



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

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Section
Course Code

Master
(PMG510)

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Project Risk Management

Instructor's Name:
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Project:

Risk Identification and Analysis (Based on the project you chose in APM)

The objective of this report is to identify project risks, prepare a risk probability matrix, and carry out an analysis of selected risks. Referring to the project you select in **Advanced projects management APM course**, your task is to prepare a risk management plan that identifies potential risks in **each stage of the project** and identify risk management strategies.

From the course content and readings, you know that the overall purpose of risk planning is to anticipate possible risk events and be ready to take appropriate action when risk events occur—to eliminate or reduce negative impacts on the project.

You may wish to begin this exercise with a brainstorming about potential risks to get candidate risks “on the table” for consideration. And then identify and refine that wording for risks that have some realistic chance of occurring in this project. For example, potential weather problems present a real obstacle to completing field data collection by the planned completion date. It is also an issue that the project manager will ultimately have to plan for, as opposed to other issues such as a major disaster (e.g., your office burning down), is not a high-enough probability event that requires much time in planning. As described below, you will select several of the identified risks and carry out a risk analysis.

You will use the distilled list of risks to make a risk probability/impact matrix. The matrix will have at least three categories (high/medium/low) for probability and impact.

Remember that it is important to name risks effectively—use words that describe the risk event and point to the impact on the project (e.g., “injury of field technician disrupts data installation work”).

After completion of the risk matrix, document a risk analysis for the selected risks. This detailed documentation for that selected risk will include:

- a description of the risk and potential impacts (schedule, quality of work, cost, etc.) on the project.
- indicators or triggers that would be monitored to help identify the risk as early as possible.
- specific risk response strategies to take.

Using probability and impact matrix calculate the Expected Monetary Value (EMV) for all risks that have the impact in terms of cost \$\$.

Best of luck...

Risk Identification and Analysis (Based on the project I have chosen in APM)

Project Title / Build a private residence villa

Abstract:

Building a house is an obsession for many citizens and owning a home is considered an urgent need, although the state provides several facilities, there is still a shortage of land near the urban area that provides very few services, in exchange for high prices, building materials and labor wages, which represent A burden on everyone who wants to build a home.

The research aims to show the skills of the professional project manager on how to use the risk management process is an effective tool for planning and controlling cost, time and achieving the technical performance of a building construction project. Construction projects often face a lot of uncertainties, which places building construction projects at the risk of cost, time overruns as well as poor quality delivery. Considering the limited resources, there is need to complete building projects on-time, on-budget, and to meet optimal quality hence, risk management is an important part of the decision-making process in construction industry as it determines the success or failure of construction projects.

Introduction:

Risk management is the process of identifying, assessing and controlling threats to an organization's capital and earnings. These threats, or risks, could stem from a wide variety of sources, including financial uncertainty, legal liabilities, strategic management errors, accidents and natural disasters. Risk management is one of the most important vital problems that affect the project's progress effectively, so we must know it scientifically because the increase in risk within any project turns into a problem, and these risks can be codified by studying the types of these risks and determining them more precisely.

A method that can be practiced to avoid losses as much as possible, due to the possibility of continuing the work. It is also found within building and construction projects to address the results of the remaining risks within the project.

Risks that some are likely to occur during the various stages of the project, and it includes preventing potential problems from occurring, correcting actual problems if they do occur and reducing them, and developing an action plan to avoid or reduce the impact of these risks.

Risk management is the way to identify all future challenges that may positively or negatively affect the progress of the project.

Negative risks are the most dangerous that may stop or delay the project for various reasons depending on the type. Therefore, it must be defined and the degree of its possibility of occurrence, and the degree of its impact on the project, and then determining the mechanism of dealing with it when it occurs, either by circumventing it, accepting it, or mitigating its effects.

As for the positive risks, it is an assistant factor for the project manager, for example the decrease in the prices of some materials, as measured by the market performance for a period of time or during the period similar to previous years, which may help him to save some sums and expenses and use them elsewhere in the project.

Literature Review:

According to Nicholas and Steyn (2011: 363), risk is a factor of the 'likelihood' of setbacks and the 'impact' unique to a project. These can only be minimised by an ascribed process of RM (Nicholas & Steyn, 2011: 363; Roberts, 2013: 110). Risk has a direct impact on time, which mostly contributes to cost overruns (Afshari, Khosravi, Ghorbanali, Borzabadi & Valipour, 2010: 42; Assaf & AL-Hejji, 2006: 349-350). Risk effects on the project parameters of time, cost, quality, and scope have been called a 'quadruple constraint' (Schwalbe, 2011: 9). In PM literature, it becomes apparent that several risks with different impacts emerged at various phases of a project. Common risks in the construction industry pertain to quality, personnel, costs, deadline, strategic decisions' risks, as well as environmental, technical, scheduling, contractual, financial, and management matters (Schieg, 2006: 151). These risks are internal to a project. Schieg (2006: 79) identifies external risks as those related to natural occurrences, political changes, societal changes, market and sectoral trends' shifts, legal developments, and technological changes. Moreover, these risks are termed using the acronym, PESTLE, i.e. Political, Economic, Sociocultural, Technological, Legal, and Environmental issues (Forbes, Smith & Horner, 2007: 736).

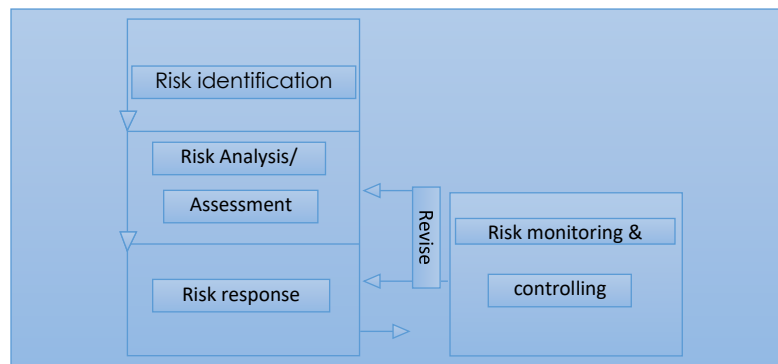


Figure No. 1: Risk management process

As indicated in Figure 1, risk identification is the first step in RMP. When a risk is known, the next step is to investigate it in terms of its likelihood of occurrence and impact. Thus, the second step is required in order to analyze the risk value (Schieg, 2006: 79). The analysis could be done through either qualitative or quantitative systems. According to

Schwalbe (2011: 438-442) and Ke, Wang and Chan (2012: 678), qualitative risk analysis involves a probability-impact (P-I) matrix, risk consequence rating (RCR), and Monte Carlo analysis. Quantitative techniques include decision trees analysis, expected monetary value (EMV), risk premium, simulation, and sensitivity analysis (Taroun et al., 2011: 87; Schwalbe, 2011: 428-442).

Methodology:

According to Leedy and Ormrod (2010: 136-137), qualitative strategies can help the researcher gain new insights into the phenomenon, develop new theories about the phenomenon, and discover the challenges within the phenomenon under investigation. Yin (2011: 6-8) points out that qualitative research represents the views and perspectives of people while offering an attractive and fruitful means of conducting research. The case study research design was adopted so as to obtain data from lived experiences of project actors to uncover Risk Management practices.

At the beginning of any project, any risks that may affect the project must be identified and determine the impact on the project from the top, medium and low and plans to avoid these risks, especially those of the highest rank, because they may affect the time and cost of the project. All the main risks should be summarized and the following is the methodology for identification the risks facing the project:

- Holding Brainstorming workshops with forming specialized teams so that valuable inputs can be obtained to identifying the risks related to the project.
- Determine the risk categories related to the project, which are the categories that are classified in a standardized way, codified into a complete risk matrix that typically contains most of the risks facing projects.
- Determine the impact of each risk.
- Estimating the likelihood of each risk occurring.

The following is a method for determining the probability of occurrence of risks:

- Checking any similar project and trying to identify the risks that faced this project.

- If there is no information about similar projects, then the best available estimates should be used, which are deduced from the experience of the relevant parties or members of the project.

For the purposes of this research, the P-I method, was used, because it presents stakeholders' views that are essential for prioritizing project risks qualitatively (Nicholas & Steyn, 2011: 370).

Identification of some risks:

S/N	Risk	Description	Impact if occurs	Sequences
A	Unavailability of materials	The possibility that the raw materials are not available or are imported from abroad and thus their entry to the site will be delayed The possibility of a lack of funds	It caused a lot of disruption as a result Delays in the supply or difference in the quality of supplies or difference in the quantities of raw materials	• Failure to adhere to the schedule • Increase the cost
B	Issue the permit	Failure to obtain permits or delay in Issuing permits before starting the project. - The possibility that the required approval has been delayed or not obtained, or that even if it is obtained it will not be implemented. Under it, except at a cost much higher than the original cost expected under the project plans	The difficulty of not obtaining these permits in the right time causes delay in the start-up time of the project. It negatively affects the project schedule and the delay in the entire project.	• Failure to adhere to the schedule • Increase the cost

C	The absence of a main contractor for the project	Lead to the emergence of the problem of lack of coordination between Contractors to the fragmentation of responsibility and the difficulty of accountability	It led to a lot of Disagreements on all parties. The project timeline could not be met and was delayed	• Failure to adhere to the schedule • Increasing the cost
D	Environmental risks resulting from changing temperature and humidity	Weather fluctuations are not taken in schedule	It led to the disruption of work on the site and the delay of the project	• Failure to adhere to the schedule • Increasing the cost

E	Risks involved By design	Insufficient site or work studies have been done The design is not Integrated	Potential mismatch The design that is done by the designer with Specifications and outputs .The project	• Increase the cost
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Table No. 1: Identification of some risks

The qualitative probability-impact (P-I) Risk analysis matrix:

The P-I risk analysis model combines both qualitative and quantitative data (Nicholas & Steyn, 2011: 370; Taroun et al., 2011: 90). As an illustration, Table No. 2 demonstrates a simple 5x5 qualitative risk method where $P \times I =$ Priority Risk Factor (RPF). The green category where $PI=0.1$ to 0.6 , risks require hardly any attention; yellow category where $PI=0.4$ to 1.0 , risks require slightly more attention; the amber category requires a right amount of attention, while the red category requires maximum risk attention (2.5-4.5 RPFs).

S/N	Risk	Likelihood					Impact					P*I	Mitigation Procedure
		1	2	3	4	5	0.1	0.3	0.5	0.7	0.9		
A	Unavailability of materials			3					0.9			2.7	It must be ensured that raw materials are available and that raw materials are imported in sufficient time and are supplied at the site in order not to The effect of this on the time of the project Contracts of - supplies to fulfill all project requirements, such as contracts based on direct supply in exchange for immediate payment

B	Issue the permit	2	0.9	1.8	The project stopped to obtain the required permits. - Obtaining all approvals before the date of concluding the project contract if this is permissible according to the applicable laws and regulations, if it is practically possible
C	The absence of a main contractor for the project	2	0.7	1.4	Speed in appointing a specialized prime contractor
D	Environmental risks resulting from changing temperature and humidity	3	0.5	1.5	Timetables for required actions can be updated (monthly or weekly)

E	Risks involved By design	2	0.5	1.0	Preparing clear design specifications and drawings for the project outputs. Setting responsibilities Consultation with the owner And informing him of the course of things (but it must not be The owner's perusal and review will lead to the provision of input to specifications or design modifications(. Hiring the services of an independent consultant Appointing him to settle disputes in an expeditious and effective manner
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Impact Scores		Likelihood				
		1	2	3	4	5
		Rare	unlikely	possible	Likely	Almost certain
0.9	Very High	4.5	3.6	A 2.7	B 1.8	0.9
0.7	High	3.5	2.8	2.1	C 1.4	0.7
0.5	Moderate	2.5	2.0	D 1.5	E 1.0	0.5
0.3	Low	1.5	1.2	0.9	0.6	0.3
0.1	Very low	0.5	0.4	0.3	0.2	0.1

Table No. 2: P-I qualitative risk analysis matrix

Expected monetary value (EMV):

Expected Monetary Value (EMV) is a statistical technique in risk management used to quantify risks and calculate the contingency reserve. It calculates the average outcome of all future events that may or may not happen. Expected Monetary Value (EMV) = Probability * Impact as a following:

Risk	P Risk probability	I Cost impact (SR)	P*I Risk contingency (SR)
A	0.27	15000	4050
B	0.18	5000	900
C	0.14	60000	8400
D	0.15	25000	3750
E	0.10	30000	3000
Total		SR 135000	SR 19200

Table No. 3: Expected monetary value (EMV)

Results and Discussion:

The results of this research present some of the problems facing public sector projects in relation to construction risks. This research provided insight into the impacts of risks on projects and increased the likelihood of their occurrence and impact in the construction phase. The results verify the reported shortfall in modern practices because the risks examined remain high with projects failing to adhere to schedule and the cost will increase.

According to the results of building construction projects. Often experiencing a lot of uncertainties, such as cost risk, time overrun, as well as poor delivery quality, the areas of the project most affected were time, cost, integration, quality and procurement management. These results reflect the lack of the required RM skills. Therefore, recommendations should target improved RM education and training that could influence practice. This could be accomplished through adequate training of professionals at the business and operational levels of construction management. The use of accredited institutions could be an immediate means of improving the practice of Risk Management. Regular RM workshops should be encouraged in the industry.

Finally, Regarding to **Table No. 3**: The expected monetary value concepts work well to calculate the contingency reserve when you have many risks, because the more risks you identify, the spread of the contingency reserve will be better among risks. So, you will need **19,200 Saudi Riyals** to cover all identified risks in the table No.3.

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