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BUILDING CONSTRUCTION COMPLETION DELAYS: FACTORS AND EFFECTS

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Abstract

Investing to the construction project does not promise a profit to the clients. The project can be delay or worse, which is abandonment. Each client want their project going well so they can meet their objectives. Therefore, this research aim to minimize the delay of building construction completion in Malaysia. The objectives of this research are (i) To identify the factors affecting delays of building construction completion in Malaysia (ii) To determine the effects of building construction completion delays to the clients, consultants and contractors (iii) To suggest action that could minimize building construction delays. In order to achieve the objectives, 90 questionnaires were distributed to the project clients, contractors, and construction consultant. Clients often change order during construction phase frequently is the main factor affecting delays, clients delay getting profit from the development as the main effect of delays and clients should ease the interim payment and do it on time as the main steps to minimize delays.

Keyword: *Factors, Delays of Construction, Building Construction, Clients, Contractors, Consultants*

1.0 INTRODUCTION

Construction in Malaysia is growing rapidly year after year. Malaysia has realized the importance of the construction sector right after independence until it began to develop. The construction industry makes up an important part of the Malaysian economy. In 2019 construction sector is contributing (4.5%) to the Gross Domestic Product (GDP). Khan et al. (2014), said today it has become one of the major sectors of Malaysian economy although its contribution is relatively small as compared to other sectors of economy like services, manufacturing, and agriculture. This research focuses more on delay issues in building construction completion. Nowadays, delay issues in building construction is a common phenomenon in the world. Many dispute have arisen among main parties involved such as clients, consultants and contractors as all of them put completion on time as one of the priority. According to Othman and Ismail (2014), punctual completion is very serious as time is important and time is money. After all effort and capital given by the key players of construction, they expecting that their project are success. A construction project usually recognized as successful when it completed exactly on time it supposed to (Aziz, 2013). This can be concluded that on time completion of construction project in the interest of parties involved.

According to Sha, Shahi, Pandit, & Pandey (2017), construction industry is one of the sector that contribute to the economy growth of a country and give support to the other industry sectors. To develop tourism sector, a country must have necessary facilities such as roads, airports and various function of buildings. Each owner of a construction project, either private or public want their project going well and success. To acknowledge a construction project success, Its must be completed or finished within time, cost are not overruns and the specification of the project meet the owner's satisfaction (Majid, 2006). However, one of the main problems in building construction projects is delay (Ullah, Khan, Lakhiar, Vighio, & Sohu, 2018). Malaysia also facing the delay issues as some researcher Ullah et al. (2018), Othman & Ismail (2014), found that only 30% of the public sector building projects in Malaysia finished on timely as per schedule dates. The delays of a construction project does not only give impact to owners, but it also become a serious problem to the others project participants which is contractors and consultants (Hisham & Yahaya, 2007). Each parties will have different effect cause by construction delays as they play different roles and get different benefits from the project. Aziz (2013), state that time overruns are typical in different construction project and cause considerable losses to project parties. To improve the quality of construction industry in Malaysia, factors that that affecting delays in construction project should be recognize. By identify the factors of delays, some recommendation to overcome or minimize this delays issues also can be find and listed. Even there are some delays that cannot be inevitable, decreasing the risk of delays could make the construction industry better and near to success.

Aim of this research is to minimize the delay of building construction completion in Malaysia. It is followed by three research question, "what are the factors affecting delays of building construction completion in

Malaysia?", "what are the effects of building construction completion delays to the clients, consultants and contractors?" and "what are the action that could minimize the building construction delays?". The objective of this research are to identify the factors affecting delays of building construction completion in Malaysia, to determine the effects of building construction completion delays to the clients, consultants and contractors, and to suggest action that could minimize building construction delays.

The scope of this research will focus on delays of building construction and the questionnaire will be distributed to project clients, contractors, consultants and project management. The targeted group is chosen because this research focuses solely on those that affected to the issue. This research is to find out the factors affecting delays of building construction completion, the effects of building construction completion delay to the clients, consultants and contractors, and actions that could minimize the delays. The location of this research is in Perak because according to Perbadanan Kemajuan Negeri Perak (PKNP) website, there are many incoming construction project in this state, which will ease in getting respondents for the survey. Questionnaire survey use as an instruments and distribute among project clients, contractors, consultants and project management as they are directly involve in construction phase and affected by delays of construction completion.

2.0 LITERATURE REVIEW

2.1 Building Construction Completion

Completion can be define as action of finishing something. In construction industry, contractors are obligated to complete the construction project. In a form of contract by Pertubuhan Arkitek Malaysia (2006), clause 15.1, works of construction can be say complete in two situation. The first is when the owner can fill and have full of works for their intended purposes, even there is some minor defects and contractor will be given a written undertaking to repair it in reasonable time by architect. Next, completion can be define when contractor fulfil the requirement stated by client for the issuance of the certificate of practical completion in the contract document. The certificate of practical completion is issued by client when the contractor successfully reach stage of completion as stated in the contract conditions.

2.2 Delay

Delay is a period of time by which is late or postponed. When something finish or complete beyond the time it supposed to, we call it as a delay. Delay can also be said as the time overrun, either after the date for completion stated in contract, or after the extended contract period where extension of time has been agreed (Fugar & Agyakwah-Baah, 2010). Each construction project will have their own contract document. In the contract document, detail of the project and agreement between contractors and clients will be stated. One of the agreement is specific date that contractor should complete the project. As the contractor fail to do so, it will be considered as a delay. Delay can occur in any stages of construction process and will give impact on completion.

2.3 Factors Affecting Delays

There are several factors affecting the delay of building construction completion. Base on literature review, Islam & Trigunarsyah (2017) studied the potential causes of construction in developing countries. They found financial issues, managerial issue, contractors related factor, owner related factor, are the most crucial and repeated factor that directly push to schedule delay all over the developing world. Another researcher also found out that contractors financial issues, incompetent team, monthly payment difficulties as main among main factors that contributed to the causes of delays (Sha et al., 2017). Another than that, labour shortage also serious factor of delay in Malaysia. Therefore, through literatures, five categories of variables that related to the causes of delays of completion in building construction projects had been found out.

2.4 Effects of Delay to The Client, Consultant and Contractor

Delays in construction will affect differently on construction key players. Each of them will have the different impact as the risk allocation between them are unalike. Majid (2006), quoted six consequences of delay found by Aibinu & Jagboro, (2002), which is time overrun, cost overrun, dispute arise, full abandonment, arbitration and litigation. Among these consequences, researcher noticed time and cost overrun is the most recurring effects in Nigerian construction industry. However, time overrun and cost overrun become more crucial effect of delays in construction projects as it get support by research carried out Sha et al.(, 2017), identify that time overrun and cost overrun ranked first and second in the ranking of common effects of delay. This researcher also put dispute, total abandonment, arbitration and litigation as other variables in their study. Other researcher, (Ullah et al., 2018) also do a research on effects of delay in building construction projects in Malaysia. They conclude their research that main consequences of delay were time overrun, cost overrun, dispute, loss of profit and arbitration.

2.5 Effective ways to minimize the delay in construction completion

One of the main ways to minimize the delay in construction completion is client should pay interim payment to the contractors on time. It is supported by Aziz (2013) in this finding, suggested owner to pay progress payment as quick as possible on time periods to avoid from delay the completeness of project work. Late payment can affect contractor cash flows, as they spent their money first to perform the work. This recommendation can counter one of the delay factors, which is late progress payment by the owner.

Assbeihat, (2016) have collect points recommended by some parties in his research. The recommend point is to control and minimize construction project from delay. Consultant should prevent delay in review and approve design documents. For contractor, he stated that do some more coordination between sub-contractor's schedules can minimize the delay in construction project. He added that client should focus on a few factor such as prevent too many changes in order in the project during post contract stage. Next, owner should be faster in decision making so he will not cause the project delay. Team work between parties involved are very important to meet the completion on time. Each party must play their role effectively and communicate with other party.

3.0 METHODOLOGY

This dissertation outline consists of eight steps to achieve the aim and objectives of the research. There are consist of problem identification which the main topic that need to be research, problem statement, set up a research aim, research objectives, develop research questions, data collection guided by primary and secondary data, make a data analysis and lastly conclusion and recommendation. This research will be conducted through the quantitative method of research. The questionnaire survey will be used as research method in order to gather reliable and significant data for this research. The number of respondents are 90, 30 of them are contractors, 30 are clients and 30 of the rest are consultant.

4.0 DATA ANALYSIS AND DISCUSSION

4.1 Factors Affecting Delays of Building Construction Completion in Malaysia

Twelve (12) questions were highlighted to explore each factor that affects delays of building construction completion in Malaysia. This section discusses more about the first objective of this research, which is to identify the factor affecting delays of building construction completion in Malaysia. In this section, the questionnaire used Likert scale questions where the respondents answered them with different answers as

represented in the 5 different level of agreement. Table 4.5 below shows the details on the scale rating that respondents need to answer.

Table 1: Factors Affecting Delays of Building Construction Completion

Section B	Statement	Mean	Ranking
1	Contractors have financial issues and poor cashflow.	3.82	8
2	Late interim payment by the clients.	4.87	2
3	Poor in managing resources (Materials, labours, equipment).	4.48	4
4	Construction management lack of experience in managing a project.	3.16	11
5	Contractors lack of experience to carry out a project.	3.74	9
6	Improper planning and scheduling by the contractors.	4.56	3
7	Incompetent sub-contractors.	3.56	10
8	Contractors having conflicts in terms of attendances (charges to the sub-contractors) and work scope with sub-contractors.	4.24	5
9	Inaccurate time and cost estimation during tendering stage.	3.56	10
10	Client change order during construction phase frequently.	4.94	1
11	Delay in decision making by the clients.	3.96	7
12	Shortage of labours during construction.	4.22	6
	Average Mean	**4.09**	

Based on the data collected from the questionnaires on the 90 construction industry players in Perak, it was founded that the respondents agreed that the client change order during construction phase frequently is the factor that affecting delays of building construction completion the most. This is because it will cost a lot of time to execute the changes during the construction phase. In case the structure have been construct by the contractors, they have to destroy it and do it again in different design if the clients willing to change. Besides, clients have to be well noted that changes order during construction phase will cause delay of the completion. The results correlate with the previous researchers, design changes by owners is one of the important causes of delays (Assaf & Al-Hejji, 2006).

4.2 Effects of Building Construction Completion Delay to the Clients, Consultants and Contractors

Table 2: Effects of Building Construction Completion Delay to the Clients, Consultants and Contractors

Section C	Statements	Mean	Ranking
	Effects to client		
1	Clients have to spend more than budgeted amount for the construction and incur loss.	2.72	10
2	Clients delay getting profit from the development	4.88	1
3	Dispute could arise and bring to dispute resolution (affect good relationship between clients, contractors, clients).	4.77	4
4	Suffer abandonment of the development	2.38	11
5	Determination of contract by the contractors	1.41	14
	Effects to contractors		
6	Contractors suffer loss and profit from the development reduce	4.56	7
7	Contractors' another project could affect or unawarded	4.70	6
8	Dispute could arise and bring to dispute resolution (affect good relationship between clients, contractors, clients)	4.76	5
9	Contractor's good reputation and professionalism affected	4.84	2
10	Determination of contract by the clients	4.82	3
	Effects to consultants		
11	Consultant profit decrease and incur loss	1.37	15
12	Consultant loss focus on another projects	4.11	8
13	Dispute could arise and bring to dispute resolution (affect good relationship between clients, contractors, clients)	4.07	9
14	Consultants' good reputation and professionalism affected	2.22	12
15	Consultants could be terminated from involve in the project	1.59	13
	Average Mean	3.55	

Most of the respondents agreed that clients delay getting profit from the development because they found out that clients invest their money in a development, to earn more money. As the construction completion delay, it will cause the operation from the development delay too. As long as the development not operating, clients will not receive any return of the investment until the operation start. Clients should play they role to overcome delay, to ensure they getting profit from the development on time. Contractor's good reputation and professionalism affected by the delays, as they are the responsible parties to execute the works of construction until completion. Their reputation is very important to secure incoming projects. Good reputation and professionalism could attract clients to deal with the contractors. Client must do their best on each project, to keep their reputation and professionalism at the excellent level. Lastly, the effect of delay to the consultant is consultant loss focus on another project. Consultant usually set an amount of project to be handle on a time. When one of their project is delay, they have to still focus on that project and will affect their focus on another upcoming project. They cannot focus on all project whenever they have to handle project more than amount that they capable.

4.3 Actions to Minimize Building Construction Delays

Table 3: Actions to Minimize Building Construction Delays

Section D	Statements	Mean	Ranking
	Actions by clients		
1	Clients should ease the interim payment and do it on time	4.97	1
2	Clients must hire well experienced construction management consultant in their project especially for big projects	3.99	14
3	Client let the main contractors to choose sub-contractors themselves to avoid conflicts in terms of attendances (charges to the sub-contractors) and work scope between them	4.04	13
4	Clients should avoid or minimize from change order during the construction phase	4.94	3
5	Clients must be well prepared to make decision related to the projects. The decision must be as quick as possible	4.12	11
	Actions by contractors		
6	Contractors must improve their resources management skills during construction	4.79	5
7	Contractors must have a stable financial status and cashflow before tender a project	4.59	7
8	Contractors must use enough labours and machineries during the construction	4.97	1
9	Contractors must put reasonable cost and time during tendering	4.28	9
10	Contractors must start the works immediately as they get site possession	4.96	2
	Actions by consultants		
11	QS should focus more on contractor's financial status and cashflow during tender evaluation	4.37	8
12	Involvement of construction management consultant for planning and scheduling works to ensure the project on the track	4.27	10
13	QS should evaluate sub-contractors' experiences before appointing them	4.1	12
14	QS must make sure selected contractors offer reasonable cost and period of construction	4.64	6
15	Consultants must monitor contractor's works, make sure according to the contract	4.87	4
	Average Mean	**4.53**	

Based on the analysis, it was found that clients should ease the interim payment and do it on time, contractors must use enough labours and machineries during the construction, and consultants must monitor contractor's works, make sure according to the contract are the actions that could minimize building construction delays. These are the three (3) actions that can be taken by each parties involve in construction, which is clients, consultants, and contractors. Firstly, clients should ease the interim payment and do it on time. Interim payment

is very important to contractors, as it contribute income to them. They sometimes rolling their money from the interim payment, to buy materials and rent plant and machineries for the construction. Whenever interim payments by the clients delay, it will disturb contractor's cash flow. Clients as the investors in a project, have to ease the interim payment and do it on time in order to achieve completion on time. Khoiry, Kalaisilven and Abdullah (2018), had quote in their research that timely interim payment by client could minimize the delay in construction. Next, finding section a give result that contractor have to use enough labours and machineries as one of the action by contractor to minimize delay. Assbeihat (2016) and Sha *et al.*, (2017), had indicates in their research that insufficient labours usage in construction is one of the crucial factor of delay. In order to overcome the delay, contractor have to solute this issues by using enough labours and machineries in a construction project. However, consultant also could play their part to minimize delay. In the table 4.7, consultant must monitor contractor's work and make sure it is according to the contract also have a high score of mean, 4.87. Khoiry, Kalaisilven and Abdullah (2018), had quote that by monitoring and supervision of contractor's work by the consultant is important as it can detect any issue or problem earlier and can come out with solutions. Consultant have play their part to achieve a timely completion of a project.

5.0 CONCLUSION

In conclusion, this research found that clients, contractors, and consultant have their own effect of delays. Some action that can be taken by each parties is clients should ease the interim payments and do it on time, contractors must use enough labour and machineries during construction and consultants must monitor contractor's works, make sure it is according to the contract. Each parties have to play their roles to minimize the delay of the construction completion. As a result, this research can be a guideline to the construction industry as a way to identify the factors of delays, effects of delays, and action to minimize delays in construction completion.

There are some gaps that can be identified for this research after concluding this study. Therefore, a recommendation was made to fill the gaps in this paper. Recommendations are generally needed to improve this topic as well as the paper for future uses, such as further studies or references. The population of the research was limited to the scope of the clients, consultants and contractors in Perak only. Future research may be undertaken in the different states of Malaysia. As a result, by broadening the scope of the studies, the results will be more interesting and more perceptual views can be gathered from the respondents. Lastly, the findings of this paper were based on the distribution of the questionnaire, which is a quantitative method by email and social media. The result of the findings can therefore be limited. For future research, it is recommended that the researcher use a mixing method that combine the qualitative and quantitative methods for further study.

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