

EXCUSABLE AND COMPENSABLE DELAYS IN THE CONSTRUCTION OF BUILDING PROJECT – A STUDY IN THE STATES OF SELANGOR AND WILAYAH PERSEKUTUAN KUALA LUMPUR , MALAYSIA.

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ABSTRACT

This paper explores the most significant causes of excusable and compensable delays in the construction of building projects in the States of Selangor and Wilayah Persekutuan Kuala Lumpur , Malaysia. Data is collected from questionnaire survey which is based on the literature reviews and also provisions in the ‘Persatuan Akitik Malaysia’ (PAM 1998) standard form of building contract that are associated with the excusable and compensable delays. The data were analysed by using mean score method and rank to formulate the findings. The result from questionnaire survey revealed four most significant causes of excusable and compensable delays which are : ‘delays due to architect instruction’, delays due to late information given to contractor’, ‘delays on the part of nominated sub contractor or supplier’, and ‘delays due to failure of the employer to provide access to site’. The finding suggest that clearly define design brief and also a full understanding of roles and responsibilities between the client and consultant during the early stage of the project development may help to minimise the delays in the construction of building projects.

Keywords: Causes of Delays, Compensable Delays, Excusable Delays, Standard Form of Building Contract

1. INTRODUCTION

The Malaysian construction industry plays an instrumental role in the country development .The industry contribute 3.3 percent of the countries gross domestic product (GDP) in year 2003 and employs more than 500,000 workers in some 54,500 local companies. In year 2003 more than 3,000 contracts have been awarded to contractor with a total value of RM4.8 billion [1]. The housing and infrastructure project has been the biggest contributor to the construction industry which contributes more than 70 % of the total value. Most of the projects awarded are located in the States of Selangor, Johor and Kuala Lumpur [1]. Although the industry contributes to a high percentage of the nation economy growth, unfortunately the industry did not prepare for the related project management problem. Many construction projects suffer from delays and have leads to increase of the cost and losses million of Ringgit to the country. Among the projects that had experienced delays are: Construction of Bakun Dam at Sarawak [2], teachers housing quarters [3], construction of low cost housing projects in Hulu Kelang Selangor [4], construction of police quarters [4], construction of housing project in Desa Subang Permai, Selangor [3] and also construction of computer laboratories [5].

1.1 DEFINITION OF DELAYS IN CONSTRUCTION PROJECT

Nunally [6] has defined construction delays as “any addition to the execution period that more than stipulated in the contract or the increase of time beyond the stated date to complete the project within the agreed period”. This is as shown in Figure 1.

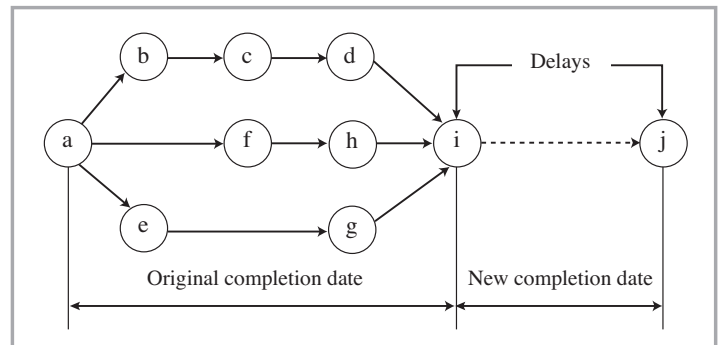


Figure 1: Delays in construction project

1.2 CLASSIFICATION OF CONSTRUCTION DELAYS

Kraiem and Diekman [7] classified construction delays into three categories: excusable, excusable compensable and non-excusable. Excusable delays are those for which the construction contract allows the contractor additional time only which is equal to the time consumed by the delay. This type of delays includes force majeure, strike, and exceptionally inclement weather. Excusable compensable delays are those for which the construction contract allows the contractor to claim additional monies equal to the monies lost by the contractor due to the delay and also additional time. The examples of this delay are: delays caused by late instruction given to contractor, delays in approval of material, incomplete design, and also changed order given to contractor. Non-excusable delays are those in which the contractor is not entitled to claim extension of time nor additional compensation.

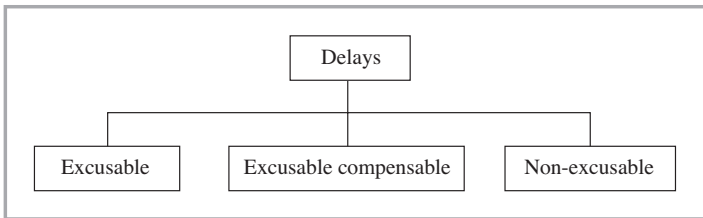


Figure 2: Categories of construction contract delays

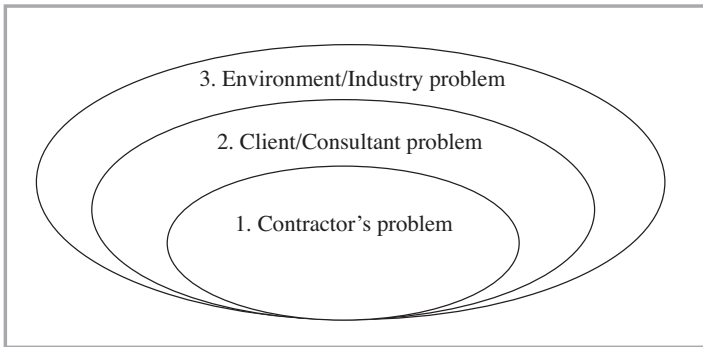


Figure 3: Problem causing delays in construction projects

These can result from the fault of the contractor, or his subcontractors, materials, workforce or suppliers. Figure 2 summarises the categories of construction contract delays.

1.3 CAUSES OF EXCUSABLE AND COMPENSABLE DELAYS

Delays in the completion of a project do not always result from a catastrophic event. They are frequently developed by many parties slowly during the course of the work. Construction delays had been studied in various part of the world. Sullivan and Harris [8], Okpala and Aneiekwu [9] and Ogunlana et al. [10] have studied construction delays in UK, UK colonies, Nigeria and Thailand. The data assembled from the studies are shown in Table 1.

A close examination of this data provides evidence that most of the delays in the construction projects are not due to the fault of contractor on the other hand it is due to either the fault of the employer or neutral event meaning that this delays are excusable and compensable.

Mansfield *et al.* [11] studied the causes of delay and cost overrun problems in Nigerian construction projects. They concluded that most of the problems were human and management problems, not technical in nature. The major factors include late payment arrangements, poor contract management, materials shortage,

inaccurate estimation and overall price fluctuations. Assaf *et al.* [12] outline the main causes of delay in large building projects in Saudi Arabia. Their findings conclude delays due to the owner are the most significant causes of delays in Saudi Arabia. Al Momani [13] conducted a quantitative analysis of construction delays by examining the records of 130 public building projects constructed in Jordan during the period of 1990-1997. The researcher concluded that the main causes of delay in construction projects are related to designers, client initiate changes, weather, site conditions, late deliveries of materials and also economic conditions of the country.

A study conducted by Chan and Kumaraswamy [14] found that the client initiated variation order when introduced during the midstream of construction period causes excessive excusable delays to the project. They also found that variation orders are the most significant causes of the time overrun. National Economic Development Office [15] reported that unforeseen ground condition is one the causes that frequently causes extensive excusable delays to the project after the commencement of the work. This is concern with bad soil condition and hard rock barrier. Ogunlana *et al.* [10] identified the delays in the building projects in Thailand. They confirm that the delays in construction industry can be nested in three layers as shown in Figure 3.

The first layer are the problem imposed by the contractors own shortcoming. The second are problems of inaccurate information and frequent changes in instruction on the part of client and consultants and the third layer are those problems related to the industry such as shortage of materials, resources, government policies towards foreign workers and also environment condition in the country. From this three layer diagramme two of the delays causes are due to excusable and compensable delays.

Because of the overriding importance of time for both owners in term of performance and contractor in term of money, construction delay is a source of frequent disputes and claims leading to lawsuits. To control these situations, a contract is formulated to identify the potential delay situation in advance and also to fix the obligation to preclude such controversies. A substantial number of general conditions clauses in standard form of building contract address this subject in one way or another. Under some circumstances, a contractor may be entitled for an extension of time and claim delays damages if the delays is due to the fault of the owner or neutral event and on the other hand there is also provision that the contractor will be imposed liquidated damages if the delay is due to fault of the contractor.

Table 1: Summary of the factor responsible for delays for construction delays in UK and UK Colonies [8], Nigeria [9] and Thailand [10]

Description	UK %	UK colonies %	Nigeria %	Thailand %
Waiting for information	51	32	47	75
Change order	49	40	71	41.7
Unforeseen ground	21	9	52	33.3
Bad weather	19	4	52	-
M&E sub contractor	17	17	-	-
Poor contract management	-	-	30	-
Contractor financial difficulties	-	-	3.3	33.3

1.4 CONTRACT PROVISIONS RELATED TO EXCUSABLE AND COMPENSABLE DELAYS IN THE “PERSATUAN AKITEK MALAYSIA” (PAM 1998) STANDARD FORM OF BUILDING CONTRACT

There are specific contract provisions and relevant event that associated with the excusable delays and compensable delays stated in Clauses 23 and 24 [16]. The kind of relevant events as stated in sub clause 23 are : (a) force majeure (b) exceptionally inclement weather (c) loss or damaged occasioned by fire and flood (d)

civil commotion, strike or lockout (e) compliance with architect’s instructions (f) delay in supply of information from architect (g) delays on the part of nominated sub contractors or nominated suppliers (h) delays on the part of artist, tradesmen or others engaged by the employer in executing the works (i) delay in the supply of materials and goods which the employer (j) opening up and inspection of covered works (k) breach of contract by employer.

Meanwhile under sub clause 24 of the condition of building contract the contractor are allow to claim for the direct loss and or expenses if the regular progress of their work or any part thereof has been materially affected by one of the relevant event as specified in the contract. The relevant event are as follows: (a) discrepancy in drawing (b) postponement of any work in accordance with architect’s instruction (c) delay in supply of information by architects (d) delays on the part of artist, tradesmen or others engaged by the client (e) delay due to opening up and inspection of covered works. Table 2 summarises the clauses related to the excusable and compensable delays in the standard for of building contract.

Table 2: Summary of clauses related to excusable and compensable delays in the standard form of building contract [16]

Delay categories	Clause 23	Clause 24
Excusable delays	Sub clause 23.7 (i) to (iv) and (vii)	
Excusable and compensable delays	Sub clause 23.7 (v), (vi), (viii) to (xii)	
Unforeseen ground		Sub clause 24.2 (i) to (viii)

2.0 RESEARCH OBJECTIVES

The objectives of this study are to: (i) to carry out an in-depth investigation on the factors that contribute to the causes of excusable and compensable delays in the construction building project in the States of Selangor and Wilayah Persekutuan Kuala Lumpur, Malaysia and (ii) to relate these academic studies for an effective solution to minimise the mentioned delays.

3.0 RESEARCH METHODOLOGY

This research was carried out in two stages. In the first stage the causes of the excusable and compensable delays were established through existing literature on delays and also as obtained from Clauses 23 and 24 of the standard form of building contract [16]. These causes of excusable delays were used as the basis of questionnaire. In the second stage, a set of questionnaire was developed. The questionnaire was divided into two sections. Section A is to obtain demographic information of the respondent. Section B was focused on the identified causes of excusable and compensable construction delays based on the clause 23 and 24 of the standard form of building contract [16]. The respondent were ask to rank the significant causes of delay based on their working experience in the construction industry for completed project between year 2000 to 2005. The author adopted five point scale of 1-5 for ranking purposes. To facilitate the analysis the following numerical values were assigned to the respondents ranking: ‘Extremely significant’ – 5, ‘Very significant’ – 4, ‘Moderately significant’ - 3, ‘Slightly significant’ – 2, ‘Not significant’ – 1.

The questionnaires were sent to one hundred local and private sector organisations namely contractors, employer, and consultant within the States of Selangor and Wilayah Persekutuan Kuala Lumpur. The organisation was selected based on information obtained from “Persatuan Akitek Malaysia” (PAM), “Pusat Khidmat Kontraktor” (PKK), Board of Engineers Malaysia (BEM), and Public Work Department (PWD) and also through personal networking and contacts.

3.1 METHOD OF DATA ANALYSIS

The data was analysed by using mean score method that had been adopted from Assaf et al [12]. In this method weighting scale of 1 to 5 was adopted in the view of its simplicity and suitability for evaluating each delays factor, significant based on the respondent own judgment and working experience in the construction industry. This five point scale is used to calculate the mean score for each factor and element, which is then used to determine the relative ranking of each factor by assigning ranking to mean score, with low mean score assigned low ranks and high scores allocated high ranks. The mean score (MS) for each factor is computed by using the following formula:

$$MS = \frac{\sum(f \times s)}{N} \tag{1}$$

Where *s* is the score given to each factor by respondents and ranges from 1 to 5 in which “1” is not significant and “5” is extremely significant; *f* is frequency of responses to each rating (1 – 5), for each factor; and *N* is the total number of responses concerning that factor.

3.2 SURVEY RESULT ANALYSIS

The total organisation that has returned the survey questionnaire form was 33. This gives a response rate of 33 %.

Table 3: Respondent response rate

Respondent	Number of questionnaire sent
Number of participant	100
Number of replied	33
Response rate (%)	33

Most of the respondents who have participated in this questionnaire have been working in the construction industry for many years ranging from minimum of 3 years to a maximum of 35 years. The profile of the respondents’ working experience in the construction industry is illustrated in Figure 3.

From the survey results 43% of the respondent are contractor project managers followed by the project architects and engineers (30%) and development managers (27%) with various development agencies. Figure 4 shows the distribution of the respondent various job functions.

The respondents were involved building contract with a contract value between 1 to 5 million Ringgit is 15%, 5 to 10 million Ringgit is 55% and more than 10 million Ringgit is 30%. This is shown in Figure 5.

Respondent experiences, contract value and also job function factor has to be taken into account in analysing the data as these variables are the root sources of the reliability of the data. From the data collected it was found that 43 % of the respondent are project

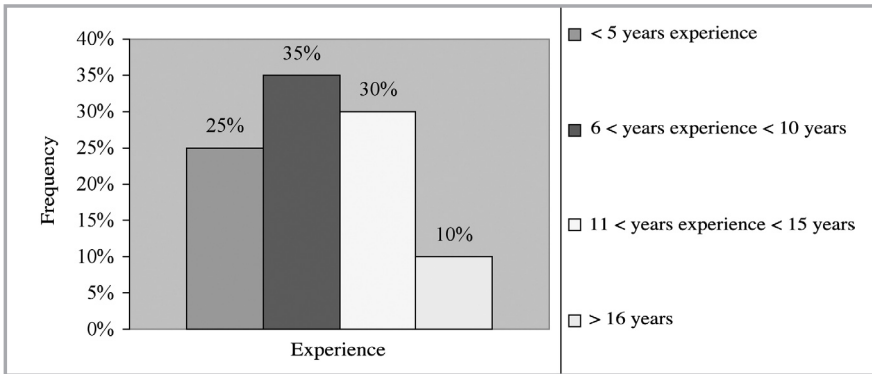


Figure 3: Respondents working experience

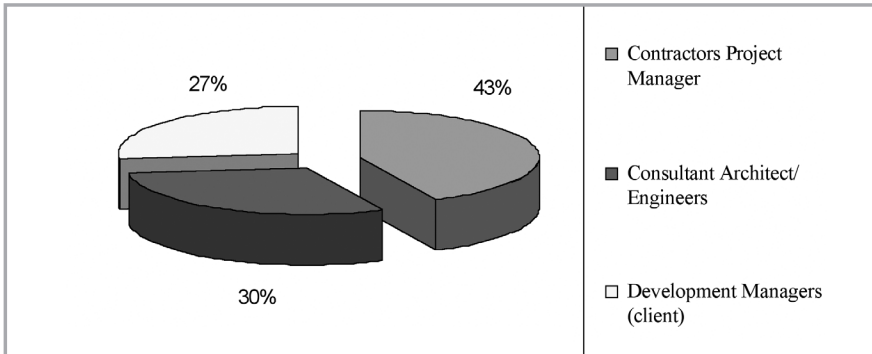


Figure 4: Respondent profession

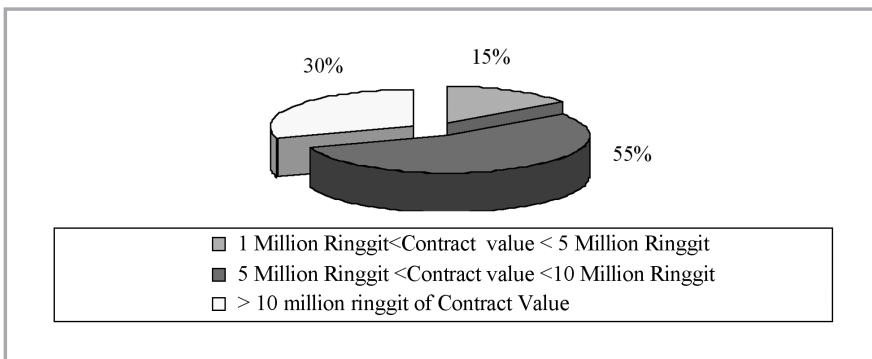


Figure 5: Respondent project experience

Table 3: Result for excusable delays in the construction of building project

Excusable delays factor	Number of respondent scoring					Mean Score	Rank
	5	4	3	2	1		
a) Delay on the part of nominated sub contractor/suppliers	24 (73%)	7 (21%)	2 (6%)	-	-	4.66	1
b) Exceptionally inclement weather	-	-	8 (24%)	12 (55%)	18 (33%)	2.0	2
c) Loss or damaged by fire, flood and riot and civil commotion	-	-	-	8 (25%)	25 (75%)	1.24	3
d) Force majeure	-	-	-	3 (10%)	30 (90%)	1.09	4

managers, 35 % of the respondent has been working for more than 5 years in construction industry and 55% of the respondent has been experience work for project which cost in between 5 to 10 million Ringgit. This information shows that most of the respondents are having vast experience working in the construction industry. Therefore the information provided regarding the causes of excusable and compensable delays building project are considered reasonably reliable and fall within the scope of work of this research. Tables 3 - 4 tabulates the mean scores and ranks the most significant factors of delays as referred to the relevant event stated in the sub clauses 23 and 24 of the standard form of the building contract [16].

4.0 DISCUSSION OF THE RESULTS

It was observed that delays by nominated sub contractor or supplier, delays due to architect instructions, delay in late supply of information's by architect and also delays due to failure employer to provide access to site are the most significant factors that causes excusable and excusable compensable delays. The following is a brief discussion of the ranking of the significant delays factors as deduced from Tables 3 and 4.

4.1 EXECUSABLE DELAYS EVENT A. DELAYS DUE TO NOMINATED SUB CONTRACTOR OR SUPPLIER

Delay due to nominated sub contractor or supplier was ranked as the most significant factor causing excusable delay as shown in Table 3 with 73% of the respondents ranked this factor as the most significant factor. This result is due to compliances to the architect instruction and also may be due to late awarding of mechanical and electrical nominated sub contractor contract by the client. Generally most of the public client will take longer time to award this contract as this usually involve of decision to be issued by the client top level management. As some of the mechanical and electrical trade such as cold water services and electrical works normally fall on the critical path of the main contractor work program, any delays due to this trade will effect the overall completion time of the project.

B. DELAYS DUE TO EXCEPTIONAL INCLEMENT WEATHER, LOSS OR DAMAGED BY FIRE, FLOOD, CIVIL COMMOTION AND FORCE MAJEURE

These factor of delays were ranked low by all the respondent as shown in Table 3. This is may be because of the moderate weather in Malaysia and the politically stable conditions of the country, thus the factor has no great effect on the construction project.

Table 4: Result for excusable and compensable delays

Excusable delays factor	Number of respondent scoring					Mean Score	Rank
	5	4	3	2	1		
a) Delay due to compliance with architect instruction issued in respect of variations, postponement of any work and also discrepancy in contract drawing	29 (87%)	4 (13%)	– –	– –	– –	4.87	1
b) Delay due to contractor not received in due time the necessary instruction, level and information request from the architect	25 (75%)	8 (25%)	– –	– –	– –	4.75	2
c) Delay due to failure of employer to provide access to site	19 (57%)	10 (30%)	4 (13%)	– –	– –	1.24	3
d) Delay on the part of artist, tradesmen or other engaged by the client in executing work not forming part of the contract.	– –	– –	3 (10%)	10 (30%)	20 (60%)	1.48	4
e) Delay due to failure of the employer to supply materials or goods in which he agreed	– –	– –	– –	10 (30%)	23 (70%)	1.45	5
f) Delay in opening up for inspection	– –	– –	– –	7 (21%)	26 (79%)	1.42	6
g) Delay due to breach of contract by employer	– –	– –	– –	3 (10%)	30 (90%)	1.3	7

postponement of the work sometimes are due to the unforeseen underground condition in which consulting engineers are required to redesign the foundation to suit the existing ground conditions. Meanwhile for the laying of building services, the postponement of works can be occur due to encountering of hard materials at the excavation area or high water table which will hinder the excavation works. Generally in both situations, the main reason for the postponement of the work is mainly due to unforeseen ground conditions. This postponement of works normally result in additional time and claim by the contractor for the idling of their machinery and plant.

B. DELAYS DUE TO LATE SUPPLY OF INFORMATION REQUIRED FOR THE WORKS

Delays due to late information or details issue by the architect was rank the second most significant factor that caused excusable and compensable delays respondent with 75% of the respondent have rank this factor the most significant causes of delays. The late issue of information or approved of materials could be due to slow decision making by the client or on the part of the architect himself which may not have the time to issue information or instruction requested by the contractor immediately due to the commitment to other project.

C. DELAYS DUE TO BAD ACCESS TO SITE

This factor was ranked the third most significant factor causing delays by the respondents with 57% has rank this factor as the most significant factor. This is common problems that occur in a large mix development area in which all the contractor are sharing a common access to the individuals' parcels. This situation will normally become worst during the rainy seasons. This may result in the disruption to the contractor works.

4.2. EXECUSABLE COMPENSABLE DELAY EVENT A. DELAYS DUE TO COMPLIANCE WITH ARCHITECT INSTRUCTIONS

Delays due to compliance with architect instruction in respect to variation works, discrepancy in drawing and also postponement of the work were ranked the most significant factor that caused excusable and compensable delays by the responded as shown in Table 4 with 87 % of the respondent has rank this factor as the most significant factor. Normally the architect will issue instruction in respect to any variation works, discrepancy in drawing and also postponement of the work. The architect has the power to issue instruction regarding any discrepancy in drawing occur mainly due to the different in dimension between the plan and sections of wall, beam and also other structures. This problem may arises due to marginal error occur during the design stage. The architect instruction regarding postponement or suspension of work normally occurs during the piling stage or laying of the utility services such as sewerage and drainage works. As for the piling works the

D. DELAYS CAUSED BY ARTISANS

This delay factor was also ranked low by the respondent in which 60 % of the respondents have ranked the delay caused by artisan as the non - significant factor.

E. DELAYS DUE TO FAILURE OF EMPLOYER TO SUPPLY MATERIALS OR GOODS

This factor was ranked low by most of the respondent in which 70% of the respondent has ranked this factor as the non-significant factor of delay. In most building contracts all the materials will be supplied and delivered by the contractor locally unless the materials required cannot be obtain locally or the cost is very high.

F. DELAYS DUE TO OPENING UP FOR INSPECTION

This factor was ranked low by most of the respondent in which 79% of the respondent have ranked this factor as the non-significant. The architect will only give instruction for opening up for inspection

if he have the evidence from the site personnel on the defective works, this is to avoid the contractor from making claims for the loss and expenses occur due to delays by employer.

G. DELAYS DUE TO BREACH OF CONTRACT

This factor was ranked lowest by the respondents in which 90% of the respondent has ranked it a non-significant factor. This is maybe because in the Malaysian construction industry it is very seldom the client will be in breach of contract.

5.0 RECOMMENDATIONS

The result of the survey shows most of the construction delays are due to the fault of employer or his agent. To overcome this problem a clearly define design brief and also a full understanding of roles and responsibilities between the client and consultant during the early stage of the project development is necessary in order to minimize the delays due to architect instruction in respect to variation order, discrepancy in drawing and also postponement of work. Besides this by allowing certain amount of money for the construction and maintenance of the access road to site shall reduce the delays due to the problem of bad access to project.

6.0 CONCLUSIONS

Based on the results carried out within the scope stated, several conclusions can be drawn, which may help to improve the time performance and provide a better understanding on the actual causes of delays in construction of building projects. The main conclusions of the research are that delays due to nominated sub contractor/ supplier are the most significant causes of excusable delays. Meanwhile delays due to architect instruction, delay in late information given by architect and also delays due to failure of employer to provided access to site are the most significant causes of excusable compensable delays in the building projects. Generally there is a similarity of several finding in this research to previous research finding from developing countries which have confirm that most project abroad face similar problems in spite of having different economical, social and political background. As such by foreseeing the common problems identified in this paper the author hope that the construction participant can avoid this problem.

7.0 ACKNOWLEDGEMENTS

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REFERENCES

- [1] B. Thomas, "Market Watch Malaysia", http://www.ihk.nordswesfalen.de/markcontact/Bindata/AHK_studie.construction 2005
- [2] Leela Barrock and P.Gunasegaran . 2004 Dam of delay. Edge magazine.
- [3] The New Straits Time News Paper. January 9. 2002.
- [4] Harian Metro News Paper. January 20. 2006.
- [5] The New Straits Time News Paper. May 15. 2004.

- [6] Nunally .S.W. 1980.Costruction method and management: Prentice Hall
- [7] Kraiem and Diekmann.1987.Concurrent delays in construction projects. Journal of Construction Engineering and Management. 113 (4) :591-602.
- [8] Sullivan, A and Harris, F C 'Delay on large construction project' Int J Oper Prod Management (1986) 6 (1) 25-23
- [9] Okpala, D C and Aniekwu, A N 'Causes of high costs of construction projects in Nigeria' Journal of Constrction Engineering (June 1988) 114 (2) 233-244.
- [10] Ogunlana S.O and Promkuntong.K. 1996. Construction delays in a fast-growing economy: comparing Thailand with other economies. International Journal of Project Management 14 1 :. 37-45
- [11] Mansfield N.R. Ugwu. O. O and Doran. T 1994. Causes of delay and cost overruns in Nigerian construction projects. International Journal of Project Management. Vol 124:. 254-260.
- [12] Assaf S.A., Al-Khalil & Al-Hazmi. M.1995. causes of delay in large building construction projects. Journal of Management in Engineering ASCE 112: 45-50.
- [13] Al Moumani. H. A. 2000. Construction delays: a quantitative analysis. International Journal of Project Management Vol. 18:51-59.
- [14] Chan.D.W.M. and Kumaraswamy M.M. 1996. An Evaluation of Construction Time Performance in the Building Industry. International Journal of Project Mangement. Vol 31:569-579.
- [15] NEDO,1988. Faster Building for Commerce HMSO, London.
- [16] Standard form of building contract (PAM 1998) by "Persatuan Akitek Malaysia".

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