivation: The effective application of expectancy theory'. Journal of Managerial Issues. 13(2), pp. 212-226.

Lam, S. and Tang, C. 2003. 'Motivation of survey employees in construction projects'. Journal of Geospatial Engineering, 5(1), pp. 61-66.

Lunenburg, F. C. 2011. 'Expectancy theory of motivation: Motivating by altering expectations'. International Journal of Management, Business, and Administration. 15(1), pp. 1-6.

Malaysia Productivity Corporation. 2012. Malaysia productivity corporation productivity report 2011/2012. Selangor: Malaysia Productivity Corporation.

Mullins, L. J. 2007. Management and organisational behaviour. 8th edn. Harlow: Financial Times Prentice Hall.

Naoum, S. 2001. People & organizational management in construction. London: Thomas Telford Publishing.

Naoum, S. 2007. Dissertation research & writing for construction students. Oxford: Butterworth-Heinemann.

Parkin, A. B., Tutesigensi, A., and Büyükalp, A. I. 2009. 'Motivation among construction workers in Turkey', In: Dainty, A.R.J., (ed.) Proceedings of 25th Annual ARCOM Conference, 7 - 9 September 2009, Nottingham, UK. ARCOM.

Ryan, R. M. and Deci, E. L. 2000. 'Intrinsic and extrinsic motivations: Classic definitions and new directions'. Contemporary Educational Psychology. 25(1), pp. 54-67.

Thwala, W. D. and Monese, L. 2012. 'Motivators of construction workers in the South African construction sites: A case study'. Journal of Economics and Behavioral Studies, 4(11), pp. 625-634.

Warren, R. 1989. Motivation and productivity in the construction industry. New York: Van Nostrand Reinhold.

William, A. N. 2010. Employee motivation and performance. Unpublished Bachelor Thesis. Bachelor Degree of Business Management. Mikkeli University of Applied Sciences.