

# RISK MANAGEMENT ON PROJECT SUCCESS IN MALAYSIAN CONSTRUCTION INDUSTRY

Jamaliah Mohamad Sopi<sup>1\*</sup>, Mohd Amin Abdul Majid<sup>2</sup>

<sup>1</sup>*Civil Engineering Department,*

<sup>2</sup>*Department of Students' Affair,*

*Politeknik Kota Bharu, 16450 Ketereh, Kelantan.*

*jamaliahsopi@pkb.edu.my<sup>1</sup>, mohdamin@pkb.edu.my<sup>2</sup>*

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## Abstract

Risk management has always been a topic of discussion in the construction business. As a result, this study looked into the level of risk management in Kuala Lumpur for Malaysian construction industry in order to improve the industry's risk management implementation. To address these difficulties, this study employs a statistical package for the social sciences (SPSS) approach to validate construction risk management (RM) as a construct from the perspective of Malaysia's registered Grade-7 (G-7) contractors. Due to the nature of its activities, the construction business is seen as the sectors that is highly impacted because of several factors which is the environment, dynamic, challenging, and risky organisation. The G-7 Contractors with more complicated operations RM is more likely to be implemented in turbulent earnings of their business operations. A structured questionnaire was used to collect data from G-7 contractors using a cross-sectional survey and proportionate stratified random sampling techniques. In terms of methodology, this study may be the first to measure the level of risk management in Kuala Lumpur for Malaysian construction industry. Using the Likert scale of risk from previous studies, statistical analysis affirmed that the overall level of risk management among Malaysian construction industries in Kuala Lumpur is at the high level.

**Keywords:** Construction risk management, contractors, construction, success.

## INTRODUCTION

A risk management plan is a method for detecting risks that corporations and organisations use to better their operations. Threats are recognised, assessed, addressed, and monitored on a regular basis in risk management, which is a cyclical process. Because it allows the upgrading and revision of assessments, this technique will result in new advancements in organisations and corporations. This allows you to update and analyse assessments as new information becomes available, and then take action to protect the business, its employees, and its assets. The purpose of strategy risk management is to maximise the possibility and impact of positive events while reducing the likelihood and impact of bad events on the project. Delays, cost overruns, and a drop in project quality are all possible outcomes. The goal of strategy risk management is to increase the likelihood and impact of positive events on the project while minimising the likelihood and impact of negative events. Delays, cost overruns, and a decline in project quality are all common negative risks in construction projects, according to Abdul-Rahman, Wang, and Sheik Mohamad (2015). The risk reduction plan from Malaysia's construction industry (Abdul-Rahman et al., 2015). The goal of strategy risk management is to increase the likelihood and impact of positive events

on the project while minimising the likelihood and impact of negative events. Delays, cost overruns, and a decline in project quality are all common negative risks in construction projects, according to Abdul-Rahman, Wang, and Sheik Mohamad (2015). The risk reduction plan is critical for keeping the project on track, which entails identifying potential risks (Ahmed, 2017). SMEs find it challenging to conduct proper risk management due to resource restrictions (Jarillo, 1989; De Arajo Lima et al., 2020; Mitter et al., 2020; Verbano and Venturini, 2013). The risk mitigation strategy is crucial in keeping the project on schedule, which necessitates the identification of potential risks (Ahmed, 2017). Due to limited resources, SMEs find it difficult to implement adequate risk management (Jarillo, 1989; De Arajo Lima et al., 2020; Mitter et al., 2020; Verbano and Venturini, 2013). Abdul-Rahman et al. (2015) discovered that risk management implementation is still at a low maturity level in the Malaysian construction industry by examining four case studies. The majority of these construction workers involved in risk management, but they lack the knowledge and skills necessary to apply risk management strategies in building projects. This value concept is grounded to the construction project environment and in line with asset and project management and procurement strategy implementation, as proposed by Male (2006) and taught in the Master Science Engineering lecture (MSE ICME, 2009). The concept's value variables represent standard project objectives for construction projects, such as quality, time, and money, as well as new value criteria such as functionality and risk management.

### **Objective**

This research attempts to examine the success of risk management strategy by identifying the level of risk management in construction.

### **Research questions:**

1. What are examples of risk management strategy?
2. Why is risk management important to project success?

### **Research problem:**

Risk management is still a relatively new idea in the Malaysian construction business, with only a few enterprises practising it. According to Hamimah et al., Malaysia's sector has a dismal reputation for risk management. Risk management has never been more critical than it is right now. Because of the increasing pace of globalisation, the risks that modern firms face have become more complicated. New hazards emerge on a regular basis, many of which are tied to and caused by the now-ubiquitous usage of digital technology. The coronavirus pandemic, a recent external risk that showed itself as a supply chain issue at many firms, affecting staff health and safety, business processes, consumer interactions, and corporate reputations swiftly become an existential threat. Businesses quickly adjusted their strategies in response to the pandemic's threats. However, they will have to deal with new hazards in the future, such as how to deal with them. Risk management is a relatively new concept in the Malaysian construction industry, with only a few companies employing it. The tools used by academics and industry practitioners are alike. Malaysia's sector, according to Hamimah et al., has a poor reputation for risk management. Checklists and

brainstorming are two approaches for recognising hazard in the risk management process. New risks emerge on a daily basis, many of which are linked to and exacerbated by the now ubiquitous use of digital technology. However, they will have to deal with new dangers in the future, such as how or if to bring employees back to work and what should be done to make their supply networks less sensitive to crises. Companies and their boards of directors are re-evaluating their risk management plans as the globe continues to cope with COVID-19. They're re-evaluating their risk exposure and looking into risk management practises. Companies that already employ a reactive risk management approach, guarding against past hazards and altering policies when a new risk causes harm, are exploring the competitive advantages of a more proactive approach. Support for sustainability, resiliency, and enterprise agility is becoming increasingly popular. Companies are also looking into how artificial intelligence and advanced governance, risk, and compliance (GRC) tools may help them better manage risk.

## LITERATURE REVIEW

The risk can also be categorised according to its specific nature, origin, and features, as well as the degree to which it is dependent on or linked to other hazards. Below is list of possible classification. Internal and external risks, speculative and static hazards, and risk interdependency are all factors to consider. It is crucial to recognise that these groupings aren't mutually exclusive. A speculative risk might occur at strategic and operational levels. Due to risk interdependency with another risk, an unexpected risk may occur. It's critical to understand that these categories aren't mutually exclusive. A speculative risk might occur at both strategic and operational levels. An unanticipated risk arises as a result of a risk's interdependency with another risk.

### **Strategic Risk**

Strategic risk is a type of risk that affects how a company's strategy is conceived and implemented at the corporate level. One risk is that the first strategy is established based on a poor forecast of future market developments. When developing a strategy, an organisation considers existing market conditions. The paper then goes on to forecast a variety of market changes that will occur over time. As an example, a company that manufactures personal computers (PCs) may determine as part of its strategy to create and introduce higher and faster operating speeds. The company will most likely do a market analysis and conclude that market research indicates that the need for faster computers will continue to be high. The strategic plan might be incorrect like the strategy may not accurately reflect the organisation's true goals. Risk monitoring and control outputs can serve as lessons for future decision-makers, and risk management paperwork is regularly reviewed and updated. The effectiveness of risk response is evaluated on a regular basis during the project in order to correct any flaws in the adopted strategy and realign it with the project objectives. Feedback is requested in order to review the treatment plan. It has the ability to loop back on itself.

### **A systematic approach to risk management for construction**

Construction is one of the most dynamic, risky, and difficult industries to work in. However, the industry has a bad reputation for risk management, with many significant projects missing deadlines and exceeding budgets. Variations in weather, labour and plant productivity, and material quality have a big impact on this. Risks are frequently overlooked or dealt with haphazardly, for as by adding a 10% contingency to a project's estimated cost. In a complicated industry like construction, this method is frequently insufficient, resulting in costly delays, litigation, and even bankruptcy (Hayes et al., 1986). Risk management is an integral aspect of any construction company's decision-making process. Uncertainty and risk can be dangerous. All construction organisations' decision-making processes include risk management. Some building projects may be harmed by risk and uncertainty. Regardless of industry, the speed with which risks can be identified and managed will influence how well businesses and institutions recover and rebuild, necessitating a reconsideration of risk management practises.

### **What is risk management strategy?**

Risk management strategy is a structured approach to addressing risks and can be used in companies of all sizes and across any industry. Risk management is best understood not as a series of steps, but as a cyclical process in which new and ongoing risks are continually identified, assessed, managed, and monitored. This provides a way to update and review assessments as new developments occur and then to take steps to protect the organisation, people, and assets.

### **Identifying risks**

Risk identification can result from passively stumbling across vulnerabilities or through implemented tools and control processes that raise red flags when there are potential identified risks. Being more proactive rather than reactive is always the best approach to reduce risk points.

### **Assessing risks**

Once potential risks have been identified, each risk should be assessed to determine the likelihood of it becoming a concern, its level of severity, and the probable impact — this helps audit teams prioritize each risk. Whether your audit team is conducting a risk assessment for Sarbanes Oxley (SOX) or focusing on other types of risks, your assessments should be systematic, documented, and, depending on your business, reviewed at least annually. How often risk assessments are completed will differ, depending on the size and complexity of each business.

### **Responding to risks**

After assessing risks, the next part of the process involves developing and implementing treatments and controls, enabling the organisation to address risks appropriately and effectively deal with each risk in a timely manner.

**Monitoring risks**

Risk monitoring is the ongoing process of managing risk by tracking risk management execution and continuing to identify and manage new risks. Monitoring risks enables prompt action if the likelihood, severity or potential impact of a risk exceeds acceptable levels.

**Why is having risk management strategy important?**

Project and operational risks are common to most businesses but having risk management processes and strategies are essential in identifying company's strengths, weaknesses, opportunities, and threats (SWOT) also known as conducting a SWOT analysis. There are many other benefits to effectively managing risks.

**1. Operational effectiveness and business continuity**

No matter how well prepared a business is, operational risks can surface at any time and from sources that is aware of the past. Risks can take the form of a new cybersecurity threat, a supplier or service provider that's no longer able to service a company, or an equipment failure. With all the moving parts both in a company and outside of it that have an impact, having an established risk management process and a strategy in place that allows to ensure internal controls to prevent fraud are in place to deal with other types of risk as they arise.

**2. Protection of company's assets**

Whether it's physical equipment, supplies, or information, protecting company's assets is imperative. A recent report by IBM shows that over 8.5 billion records were compromised in data breaches between April 2019 and 2020 with the average cost of a mega-sized data breach being \$3.86 million US. In one-year period ending April 2020, 80 percent of thefts were customer-related personally identifiable information establishing a solid and actionable risk management strategy imperative from a business insurance perspective.

**3. Customer satisfaction and loyalty**

The company's logo, brand, digital presence, and reputation is also an asset and customers take comfort in seeing and interacting with them daily. When business has a well-thought-out and developed risk management plan and acts on it, customers can maintain a sense of security and confidence on the reputation and brand. The risk strategies and processes help the company to protect their brand and reputation by safeguarding assets. It also ensures that customers can maintain faith in their ability to be there and deliver the products and services to which they have committed. The result is a higher degree of customer satisfaction and loyalty.

**4. Realizing benefits and achieving goals**

A significant part of finishing projects on time and achieving the intended goals relies on how effectively risks are managed. Risk management identification, assessment, and management practices expose vulnerabilities faster and allow company to remove projects and activities that simply don't produce a return on investment. This increases the chance of

achieving expected project portfolio and wider business performance and reaping the anticipated benefits.

## **5. Increased profitability**

The bottom line for most businesses is remaining profitable. Often when something like a breach occurs, there is a substantial financial impact — and it usually involves tedious hours working with legal and insurance teams to conduct lengthy investigations. Managing market, credit, operational, reputational, and other risks is vital to keep company's bottom line.

### **What are 4 examples of common risk responses?**

Managing risks can involve applying different risk responses to deal with varying types of risk. Not every risk will warrant the same response. You've likely heard the adage, "Avoidance is not a strategy." Well, believe it or not, when it comes to risk management strategies, avoidance is a common risk response along with reducing, accepting, and transferring. Here's what you need to know about each risk response and when they might work best.

#### **1. Avoiding risk**

Avoidance is an option that works to remove the chance of a risk becoming a reality or posing a threat altogether. If a product isn't working well but doesn't present any potential risk to the health or safety of employees or the company, then avoiding the risk may be the best option. One example may be avoiding the use of a piece of faulty equipment but only if it is not needed and it doesn't impact performance, productivity, or safety. Avoidance shouldn't necessarily be used with frequency or for longer-term threats. Eventually, this response should be re-evaluated to find other sustainable risk responses that address underlying issues.

#### **2. Accepting risks**

Sometimes avoidance is not an appropriate response, and acceptance may be the better practice. When a risk is unlikely to occur or if the impact is minimal, then accepting the risk might be the best response. Timing also plays a role it could be that a risk doesn't pose any imminent concern, or it won't impact your company's strategic outlook. One example might be a change to vendor pricing or delivery down the road. It's important to keep re-evaluating these types of risks periodically: their impact on company and its projects could change.

#### **3. Mitigating risks**

Mitigating risks is the most commonly discussed risk response however, it isn't always practical or possible. It may be the best option if a risk poses a real threat or problem, and avoidance or acceptance won't suffice. If a risk creates a negative impact and one that could be costly to your company, employees, vendors, or customers, then that risk should be mitigated. This means identifying the risk, assessing all possible solutions, devising a plan, taking action, and monitoring the results.

**4. Transferring risks**

There will be times when challenges or issues arise and the company’s team may not be able to avoid, accept, or mitigate them. One example may be a lack of expertise or training required to address the risks. In this case, it may be a good idea to outsource or transfer the risk to another party sometimes in-house, while other times it might warrant help from an external third or fourth party.

**Who is responsible for developing risk management strategy?**

Determining who will be the best person or function to identify, assess, and develop a risk management strategy won’t necessarily be the same each time, it will depend on the scope, nature, company structure, complexity, resource availability, and team capabilities. So, who is responsible for developing a risk management strategy? It might be the responsibility of a risk management committee member, an audit team member, a project manager, a risk specialist, or someone else – like an external consultant. When deciding which direction to go, other things to consider include drivers and benefits behind developing a risk management strategy. The end-to-end process, from initiation to completion.

Risk avoidance	Project success
<ul style="list-style-type: none"> <li>- Elimination of hazards, activities and exposures</li> <li>- Minimize vulnerabilities</li> <li>- Training and education</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of work</li> <li>- Being as per the schedule</li> <li>- Being within budget</li> <li>- Team satisfaction</li> </ul>

Figure 1 : Conceptual framework of Project success

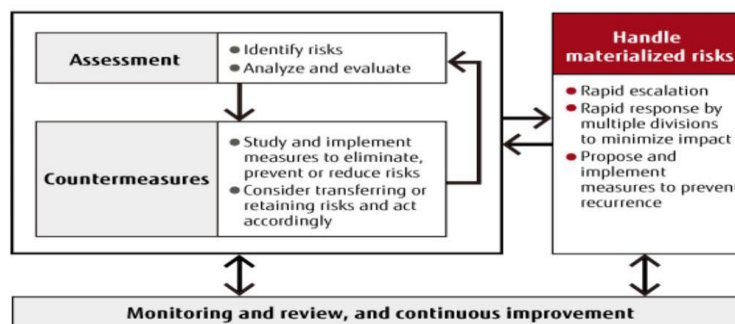


Figure 2 : Conceptual framework risk management countermeasure

**Privacy**

**Third-party risk management**

The objective of project risk management is to increase the likelihood and impact of positive events and decrease the likelihood and impact of negative events on the project. Abdul-Rahman, Wang and Sheik Mohamad (2015) indicate that delays, cost overruns, and reduction of quality of projects are the common negative effects of risk inherent to construction projects. The risk mitigation strategy plays a vital role to keep the project on track for which identification of potential risks is a must (Ahmed, 2017). Failure to

accomplish project goals will harm the company's financial performance, operations, culture, and reputation (Abdul-Rahman et al., 2015). Understanding the controllability of present project issues is essential for the project practitioner to plan the activities needed to manage and control these project issues in the future. Risk can affect productivity, performance, quality, and the budget of a project. Risk cannot be eliminated, but it can be minimised, transferred or retained (Burchett, 1999). The top ten risks identified are unavailability of funds, design errors and poor engineering, poor site management & supervision, contractual risks, laws and regulations changes, severe environmental conditions, change in the inflation rate, natural disaster, inadequate safety measures, change in project scope. In business, risk management is defined as the process of identifying, monitoring and managing potential risks in order to minimize the negative impact they may have on an organisation. Examples of potential risks include security breaches, data loss, cyberattacks, system failures and natural disasters. One approach for this is provided by separating financial risk into four broad categories: market risk, credit risk, liquidity risk, and operational risk. There are five risk management strategies basic methods for risk management avoidance, retention, sharing, transferring, and loss prevention and reduction that can apply to all facets of an individual's life and can pay off in the long run.

## METHODOLOGY

Five methods and how they can apply to the management of health risks, communication, top management, project mission, personnel, and project schedule or project plan on project success. This study has five hypotheses based on the literature review to investigate the relationship between the variables.



Figure 3: Conceptual framework (Adapted by author)

## Sample and population

The population of this research is represented by managers and employees of construction companies registered with CIDB (Construction Industry Development Board) in Kuala Lumpur, Malaysia. Simple random sampling has been used by the researchers to efficiently apply to all employees and managers from the construction. Researchers then used the computer to select the necessary respondents from the whole construction sector list and the questionnaire distributed to the chosen sector in order to collect the data on the factors that may affect project success. The sample size, using simple random sample calculator, was

determined according to Peduzzi et al., (1996). They stated that the sample size approximately should have ten cases per variable to be reasonably stable which has been used to calculate the number of respondents in the current study:

Variables \* 10 =  $n$  in which the sample size would be 50 considering of having 6 variables in this current study. The sample size of this study is fifty respondents, determining using at least 30 as a sample size, this study includes additional cases to achieve the statistical conditions.

### Data collection and analysis techniques

Sekaran (2003, 2006) highlights that, questionnaires are the most commonly used technique of data Collection in social science research which has been used in this research due to its suitability in data collection. In the current study, personal administration of the questionnaires is carried out. Data is obtained from managers and employees working in construction companies registered with CIDB in Kuala Lumpur, Malaysia. The study involves guidelines on the cover page to explain how to complete the survey and to ensure the anonymity of the participants. Most respondents completed the questionnaire with the presence of researcher immediately after they listened to the explanations and instructions which was the purposes of filling the questionnaire to reduce the rejection of the respondents. Fifty questionnaires were distributed to the managers and the employees. Since the response rate was quite high and had met the requirements for data analysis, therefore, there was no need for additional respondents to be chosen. The collected data entered into the Statistical Package for Social Sciences (SPSS). The descriptive analysis has been used to describe the characteristics of the sample and multiple regression analyses have been used to test the hypotheses as appropriate. A summary of respondents' background is illustrated in Table 1.

Table 1: Respondents' background

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Role in the company</b>		
Risk Officer	5	10
Executive	5	10
Architect	5	10
Project manager	28	56
Engineer	2	4
Quantity surveyor	5	10
<b>Working experience (Years)</b>		
Less 10 years working experiences	3	0.7
More 10 years working experiences	55	8.7
<b>Gender</b>		
Man	26	52
Woman	24	48

### Finding and analysis

A correlation test is generally utilized for inferential statistics. In the present study, the Pearson correlation is utilized measuring the linear bivariate significance among dependent and independent variables to assist the study's objectives (Sekaran, 2006). Correlation is a bivariate association metric that indicates the strength of the connection between two variables varying from 0 (random relationship) to 1 (perfect linear relationship) or -1 (perfect negative linear relationship). Generally, it is reported according to its square ( $r^2$ ) and interpreted as the percentage of variance explanation (Hair et al., 2006). Rapid change seems to be the order of the day, as the speed and complexity of business continue to increase. Technological advances such as cloud computing, mobile devices and social media continue to take hold. Regulatory demands continue to expand. Workforce dynamics continue to evolve. These and numerous other trends spawn new risks, altering risk profiles and exposing business models to disruptive change. Because of this dynamic environment, enterprise risk management should provide the discipline to ensure a fresh look at the organisation's risk management capabilities from time to time.

Table 2: Score for risk within the management

Management risk	Frequency	Percentage	Mean
Very low	-	-	-
Low	-	-	-
Medium	-	-	-
High	50	100	4.0805
Very high	-	-	-

Table 2 explains the frequency and percentage score for risk within the management point of view of construction industries. The score with the highest frequency (50) and percentage (100%) is high.

Findings show Project success's significant positive correlations (0.797) with success. In addition, it also presents Personnel's significant correlation with a high value of (0.622), Project mission's significant correlation with a value of (0.606) and Project schedule or Project plan's significant positive correlation of (0.005). Nevertheless, top management support signifies more correlation with Project success with a value of 0.875. Linear regression analysis was conducted to find out whether the five studied independent variables impact project success in construction industry in Malaysian context and the outcome of this analysis determined the acceptance or rejection of pre-defined hypothesis. Linear regressions are conducted in the determination of the impact of communication, top management, project mission, personnel, and project schedule or project plan.

### CONCLUSION

In discussions of risk management, many experts note that at companies that are heavily regulated and whose business is risk, managing risk is a formal function. Banks and insurance companies, for example, have long had greater risk departments typically headed by a chief risk officer (CRO), a title still relatively uncommon outside of the financial

industry. Moreover, the risks that financial services companies face tend to be rooted in numbers and therefore can be quantified and effectively analysed using known technology and mature methods. Risk scenarios in finance companies can be modelled with some precision. For G7 Contractors, risk tends to be more qualitative and therefore harder to manage, increasing the need for a deliberate, thorough and consistent approach to risk management, the level of risk management. This research lays the groundwork for future researchers interested in this industry to dig further into the relationship between the components in this study and to broaden the scope of the investigation, such as sample size and population, to improve generalisation. As a result, this study provides a theoretical framework for understanding construction risk management.

The uncertainty can be done through insurance, the main function is to a counterpart risk through transferring or shifting risk from one individual to a group of individuals. However, the construction industry has an important part to play in the competitive delivery of goods and services, it is full of many known and unknown risk occurrence due to various source of uncertainty, which includes the performance of construction parties, resources availability, environmental conditions, the involvement of other parties, and contractual relations. Postulated that a contractor can prevent the risk of been financially crippled by substituting a small definite cost, i.e., the premium for the variability of construction.

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