

**ESSENTIALITY OF THE PROJECT MANAGER IN PROJECT MANAGEMENT
PRACTICE IN HOUSING DEVELOPMENT:
A CASE STUDY IN PENANG**

BY

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**This dissertation is submitted to
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DECLARATION

I, HEREBY DECLARE THAT THIS DISSERTATION IS A RESULT OF MY OWN
UNAIDED WORK, AND REFERENCES TO OTHER SOURCES HAVE BEEN
CLEARLY AND ACCURATELY RECORDED.

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THIS DISSERTATION IS PRESENTED TO THE
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Abstrak

Industri perumahan telah banyak menyumbangkan dalam pembangunan negara, membentuk sector ekonomi yang produktif serta menyumbangkan Keluaran Dalam Negara Kasar (KDNK). Kerajaan telah berusaha dalam pembekalan perumahan dan mengenalkan pelbagai polisi dan insentif untuk membantu pihak swasta dalam pembangunan perumahan dan pembekalan perumahan kepada pembeli rumah dari pelbagai taraf pendapatan. Walau bagaimanapun, gertakan dan cabaran kebelakangan ini telah membentuk halangan yang membantut perkembangan industri ini.

Kajian ini diadakan dengan tujuan untuk menentukan faktor-faktor yang menyebabkan kelampauan masa dan kos dalam projek perumahan, dan menyelidik amalan pengurusan projek dalam project pembangunan perumahan yang terkini serta keberkesanannya dalam menyelesaikan isu-isu pembangunan perumahan, dan menyelidik tanggungjawab Pengurus Projek dan pelaksanaan amalan pengurusan projek yang berkesan yang menyumbang dalam usaha mencapai objektif projek.

Kajian literatur yang lengkap dan kajian-kajian kes yang dilakukan dengan temuduga dengan pemaju perumahan Pulau Pinang yang terpilih telah diadakan. Dalam faktor-faktor yang dikaji, kekurangan dalam amalan pengurusan projek merupakan penyumbang utama pada pencapaian rendah dalam pembangunan perumahan. Temuan kajian ini telah menunjukkan persetujuan dalam kewajipan Pengurus Projek dalam pengurusan projek yang berkesan dalam mengarahkan projek perumahan ke penyelesaian yang jaya.

Abstract

Housing industry has a great contribution to the national growth and it forms part of the productive economic sector and contributes to our country Gross Domestic Product (GDP). Government has taken a lot of initiative in housing provision and introduce various policies and incentives to help the private sector in housing development and housing provision for purchaser from all income level. However, current threat and challenge has build up the barrier that slow down the industry growth.

This research is conducted with the objective to identify the factors that caused the time and cost overrun of a housing project, to study the current project management practices in housing development project and its effectiveness in solving the housing development issue, to study the roles of Project Manager and application of effective project management practices, and the essentiality of Project Manager in effective project management in the contribution in achieving project aim.

A comprehensive literature study and a series of case studies conducted by interview with selected Penang housing developer were established. Among all the factors, deficiency in project management practices is the main contributor to the low performance of housing development. The research finding has shown the agreement of essentiality of Project Manager in effective project management in leading the housing project to success completion.

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LIST OF ABBREVIATION

ABBREVIATION	DETAIL
BEM	Board of Engineer Malaysia
CEO	Chief Executive Officer
CSF	Critical Success Factors
C&S	Civil and Structural
CIOB	Chartered Institute of Building
D&B	Design and Build
ECER	East Coast Economic Region
EPF	Employees Provident Fund
FDI	Foreign Direct Investment
GDV	Gross Development Value
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IDR	Iskandar Development Region
KPI	Key Performance Indicator
MBAM	Master Builder Association of Malaysia
MHLG	Ministry of Housing and Local Government
MPPP	Majlis Perbandaran Pulau Pinang
MM2H	Malaysia My Second Home
NCER	Northern Corridor Economic Region
NEP	New Economic Policy
O.C.	Occupancy Certificate
OSC	One-Stop Centre
PDC	Penang Development Corporation
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute

LIST OF ABBREVIATION

ABBREVIATION	DETAIL
PC	Prime Cost
QDA	Qualitative Data Analysis
QS	Quantity Surveyor
REHDA	Real Estate and Housing Developers Association of Malaysia
RIBA	Royal Institute of British Architect
RPGT	Real Property Gain Tax
SME	Small and Medium Enterprises
V.O.	Variation Order
9MP	Ninth Malaysia Plan
etc	Et cetera
et al	And others

CHAPTER 1

INTRODUCTION

1.0 Introduction

To most individuals housing represent the largest single investment item of a lifetime. This is especially true as family incomes increases and housing viewed as a basic consumption and more as a key to a secure future (Shuid, 2003). Malaysia just like other developing countries has considered housing as a basic need and one of the main sectors in national economy. This is because, housing provision is not only to meet the people's needs but also contributing to the national growth (Ismail, 2002).

Generally, the housing development is initiated by both the state government and the private sectors. According to the state government, a total of 121,000 units' houses have been built since 1994 (www.intproperties.com). The state government-initiated housing schemes are being developed by the state's development agency, Penang Development Corporation (PDC) which have successfully completed more than 22,000 housing units since 1970s including the development of landmark building-KOMTAR and will continue to build another 1,628 units of low and medium cost houses between 2006 till 2010.

According the Asia Property Report, 29 September 2007 (www.property-report.com), Malaysia's housing market is expected to recover strongly in the second half of 2007, with buying interest in the low end and mid range property ignited by government incentives to bolster sluggish sales. While sales in the high end housing market have always been robust, those in the middle and lower price range started to pick up at a

steady pace from April in year 2007 after languishing for more than two years. Between April and June of 2007, the housing property market saw investor activities across all segments of the market as a result of the exemption of the real property gains tax (RPGT), which came into effect in April.

Positive factors include Malaysia's improving economy, availability of loans to foreigners and no restriction to number of units that can be purchased, the strengthening of the ringgit that augurs well for the high-end residential housing market, the government's efforts to exempt real property gains tax will spur foreign direct investment (FDI) and help grow the housing development industry.

However, the existence of abandoned housing projects due to the failure by private developers to complete the housing schemes that had been approved by local authority has led to the predictable under-performance of private developers in the construction of housing provision. In 1986, the Ministry of Housing and Local Government (MHLG) reported that up to 31 December, there were 126 housing schemes, which could not be completed as scheduled. Some of these projects have been left totally abandoned by private developers. The total number of housing units concerned at that time was 14,568, involving 6,834 buyers. The Ministry of Housing and Local Government has monitored the existence of housing abandonment in Malaysia since 1986 and reported that the accumulative figure of the total projects involved up to 31st December 2001 were 526 projects. The total number of housing involved at that time was 114,568 units involving 72,543 homebuyers in Peninsular Malaysia. On top of that, total of 261 projects is

recorded as abandoned project in year 2005. It involves 88,410 numbers of houses and 58,685 homebuyers that cost estimated value of RM 8,043 million (MHLG, Monitoring & Enforcement Division).

Furthermore, the housing development industry is influence by other negative issue such the shortage of construction material and construction worker, rise of construction material price, late delivery of project, etc.

The reasons for the existence of housing development issue might be related to planning and land policy, market instability, site characteristics and agent's behaviour amongst other things. It is important to determine the actual factor that lead to the above mention issue.

1.1 Problem Statement

Through the literature review, most factors that lead to the cost and time overrun of the project, or the worse that caused the project abandon, is due to the inefficient of project management practice in the housing industry. Generally, is the project manager that carries the project management role in delivering the client or the housing developer needs and objective to the whole project team and leading the team to the achieved the project aim.

However, the project manager's role is not clearly defined and not a paramount concern particularly in the Penang housing development project. The project manager position is not an essential requirement in the Penang housing development project, the scope of work and responsibility are not specified in the housing project contract form. Thus, this does lead to the need of studying the actual practice of project management process and the essentiality of project manager in the Penang housing development.

Is Project Manager essential in the housing development project? Will architect or other consultant team such as C&S engineer able to play as the project manager role in the housing development project? What are the project management concept and principle that practice in Penang housing development industry? How is the project manager carry out their role in the housing development industry? What is the effect to the housing development project that without a proper project management? Will it lead to the project failure due to poor management practice in the housing development project?

All these questions are under the writer interest to seek the answer throughout the study. Within the research, the writer will carry out the study and review on the theoretical concepts, principle and practices of project management in construction industry. Meanwhile, case studies on selected major housing development companies in Penang will be carries out to study the current project management practice in the housing development and to determine both the effectiveness and weaknesses of the practice. Comparison will be carried out among the standard practice and the current practice in the industry. Finally, the writer will make recommendations and suggestion based on the finding of the research on the improvement of Penang housing development industry.

1.2 Research Questions

The following research question is identified:

- i. What are the factors that causing time and cost overrun of a housing project?
- ii. What are the current project management practices in housing development project and how effective is it in solving the housing development issue?
- iii. What is the role of project manager and the application of effective project management practices in the housing development project?
- iv. To what extent the essentialities of project manager in effective project management in the contribution in achieving the project objective?

1.3 Research Objective

The following research objective has been identified:

- i. To identify the factors that caused the time and cost overrun of a housing project.
- ii. To study the current project management practices in housing development project and its effectiveness in solving the housing development issue.
- iii. To study the role of project manager and application of effective project management practices to the housing development project.
- iv. To study the essentiality of project manager in effective project management in the contribution in achieving project aim.

1.4 Scope of Research

This research is focus on the study of the essentiality of project manager in effective project management practice in housing development as outlined in the organization of the dissertation in section 1.7. This research is conducted based on the literature review and case studies on the project management practices for the housing development project in Penang state. The case studies are focus on the selected major housing development companies in Penang state on the effective project management practices in

housing development project. The finding for essentiality of project manager in the effective project management practice for housing development project will be analyze and finding in the project bidding success factor.

1.5 Research Methodology

The research methodology is mainly focus on both primary and secondary sources of information related to the research scope and objective. Primary information will be acquired by means of case studies through personal interview with the selected housing development companies in Penang state, which will assist the researcher to obtain invaluable opinion in order to achieve the research objective.

Meanwhile, the secondary sources are collected through various form of literature such as the articles, thesis, book, journal and electronic data (internet) on housing development, project management practices and property development. It is essential to form the clear understanding for the overall housing development process and project management practices in the construction industry. It also serves as the base for the interview questions development.

The collected data will be analyses through the qualitative data analysis (QDA) model and the finding and conclusion will be generated at the end of this research. The detail discussion on the methodology and the data analysis and research finding will be present in the following chapter as shown in the organisation of the dissertation (section 1.7).

1.6 Limitation of Research

In this research, there are some uncontrollable limitations, as following:

i. **Limitation of respondents**

Due to the time constraint and financial limitation, the data of this research area only focused on the housing development project in Penang state. The data used are only base on the management for the housing development project. This had narrowed down the scope in carrying out the interviews.

ii. **Response from the housing development company**

The willingness of the housing development company to be fully cooperated in giving their information became the main factor in achieving the research objective. This is due to some information that acquired is consider as the company confidential data and documents. On top of that, the respondent might not have long period for the interview section. Hence, the data collected might not fully fulfil the researcher intention.

iii. **Time constraint**

The arrangement of the interview session and data analysis is consumed a great portion of time. Hence, the limited time for data collection and analysis has caused the researcher to reduce the number of respondent that might lead to the sample collected not sufficient enough to represent the whole Penang state.

1.7 Organisation of the Dissertation

This thesis is organised as follow:

Chapter 1: Introduction

This chapter is begin with an overview of the research background, follows by the discussion on the problem statement, research question, research objective, scope and limitation of the research and the outlined of the dissertation.

Chapter 2: Housing Development

This chapter review the Malaysia housing needs, housing policy, current housing issue and the deficiency of project management practices in housing development.

Chapter 3: Project Manager Role and Project Management Practice in Housing Development

This chapter outline the role of project manger in the housing development process, from inception to completion. It will examine the various attributes, duties, responsibility and the managerial skill of a project manager as well as the project management practice in the housing development process.

Chapter 4: Methodology

This chapter outlines the research methodology used in the study. It compasses discussion on research development, data collection, questionnaire design, research sampling and the qualitative data analysis (QDA) model that adopted in the research.

Chapter 5: Case Studies

This chapter is to investigate the application of project management practice and the essentiality of the project manager in effective project management for housing project through the interview with the selected major housing development companies.

Chapter 6: Analysis of the Result of the Case Studies

This chapter will be the analysis of the result of the case studies. It will report on the interviews conducted with the management team of the selected housing development companies. It will look into the similarities and differences of these housing development companies. It will also attempt to identify to what extent the effective project management practices that contribute to the success of the company.

Chapter 7: Conclusion and Recommendations

This conclusion chapter will comprise the finding of this research study and give recommendations to improve the overall performance of housing development companies.

References

Literature review forms part of the dissertation and the list of published literature which form the basic in this research is given in the references section at the end of the dissertation.

CHAPTER 2

HOUSING DEVELOPMENT

2.0 Housing Development

2.1 Introduction

The provision of suitable housing is still one of the biggest problems faced by the world. It is known that increasing population, immigration, and natural disasters are the main reasons for the great housing demand. The industrial revolution caused an increase in building demand, and because of this, new developments in building construction systems emerged. Furthermore, the conventional construction method, which commonly practiced in the building construction industry, is unable to respond to this huge demand in a short time with standard quality (Senturer, 2001).

Although developments in the building construction sector started at the beginning of the twentieth century, the real developments were realised after the Second World War during the restoration of the ruined cities (Warszawski, 1999). Today, the Western World has made substantial progress in solving its housing problems. However, it is still a paramount problem for developing countries such as Malaysia, together with the issue of having better environmental quality (Abdul Kadir *et al.*, 2005). This is a multidimensional problem and there are many issues related to the reasons for, and the solutions to, the problem. For instance, if the problem is considered from the viewpoint of the building industry (the design, production, construction and economy of the building), industrialised building systems seem to be a solution. Buildings constructed by this method have a short construction time and standard quality (Senturer, 2001).

Although Malaysia did not face the devastating impact of World War II, the increasing population has prompted the country to put emphasis on housing particularly the low cost housing as evidenced in the periodic 5 year Malaysia Plan.

2.2 Malaysia Housing Needs

Malaysia just like other developing countries has considered housing as a basic need and one of the main sectors in national economy. This is because, housing provision is not only to meet the people's needs but also contributing to the national growth (Ismail, 2002). In this sense, the housing industry in Malaysia in 1994, contributed to 12 per cent of the national income producing more than RM 7 billion in outputs (Azhar, 2000) as well as it forms part of the productive economic sector and contributes to Gross Domestic Product (GDP). Gurjit (1992) argues that in developing countries, housing investment can comprise up to 2 to 8 percent of the GDP and from 10 to 30 percent of gross capital information. In this context, the Federal Government allocation for the mid-term review of the Eighth Malaysia Plan (2001-2005) has allocated the amount of RM 6.2 billion for housing sector.

Even though housing provision is significantly contributes to the national growth, the government aims is mainly to meet housing needs and ensure all citizens are provided with affordable housing especially for lower income group. That is reason caused the government of Malaysia has made great strides in meeting the requirements of its citizen

in relation to housing through the various five-plans, and it shown the government has vigorously embarked on numerous housing programmes, both in rural and urban areas. For example, under the Eight Malaysia Plan (2001-2005), the total number of housing units targeted was 782,300 units and under the Ninth Malaysia Plan (2006-2010), the government of Malaysia targeted to construct 709,400 units of housing.

In line with this, the government has invited the private sector to involve in providing housing for all income groups. This is because the government could not provide sufficient housing for everyone because of an inadequate work force and funding. Due to these inadequacies, the Malaysian government has allowed more opportunity for the private sector to play a role in providing housing. The private sector that is responsible for providing housing has become the key in overcoming the burden of social obligation in housing provision, even though private housing developers are entrepreneurs who construct houses for profit. For instance, the private sector is expected to produce 303,000 units under the Eighth Malaysia Plan (2001-2005) and 511,595 units under the Ninth Malaysia Plan (2006-2010).

Generally, the Malaysia's housing need, with refer to the 4 main type of house price structure; can be illustrated by the total approved units of houses for construction by licensed developer through out 1990-2006, (Table 2.1).

Table 2.1: Total Approved Units of Houses for Construction; Licensed Developer, 1990-2006

Price Group Year	LC	LMC	MC	HC	Total
1990	41,586	14,057	40,514	27,959	124,116
1991	38,791	10,363	41,601	35,389	126,144
1992	26,128	10,409	33,054	28,027	97,618
1993	15,931	6,394	28,455	26,593	77,373
1994	18,967	6,091	36,867	35,675	97,600
1995	23,000	4,941	37,213	48,029	113,183
1996	25,439	3,031	33,831	53,239	115,540
1997	47,286	9,757	42,915	88,442	188,400
1998	44,319	19,448	48,649	47,112	159,528
1999	46,843	11,501	60,734	63,300	182,328
2000	46,602	16,931	66,641	84,136	214,310
2001	39,791	20,816	58,601	108,052	227,260
2002	32,686	19,176	49,060	98,048	198,970
2003	44,523	15,312	35,801	107,129	202,765
2004	27,954	10,391	28,262	108,064	174,671
2005	24,169	16,599	20,194	108,998	169,960
2006	14,974	8,357	29,856	77,279	130,464
Total	558,987	203,574	692,248	1,145,471	2,600,280

Note:

House Price for Year 1990-1998*

House Price for Year 1999 and following years**

LC (Low Cost)	*(< RM 25,000)	** (< RM 42,000)
LMC (Low Medium Cost)	*(RM 25,001 – RM 50,000)	** (RM 42,001 – RM 70, 000)
MC (Medium Cost)	*(RM 50,001 – RM 100, 000)	** (RM 70,001 – RM 100,000)
HC (High Cost)	*(> RM 100,000)	** (> RM 100,000)

[Source: Licensing and Advisory Department, MHLG]

2.3 Overview of Malaysia Housing Policy

Since independent, the provision of low cost housing has become a priority of the government in the Five Years National Plans. Government agencies were directly responsible in providing housing for the poor in urban areas through establishment of the State Economic Development Corporations and various urban development agencies. A ceiling price for low cost housing was fixed at RM 25,000 per unit for people with household income of less than RM 750 per month since 1982.

In order to ensure the private sector to construct low cost housing, government through the local authority has imposed 30% quota provision of low cost housing in every residential development. In ensuring that these houses are secured by targeted group, the government also imposed an open registration system (Table 2.2). There is no specific quota or registered purchaser required for other housing categories.

Furthermore, under the Seventh Malaysia Plan (1996-2000) and Eight Malaysia Plan (2001-2005), Malaysian government are committed to provide adequate, affordable and quality housing for all Malaysian, particularly the low-income group. This is in line with Istanbul Declaration on Human Settlement and Habitat Agenda (1996) to ensure adequate shelter for all.

Table 2.2 Summary of Malaysia Housing Policy

Phase	Period	Focus of Attention	Strategies	Key Documents	Policy Analysis
Colonial Period	Before 1957	<ul style="list-style-type: none"> - Housing for government staff quarters. - Resettlement of people during communist insurgencies to the new village. - Resettlement of people to FELDA scheme. - Provision of housing especially for low income people in urban area. 	<ul style="list-style-type: none"> - Construction of government quarters based on department requirement. - Building of houses in the new settlements with facilities for more than 500,000 people. - Planning and development of FELDA Scheme with the housing and facilities. - Setting-up of Housing Trust in 1952. 	<ul style="list-style-type: none"> - Briggs Plan, 1952. - Land Resettlement Act, 1956. - Housing Trust Ordinance, 1949. - G.Rudduck Report, 1950's. 	<ul style="list-style-type: none"> - Government is the key player in housing provision. - Physical oriental. - Ad-hoc policies.
Early stage of Independence	1957-1970	<ul style="list-style-type: none"> - Continuing the colonial government policies with minor improvement. - Emphasis on housing especially for low income group in urban areas. - Private sector involvement in housing provision. - Improvement of basic infrastructure. 	<ul style="list-style-type: none"> - Implementation follows the colonial policies with limited budget. - Housing Trust involved actively in low cost housing development in urban areas such as KL and Penang. 	<ul style="list-style-type: none"> - First and Second Malaya Plan (1955-1964). - First Malaysia Plan (1965-1969). 	<ul style="list-style-type: none"> - Government as key player in housing provision especially low cost - Private sector to focus on medium and high cost housing.
New Economic Policy	1971-1990	<ul style="list-style-type: none"> - Eradication of poverty & restructure the society. - Implementation of Human Settlement Concept in housing development. - Housing for low income group was given priority in national policies. - Private sector plays key player in housing provision. 	<ul style="list-style-type: none"> - High rate of rural-urban migration. - Private sector was responsible to built large portion of housing for people including low cost. - Ceiling price for low cost house was set at RM 25,000 in 1982. - Government established state agencies. - Encourage national unity in housing development. 	<ul style="list-style-type: none"> - New Economic Policy, 1971. - Second Malaysia Plan to Fifth Malaysian Plan (1971-1990). 	<ul style="list-style-type: none"> - Private sector as key player in housing provision including low cost.

Continued

Phase	Period	Focus of Attention	Strategies	Key Documents	Policy Analysis
National Development Plan	1991-2000	<ul style="list-style-type: none">- Continue implementation of NEP policies and strategies.- Human Settlement Concept with Emphasis on sustainable development.- To ensure all people regardless of their income to live in decent house.- Private sector continues to responsible in housing provision for the people.	<ul style="list-style-type: none">- To build more affordable housing especially low and low medium cost housing.- Low medium cost housing as major component in housing provision since Seventh Malaysia Plan (1996-2000).- Emphasis on squatters elimination by the year 2005.- Government created new laws and guidelines to control private sector.	<ul style="list-style-type: none">- National Development Plan, 1991.- Sixth and Seventh Malaysia Plan (1991-2000)- Agenda 21 (UNCHS), 1994- The Habitat Agenda, 1996.	<ul style="list-style-type: none">- Private sector still play as key player in housing provision but government created many new laws and guidelines to ensure quality housing.
Vision Development Plan	2001-2010	<ul style="list-style-type: none">- Emphasis on sustainable urban development and adequate housing for all income groups.- Housing development will be integrated with other type of development such as industry and commercial.- Emphasis on ICT.- Government as key player in low cost housing provision and private sector for medium and high cost housing.	<ul style="list-style-type: none">- Continue effort to provide the guidelines and inculcate the citizen understanding towards sustainable development and encourage citizen to participate in housing development in line with Local Agenda 21.- Encourage more private developers to construct low medium cost house.- Setting-up Human Settlement Research Institute or MAHSURI to encourage research and development in housing.	<ul style="list-style-type: none">- Vision Development Plan 2001.- Eight Malaysia Plan, (2001-2005)	<ul style="list-style-type: none">- Government as key player in provision of low cost housing provision.

[Source: Various Five Years Malaysia National Plan, (Shuid, 2003)]

2.4 Current Housing Development Issue

2.4.1 Current Government Policies

Housing development is always a paramount element input in the Malaysia development process since independence. Through the Five Year Plans, the government has focused on various housing programmes in both rural and urban areas with the aim of providing affordable housing as discussed in previous section.

During the Ninth Malaysia Plan period (2006-2010), the government stated that the development of the housing sector would continue to focus on the provision of adequate, affordable and quality houses for all Malaysians. Towards this end, the private sector will undertake the lead role while the public sector will provide the necessary support and regulatory measures to ensure efficiency.

In order to meet the needs of the low-income group, emphasis will continue to be given to the development of low and low-medium cost houses at suitable locations provided with adequate public amenities. For improving the quality of life of the urban population, the provision of urban services will focus on expanding the scope of coverage of the local authorities, creating a safe living environment, increasing people participation as well as ensuring sustainable urban planning and development.

Meanwhile, the government offers incentives to developers under the build-and-sell concept. The incentives include speedy approval of land matters and development plans. Such approvals normally take one to two years but will be expedited and shortened to four to six months. Developers who opt for the concept will also be exempted from paying the RM 200,000 deposit and stamp duties. Other positive factors for Malaysia housing development include Malaysia's improving economy, availability of loans to foreigners and no restriction to number of units that can be purchased. The strengthening of the ringgit also augurs well for the high-end residential housing market. The government's efforts to exempt real property gains tax will spur foreign direct investment (FDI) and help grow the high-end property segment.

In the Budget for 2008, Prime Minister Datuk Seri Abdullah Ahmad Badawi announced 50 percent stamp duty exemption on documents of transfer for the purchase of one house costing not more than RM 250,000. The proposal is effective for sale and purchase agreements executed from Sept 8, 2007, to Dec 31, 2010. This measure will reduce the cost of purchasing a house by up to RM 2,000 and it will help to boost property investments by the middle-income group. Moreover, the government's decision to offset existing housing loans from money accrued in Account II of the Employees Provident Fund (EPF) would help to reduce non-performing loans.

On top of that, 3 major Economic Corridors of Development; Iskandar Development Region (IDR) which focus on Johor state, Northern Corridor Economic Region (NCER) that encompassing the states of Perlis, Kedah, Penang and the north of Perak, and the East Coast Economic Region (ECER) which cover the 3 East Coast state, Kelantan,

Terengganu, Pahang, and Mersing is announced by Malaysia Government with the Ninth Malaysia Plan (9MP). These Economic Corridors is with aim to bring an equal development in social and economic aspect by maximising value-add from existing industries in the Region and promoting new sources of growth. As a result, these plans do inject growth to the housing development as well.

2.4.2 Current Construction Threat and Challenge

Though the initiative of Ninth Malaysia Plan (9MP), economic region and government incentive have brought a great boon to the housing industry lately. Current construction threat and challenge might slowdown the growth of the industry. There are many issues in each construction stage that cause the low labour productivity, cost and schedule overrun of project, or the worse condition, project abandon.

Hence, it is imperative to identify the project delay factors that can impede Malaysians residential construction labour productivity at the project level. 10 most critical project delay factor has been identify by Abdul Kadir *et al.* (2005) and discussed as below.

(i) Material shortage at project site

Lack of material was ranked as the most critical factor causing low labour productivity. Lack of material refers to problems encountered due to inaccessibility of items or excessive time expended to acquire them. As a result of this, workers are often idle

waiting for materials. As the construction activities are interdependent, the shortage of critical materials such as rebars, ready-mixed concrete and formwork impede the work sequence and progress.

Sometimes, the non-availability of materials is caused by negligence and sabotage. For instances, during bad economic times, the project manager might purposely delay the work progress to prolong the contract period especially those employed on a contract basis. In this case, the top management should be mindful of the behaviour of the project manager. On top of that, the high demand of construction material from other developing country has lead to the great competition in the material acquisition and causing the issue for the late supply of material in the market and hence the material shortage at project site.

The recurring shortages and price fluctuations would interrupt the construction schedules of projects and housing developments, causing delay and increasing the risk of project failures when costs cannot be contained. The Building Industry Presidents Council (BIPC) comments that, the shortage of supply and rising steel and cement process could cripple the construction industry and delay the implementation of the Ninth Malaysia Plan (9MP) if there is no intervention from the authorities. This severely affects the project work progress.

Lack of materials was found to be the most critical construction delay factor in Indonesia (Kaming et al., 1998), Iran (Zakeri *et al.*, 1996) and Nigeria (Olomolaiye *et al.*, 1987). It was also ranked eighth in Singapore construction productivity problems (Lim and Alum,

1995). In urban Singapore, timely delivery of materials is paramount because of inadequate storage spaces. When materials are delivered too early, double handling occurs, hence causing the loss of man-hours.

(ii) Non-payment (financial problem) to suppliers causing the stoppage of material delivery to site

The second most important factor resulting in low labour productivity is the stoppage of material delivery by the suppliers due to non-payment by the contractors. This makes the suppliers lose their confidence in the credibility of the contractors. Hence, the suppliers might insist on cash terms or a bank guarantee before the delivery the materials.

This issue might cause by the late issuance of progress payment by client to contractor. Delay in progress payment affects cash flow of contractors which in turn affects the payment to workers and suppliers. This causes detrimental effects on workers' motivation and suppliers' creditability. Delay in material delivery to site was ranked 12th in Singapore construction problems (Lim and Alum, 1995).

(iii) Change order by consultants causing project delay

Change order by consultants was ranked the third factor causing low labour productivity. This problem was ranked fourth most important productivity problem in Indonesia construction projects (Kaming *et al.*, 1998). Change order might occur due to design error during planning stage. This factor is a particularly irritating and costly problem if the

work has been done. For instance, hacking of hardened concrete is time consuming and affects the workers' motivation. Work sequences are also disrupted due to rework.

Sometime, the change order by consultant is unavoidable due to the unpredictable construction site condition. For instance, the pile penetration depth is can only be estimate by site investigation and geotechnical report, yet is much affected by the actual site condition and might have a great varies through out the whole site.

(iv) Late issuance of construction drawing

Late issuance of construction drawing by consultants was ranked fourth most critical delay factor. This may caused man-hours lost due to workers idling. For instance, late issuance of the pile cap construction drawing result in delay to structural framework progress due to it is predecessor task and the subsequent work can only be carry out after the completion of the substructure work. Hence, it will drag down the whole progress.

The late issuance of construction drawing might due to various factors, such as changing order or addition of requirement by client and architect, poor coordination and lack of communication among consultant team, lack out of construction detail due to insufficient design period or humanistic error, unpredictable site condition that caused redesign of the structure and etc. Often the late issuance of construction drawing is interrelated to coordination problem among consultants factor which was ranked 11th in term of importance of delay.

(v) Incapability of contractor's site management to organise site activities

An effective and efficient site management team is paramount to ensure that work sequence is accomplished according to work programme. Poor knowledge and the inexperience of the site management team in planning, scheduling and procurement impede the work progress.

The project manager should check for discrepancies between structural, architectural and electrical construction drawings to avoid rework. Subcontractors should be appointed even before site procession so that they can be familiar with the construction drawing, and planning of labour, which can be done at an early stage. The incapability of contractor's site management to organise site activities was ranked as fifth factor in term of importance of delay.

(vi) Late issuance of progress payment by client to contractor

Late issuance of progress payment by client to contractor can severely hinder the work progress. This delay factor was ranked sixth among the other factors. Delay in progress payment affects cash flow of contractors which in turn affects the payment to workers and suppliers. This causes detrimental effects on workers' motivation and suppliers' creditability as discuss above.

(vii) Late supply of material in the market

Currently, the construction industry in Malaysia experiences severe shortage of steel bar due to artificial shortage created by the suppliers. Steel bars are critical material in any