



Everyone's Smart University

Project (Spring 2021)

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Section

Master

Date

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Course Code

(PMG510)

Project Risk Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-20 في تمام الساعة ٩ مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
- يتم تسليم المشروع في صيغة ملف . pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion ، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
- يجب الالتزام بـ Theme موحد كما يلي:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر 1.5 line spacing
- عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: Eng. Mosaab M. Hamed

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...

المشروع:

التعرف على المخاطر وتحليلها (بحث مبني على مشروعك الذي اخترته في مادة ادارة المشاريع المتقدمة)

الغرض من هذا التقرير هو التعرف على المخاطر المحيطة **بكل مرحلة** من مراحل المشروع, تحضير مصفوفة احتمالية المخاطر ومن ثم القيام بالتحليل لهذه المخاطر المختارة. مهمتك هي تحضير خطة متكاملة لإدارة المخاطر تشمل التعريف بالمخاطر المحتملة التي تحيط بكل مرحلة من مراحل مشروعك (**نفس المشروع الذي اخترته في مادة إدارة المشاريع**

المتقدمة (Advanced project management). ومن ثم القيام بتحديد استراتيجيات ادارة المخاطر المناسبة لكل خطر على حدة.

من محتويات المقرر والمصادر الأخرى المتاحة أصبحت تعلم الان أن الغرض العام لمرحلة التخطيط للمخاطر هي توقع أحداث المخاطر المحتملة والتجهز لاتخاذ ردة الفعل المناسبة عند وقوع الخطر – لمنع أو تقليل الاثار السلبية على المشروع.

قد تحيّد بداية هذا البحث بعصف ذهني عن ماهية المخاطر التي قد تحيط بكل مرحلة من مراحل مشروعك, وذلك للحصول على قائمة بتلك المخاطر. ومن ثم تحديد وتصفية هذه القائمة للوصول إلى قائمة مختصرة بالمخاطر التي لها فرصة واقعية أكبر في الحدوث. على سبيل المثال: المشاكل الجوية المتوقعة والتي تمثل عقبة حقيقية أمام اكتمال جمع البيانات من المواقع في أو قبل الوقت المحدد، هذه تعتبر مشكلة على مدير المشاريع أن يضعها في الحسبان. من ناحية أخرى، فإن المخاطر غير الواقعية مثل الكوارث الطبيعية والأعاصير (تلك التي تسبب حريقاً بمكتبك وفقدان الأوراق المهمة) ليست لها احتمالية وقوع عالية وبالتالي لاتستدعي تضيق الكثير من الوقت في التخطيط لها. كما سيتبين لك، ستقوم باختبار عدة مخاطر من تلك التي قمت بالتعرف عليها لتحليلها.

ستقوم باستخدام هذه القائمة المختصرة لعمل مصفوفة المخاطر (الاحتمالية/الأثر). المصفوفة ستحتوي على الأقل على ثلاث تصنيفات (عالي/متوسط/منخفض) للإحتمالية والأثر.

لاتنس استخدام أسماء تصف طبيعة المخاطر بصورة فعالة – قم باستخدام كلمات تصف الحادثة الخطرة وتشير الى أثرها على المشروع (مثل: إصابة أحد الفنيين في الموقع مما يؤثر على أعمال التركيب).

بعد انتهاءك من مصفوفة المخاطر، قم بتوثيق تحليلك للمخاطر المختارة. هذا التسجيل المفصل للمخاطر يجب أن يتضمن:

- وصف للخطر واثاره المحتملة (الجدولة، جودة العمل، التكلفة، الخ)
- المؤشرات والمحفزات التي يجب مراقبتها للمساعدة في التعرف على هذا الخطر قبل وقوعه
- تفصيل للاستجابة المقترحة للتصدي لهذا الخطر

باستخدام مصفوفة الاحتمالات والتأثير ، احسب القيمة النقدية المتوقعة (EMV) لجميع المخاطر التي لها تأثير من حيث التكلفة \$\$.

مع تمنياتي بالتوفيق..

Risk Identification and Analysis for Makkah Housing Project

1. Introduction:

- **1.1: Makkah Housing Project:**

The project is about design a seven residential building for a real estate company "owner" that work with ministry of housing. My organization is an engineering consulting company; this project was one of the unique project that my company faced due to many reasons. First, the project start during the COVID-19 period and it was the first time that we got a project in this situation. Second, it is the first time to work and prepare conference meeting with client. Finally, limited resources and experience from the owner due to ministry of housing requirements and the owner needs in this project. In this project, I was the project manager and I was responsible for all the project stages and coordination between all stakeholders. In addition, I was responsible to collect the data and requirement from the owner, ministry of housing and municipalities. In addition, I was responsible to study the location of the project, which proposed by the ministry and study the needs of citizen in Makkah city. Stakeholders in this project are owner, ministry of housing and team member. Stakeholders in this project were in different locations the owner was in Taif city and his project manager was in Makkah city, the ministry staff and our staff were in Riyadh city. The primary design should submitted to the ministry within twenty days and this effect the way of communications in addition to COVID-19 situation.

- **1.2: Risk & Project Risk Management:**

Risks is one of the common thing in projects and you cannot find a project without any risks even small or big risks. Institute of Risk Management (IRM) defines risk as "The combination of the probability of an event and its consequence." [\[1\]](#) The common knowledge for many people that all risks are negative but this is a wrong thing, the risks could be negative such as; injury and fire and could be positive such as enter a new project or decrease in the raw material costs. Once we talk about the risks, we should talk about how we can manage these risks. Risks are different and to deal with these risks we should have a knowledge about project risk management, because the main requirements for all projects is to delivered on time, within budget and to specifications. Different types of risks directly affect the previous requirements for the projects.

- **1.3 : Research objectives:**

The purpose of this research is to identify the project risks in general and specially to the communication between the stakeholders in this project. The other objective is to prepare the risk probability matrix and risk analysis for the risks selected in this project. Studying the impact of each risk after analyzing them with the proposed response to each risk.

2. Literature Review:

- **2.1: Project Risk Management:**

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project [2]. The events that can impact an organization may inhibit what it is seeking to achieve (hazard risks), enhance that aim (opportunity risks), or create uncertainty about the outcomes (control risks) [1]. In addition, project risks management is a process that can occur and implement during the project life cycle and we cannot consider it as a one-time process.

- **2.2: Identifying risks:**

This process is one of the most important process in the project generally and in risk management process specially. It helps the organization to identify the overall risk and individual risks and documenting their characteristics. The key benefit of this process is the documentation of existing individual project risks and the sources of overall project risk [2].

- **2.3: Risks analysis:**

After identifying the risks, we going to the next process, which is analyzing the risks. The simplest way is to use a risk matrix for this process. A risk matrix is normally used to represent the residual or current level of risk [1]. This process used to determine the controls to the risks even in its current level or inherent level. Controls will need to be audited in order to allow confidence that the control selected has been properly designed and implemented and is producing the desired effect [1].

- **2.4: Communication risks in projects:**

Many researches and book are talking about the communication and its affect in general life and especially in the business and projects. Communication it is a common and nature thing and nothing can done without communication regardless the way of communication. Communication is a vital part of our daily routines [3]. The communication in project is a mandatory and Alison said in his book "communication

one of the ways a project can get off track is for various parties to take action without the approval, or even knowledge" [4]. Communication therefore becomes an important aspect of risk management (and hence of risk identification) [5].

3. Methodology:

In this research, the methodology used is descriptive approach. We start in this research to identify and list the risks that could happen by using two methods, brainstorming with team members and asking expert about the risks in this type of projects and the communications risks. Then we summarize the risks that directly affect the project. Then determine the impact and probability for these risks using risk probability/impact matrix and determine the severity for each risks. After that, we analyze these risks and documenting these risks and describes their impact on the project. Then we determine the trigger or indicator used in this project and the respond to these risks. Finally, we calculate the Expected Monetary Value (EMV).

4. Results & Discussions:

Starting with brainstorming with team member to list and determine the possible risks that related to the project generally and communication especially. After that, we set with team member and stakeholders to determine the most related risks to our project. After we get the risks from brainstorming, we list the most common risks related to our project as shown below and the risks matrix also shown:

		Probability		
		Rare (1)	Possible (2)	Definite (3)
Impact	Catastrophic (3)	Medium 3	High 6	High 9
	Major (2)	Low 2	Medium 4	High 6
	Insignificant (1)	Low 1	Low 2	Medium 3

From the risks matrix we found that the risks severity are different and this help us to prioritize our concern about the risks and what is the important risks in this project, the following table shows the severity:

Risk Description	probability	Impact	Severity level
Internet disconnection which delays the arrival of e-mail	2	2	Medium
An individual is infected with the COVID-19, which stops working in offices.	2	3	High
Printer failure delaying project delivery	2	2	Medium
Team members are not aware of using virtual communication, which affects meeting outcomes	1	2	Low
Failure to understand some of the requirements, which affects the specifications	3	3	High
Power outages affecting computers	1	2	Low

Here we identify the risks with the triggers and response :

Risk	Trigger	Preventive	Response	Plan to prevent & mitigate the risk
Internet disconnection which delays the arrival of e-mail	Faulty in network	Maintenance	Work in another network	Always ensure that the connection and the router are in good condition. Check with other stakeholders by phone call about receiving the e-mails. See another place that have another internet operator such as hotel or café.
An individual is infected with the COVID-19, which stops working in offices.	Failure to take health measures	Awareness on health instruction to deal with COVID-19	Check temperature for the employee	Following ministry of health instruction about this situation. Reduce the working hour in the office and allow team member to work from home. Provide sanitizers, masks and enough spaces in office for work that should done in the office.
Printer failure delaying project delivery	Faulty in printer software	Updates and maintenance	Backup updates on USB	Check the printer daily and its performance. Prepare another plan for printing drawings by going to a bookstore to print the drawings.
Team members are not aware of using virtual communication, which affects meeting outcomes	Knowledge	Training of the members	Provide IT expert	Prepare a training for the team member to deal and work on the conference meeting. Test and check this process before starting the real meeting.
Failure to understand some of the requirements, which affects the specifications	Less information	Reading the requirements and standards	Contact the ministry	Reviewing the requirements and standards and asking the expert team members about these requirements. Double check with owner and other

				stakeholders and asking them to provide a clear scope.
Power outages affecting computers	Overload on disruption panel	Maintenance	Backup and recovery software	Provide laptops for the team members, which have battery that can make the work continuous. Provide a power banks and routers that work on battery to the team members. If this problem not fixed for more than one hour let the team members to complete their work in house.

From the previous information about the risks and their contingency plans, we reach to an important stage, which is calculating the Expected Monetary Value (EMV) in term of cost to provide an indicator that can affect the project.

No.	Risk	Probability	Impact cost (SR)	EMV
1	Internet disconnection which delays the arrival of e-mail	0.5	1,800	900
2	An individual is infected with the COVID-19, which stops working in offices.	0.7	10,000	7,000
3	Printer failure delaying project delivery	0.5	800	400
4	Team members are not aware of using virtual communication, which affects meeting outcomes	0.3	1,500	450
5	Failure to understand some of the requirements, which affects the specifications	0.7	30,000	21,000
6	Power outages affecting computers	0.1	2,000	200
Total			48,000	29,950

From the previous results and from the calculation of Expected Monetary Value (EMV) we found that this project has a high risk and it should be to consider and focus on the risks that have a higher severity and higher cost to prevent any problems in this project. EMV is the result of multiplying the probability with the cost of this risk. These costs will be added to the project cost as a contingency cost.

5. References:

- [1] Hopkin, Paul. Fundamentals of risk management: understanding, evaluating and implementing effective risk management. Kogan Page Publishers, 2018.
- [2] Singh, Harjit, and Peter S. Williams. "A Guide to the Project Management Body of Knowledge: PMBOK (®) Guide." Project Management Institute, 2020.
- [3] Worth, Richard. Communication skills. Infobase Publishing, 2004.
- [4] Dykstra, Alison. Construction project management: A complete introduction. Kirshner Publishing Company, 2018.

[5] Edwards, Peter J., et al. "Identifying and communicating project stakeholder risks." Construction Research Congress 2009: Building a Sustainable Future. 2009.