Contractors' Approaches to Risk Management at the Construction Phase in Malaysia

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Abstract - **Often times, contractors failed to identify, plan, strategize, analyzed, execute, monitor, control and manage the risk involves during construction phase in Malaysia. Consequently, the contractor failed to complete the project on schedule, within client's budget and quality. The idea of introducing formal risk management among Malaysian contractors during construction phase is seem to be a proactive approach to achieve the project objectives. This paper intends to identify the application of formal risk management among the contractors during the construction phase in Malaysia. Questionnaires and interviews were used. It was found that although the risk management process in Malaysian construction industry has been introduced, most of them are not well structured and not being implemented in a formal manner. Therefore, it is suggested that these contractors should try to implement formal risk management and hope that the construction industry in Malaysia can enjoy the benefits and lead our industry effectively into the next stage of building the nation.**

Keywords : Risk Management, Contractors, Construction Phase, Malaysia

I. INTRODUCTION

Construction project is a massive and it involves a worldwide effort to build various types of structures and facilities. It is being initiated by a client and accomplished by assembling materials, parts, and systems into the major sub-sections of the structure and the finished structure itself then becomes part of the building which is necessary for the conduct of business life (Liebing, 2001). The construction phase is one of the stages in a construction project and has its own risk, which results in accumulative associated risk for the project. These risks include the occurrence of unexpected events such as natural disasters, unforeseen site conditions, material and equipment delivery delays and equipment breakdown. There are many parties involved in construction phase and a large number of disputes are likely to occur. However, all parties are looking for profit and each party aims to finish the job with maximum benefits and minimum risk (KLIUC News, 2007).

This article aims to identify the application of risk management and their consequences of the application of risk management during construction phase in Malaysia.

II. PROBLEM STATEMENT

Construction project in Malaysia involves high risk and the level of construction risk during construction phase is considered much higher than in other types of economic activities (Infrastructure and utility rating, 2003). From a credit perspective, the construction phase in Malaysia invariably poses the single largest risk (Infrastructure and utility rating, 2003).

Risks will lead to the failure of a contractor to complete on time which can lead to cash flow deficiencies and the project may be terminated. On the other hand, the contractor failed to plan, strategize, execute, monitor, control and taking into account of all factors and risks involved, in ensuring success of a project (Infrastructure and utility rating, 2003). Although the risk management process in construction industry in Malaysia has been introduced, most of them are not well structured and not being implemented in a formal manner (JICA, 2007). Moreover, the contractor has limited expertise to develop strategy to mitigate the risk. In Malaysia, there is still lack of knowledge about risk factors (Ninth Malaysia Plan, 2006-2020). Therefore, there are still high risks arise in Malaysian construction industry. There are several types of risk arise in Malaysia such as accidents, price fluctuation, inadequate materials and unfavorable weather condition.

According to Loosemore (2006), it is impossible in the construction project to have a zero risk. In other words, risk is inherently present in all construction projects. Quite often, construction projects fail to achieve their time, quality, and budget goals. A risk management is introduced to help contractors identify project risks and systematically to analyze and manage them. Therefore, a systematic risk management is needed in order to reduce the complexity and risk in construction (Al-Bahar, 1990). During the construction stage, applying the risk management principles will help the contractors to have better management over the potential risk that might occur and consequently enable to manage the risk effectively. According to Abdul Rashid

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(2002), the success of the project is to a large extent dependent upon the risk associated with the project being allocated efficiently among the parties involved.

Thus, a systematic risk management is needed in order to reduce its complexity in a construction project and to help in ensuring the construction projects are successfully completed on time and within budget (KLIUC News, 2007). According to Flanagan and Norman (1997), formal methods of risk management are risk identification, risk classification, risk analysis, risk attitude and risk response. Ali (2005) highlighted, among all methodologies, Risk Management Process (RMP) methodology provides a logically consistent framework for managing risk. However, Dikmen (2008) pointed that, Risk Management has a major weaknesses in terms of tools for risk rating process and unwillingness of people to enter information about reason of failure. In other words, risk management is essential to construction activities in minimizing losses and enhancing profitability (Akintoye and Macleod, 1997). Ignoring risks can lead to increase in costs and unsuccessful outcomes for projects. Risk Management is a planning tool that provides information in advance about what and when events can cause damage to the project outcomes. Risk Management practices will lead to more creative and efficient planning of projects and provides the following benefits to organizations (JKR, 2009). Therefore, it is hoped that, an active approach to the application of risk management will yield positive benefits to any project organization in Malaysia. Maintaining an active approach, through a continuing cycle of learning and improvement, should contribute much towards ensuring that these benefits are sustained over the long term of the organization.

III. METHODOLOGY AND ANALYSIS

This scope of study covers a survey on local contractors, CIDB G7 license, specifically confine within Kuala Lumpur. The sampling used for data collection is simple random sampling. The number of population is obtained from CIDB directory. The researcher only takes two hundred (200) contractors as the sample size.

A survey was carried out to determine the types of risk involve during construction phase in Malaysia, the application of risk management among the contractors in Malaysia and the consequences of applying risk management during construction phase in Malaysia. This was done through distribution of prepared questionnaires to contractor companies categorized as contractor PKK Class A license in accordance to the authority's requirements. In order to view the frequency distribution of the support of respondents for particular question clearly, the data obtained were transferred into percentages, bar chart and pie chart.

TABLE I. DIFFERENT POSITION IN FIRM

Respondent's position in firm	Respondents	
	No	%
Senior Manager	4	7
Deputy Senior Manager	1	2
Project Managers	5	8
Chief Executive Officer	1	2
Site Coordinators	2	3
Group Auditor	1	2
Project Engineers	2	3
Personnel and Admin manager	1	2
Project Directors	3	5
Business and development Managers	4	7
Managing directors	5	8
General Managers	3	5
Executive Directors	4	7
Technical Director	1	2
Contract and Planning Manager	1	2
Directors	3	5
Assistant Directors	2	3
Engineers	5	8
Quantity Surveyors	10	17
Architect	1	2
Total	59	100

Table 1 shows 59 respondents answering the questionnaire with different position in firm.

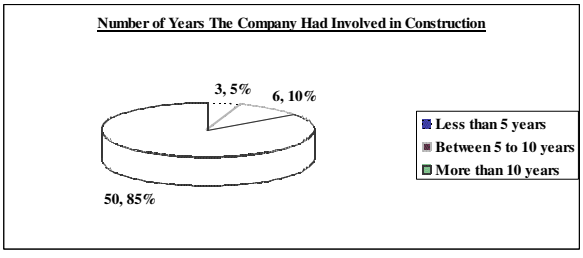

Figure 1.Number of years the company has involved in construction

Figure 1 shows the percentage of the number of years the construction company that had involved in the

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construction industry. From 59 respondents, 3 of them had involved in construction less than 5 years which is equal to 5 percent, 6 of them involved in construction between 5 to 10 years which is equal to 10 percent and 50 of them had involved more than 10 years in construction which is equal to 85 percent.

TABLE II. NATURE OF WORKS

Nature of works	Respondents	
	No	%
1. Civil work	45	76.3
2. Building work	42	71.2
3. Mechanical work	12	20.3
4. Electrical Work	15	25.4

The result shows that the nature of work for the construction company is more specialists in civil and building work. From 59 respondents, 45 construction company are involve in the civil work, 42 of them are involve in building work, 12 of them are involve in Mechanical and 15 of them are involve in Electrical work.

A. Identification the types of risk during construction phase in Malaysia

TABLE III. CONSIDERATION TOWARDS RISK

Consideration towards risk	Respondents	
	No	%
1. Yes	59	100
2. No	0	0
3. Not sure	0	0
Total	59	100

Table 3 shows that 59 respondents which are 100 percent of them consider risk when dealing with the project.

TABLE IV. TYPES OF RISK IN CONSTRUCTION PROJECT

Types of risk	Respondents	
	No	%
1. Force Majeure (flood, inclement weather, riot, etc.)	27	45.8
2. Financial (Cash flow, bank loan, price fluctuation, etc.)	51	86.4
3. Political (Regulation by government, permit and approval, etc.)	33	55.9
4. Social (Public Complaint, etc.)	27	45.8
5. Technical/Functional (Availability of material, equipment, labour, changes of design, etc.)	42	71.2

Table 4 shows the types of risk the companies normally encounter in construction project. Respondents answered more than one answer for this question. 86.4 percent faced financial risk, followed by technical risk which is 71.2 percent and political risk which is 55.9 percent. Social risk and force majeure both are 45.8 percent respectively.

TABLE V. HOW FREQUENT THE RISK IN CONSTRUCTION PROJECT

Types of Risk	Rare		Frequent		Very Frequent		Total	
	No	%	No	%	No	%	No	%
1. Force Majeure (flood, inclement weather, riot)	45	76.3	14	23.7	0	0	59	100
2. Financial (Cash Flow, Bank Loan, price fluctuation)	12	20.3	23	38.9	24	40.7	59	100
3. Political (Regulation by government, requirement for permit and approval)	39	66.1	20	33.9	0	0	59	100
4. Social (Public Complain etc)	32	54.2	15	25.4	12	20.3	59	100
5. Technical/ Functional (Availability of material, equipment or labour, changes of design etc.)	14	23.7	21	35.6	24	40.7	59	100

Table 5 shows how frequent the risks occur in the construction project. The most frequent risk is financial and technical risks which are 40.7 percent representing 24 respondents, followed by social risk 20.3 percent representing 12 respondents. Political and force majeure are 0 percent respectively.

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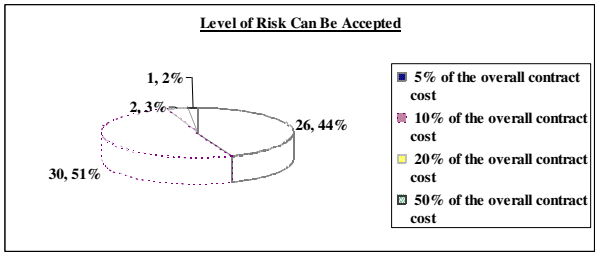

Figure 2: Level of risk can be accepted

Figure 2 shows the level of risk that can be accepted by the companies. The level of risk that can be accepted is categorized as 5%, 10%, 20% and 50% of the overall contract cost. The highest percentage is 51 percent representing 30 respondents, followed by 44 percent representing 26 respondents. Consequently, 3 percent representing 2 respondents, while 2 percent representing 1 respondent.

B. Identification the application of risk management among the contractors in Malaysia

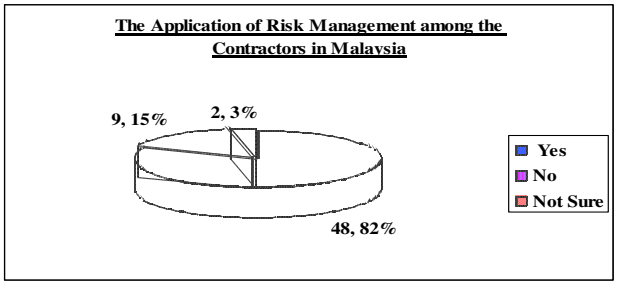

Figure 3: Application of risk management among the contractors in Malaysia

Figure 3 shows the percentage of the construction companies that apply risk management during construction phase. 82 percent which is equal to 48 respondents of the construction companies apply risk management in their organization. 15 percent which is equal to 9 respondents did not apply risk management, while 3 percent which is equal to 2 respondents are not sure whether they apply risk management or not.

TABLE VI. WHY THE ORGANISATION APPLY RISK MANAGEMENT

Reasons	Respondents	
	No	%
1. The policy of the company	33	55.9
2. The requirement of the client	21	35.6
3. Depends on the individual requirement	30	50.8

Table 6 shows why the organization applies risk management to identify risk faced by company on the previous or current project. The respondents can answer more than one for this question. 55.9 percent representing 33 respondents agreed, risk management is the policy of the company. 50.8 percent representing 30 respondents agreed it is depends on the individual requirement and 35.6 percent representing 21 respondents agreed it is based on the requirement of the client.

TABLE VII. METHOD ADOPTED TO IDENTIFY RISK

Application of Risk Identification	Respondents	
	No	%
1. Discussion/Brainstorming	54	91.52
2. Consult Specialist/Employed Analyst	33	55.9
3. Desk Research(Refer to available document, experience,etc.)	42	71.2

Table 7 shows the application of risk identification in the construction companies. The respondents can answer more than one for this question. Most of the construction companies apply risk identification through discussion and brainstorming which are 91.52 percent representing 54 respondents, followed by desk research 71.2 percent representing 42 respondents and consult specialist which is 55.9 percent representing 33 respondents.

TABLE VIII. HOW FREQUENT THE ORGANISATION ADOPTS COMPONENTS OF RISK MANAGEMENT

Risk Management components	Never		Seldom		Common		Total	
	No	%	No	%	No	%	No	%
Risk Identification	0	0	17	28.8	42	71.2	59	100
Risk Classification	9	15.3	14	23.7	36	61	59	100
Risk Analysis	0	0	17	28.8	42	71.2	59	100
Risk Attitude	21	35.6	17	28.8	21	35.6	59	100
Risk Response	14	23.7	30	50.8	15	25.4	59	100

Table 8 above shows how frequent the organization adopts the components of risk management system to their previous or current project. From the table above, it shows that risk identification, risk classification and risk analysis are commonly used. The highest percentage is risk identification and risk analysis which are 71.2 percent representing 42 respondents, followed by risk classification

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61 percent representing 36 respondents. However, risk attitude and risk response are seldom been used by the organization which shows 35.6 percent representing 21 respondents and 25.4 percent representing 15 respondents. Therefore, it shows that there

C. Consequences of the application of risk management during construction phase in Malaysia

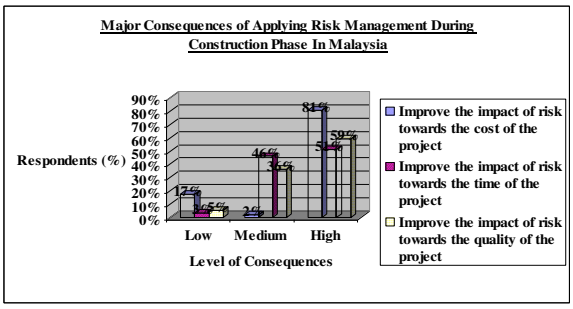

Figure 4: Major consequences of applying risk management during construction project

From Figure 4 above, the level of consequences are divided into three, which are improve the impact of risk towards the cost of the project, improve the impact of risk towards the time of the project and improve the impact of risk towards the quality of the project. Each level is divided into three categories which are low, medium and high. The highest category shows the percentage which is 81 percent representing 48 respondents for improvement in terms of cost, 59 percent representing 35 respondents in terms of quality and 51 percent representing 30 respondents in terms of time. Therefore, by applying risk management during construction phase in Malaysia, it can improve the impact of risk towards the cost, time and quality of the project.

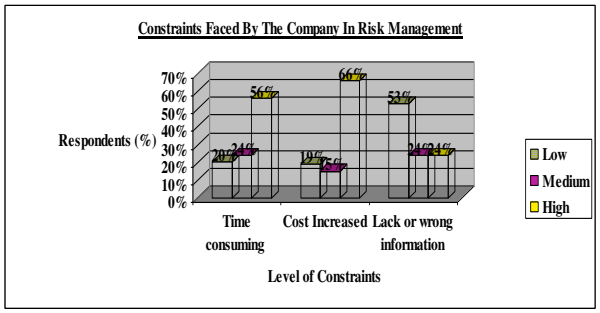

Figure 5: Constraints faced by the company in risk management

Figure 5 shows the types of constraints and the level of constraints faced by the company in the application of risk management. The highest constraints is cost increased which is 66 percent representing 39 respondents, followed by time consuming 56 percent representing 33 respondents. The lowest constraints are lack of information or wrong information given on the application of risk management which is 24 percent representing 14 respondents.

Conclusion

This article has discussed the overall findings of the research obtained from questionnaires. This chapter also explained the objectives of this research which are to identify the types of risk during construction phase, the application of risk management among the contractors and the consequences of application of risk management in terms of time, cost and quality. The survey shows that some of the formal risk management stages such as risk attitude and risk response are seldom been used by the respondents. The formal methods of risk management which are risk identification, risk classification, risk analysis, risk attitude and risk response have clearly proved that there is none exist in the local construction industry. The results present, not all component of the formal risk management process are being adopted. Although there is a sign of risk management process adoption in handling the risk, but it is rather unsystematically. The findings thus indicate the level of exposure in the implementation of formal risk management in local construction industry clearly illustrates that it is still very low. Hence, further research on the application of formal risk management in future is thought to be necessary.

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