



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	Ayman Ahmed Badawood	اسم الطالب
Students I.D	2021201771	الرقم الجامعي

Section

Master

Date

Thursday

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Course Code

(PMG510)

Project Risk Management

Instructions:

- اخر موعد للتسليم هو يوم السبت 2021-05-08 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 line spacing 1.5
- 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 **the selected 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 stage. 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 بالمرحلة التي تختارها المرحلة من مراحل مشروعك (نفس المرحلة التي اخترت التطرق لها في مشروعك لمادة إدارة المشاريع المتقدمة Advanced project management) حيث أن مهمتك هي تحضير خطة متكاملة لإدارة المخاطر تشمل التعريف بالمخاطر المحتملة التي تحيط بتلك المرحلة وتحضير مصفوفة احتمالية المخاطر ومن ثم القيام بالتحليل لهذه المخاطر المختارة وتحديد 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 تحبذ بداية هذا البحث بعصف ذهني عن ماهية المخاطر التي قد تحيط بتلك المرحلة 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 باختيار 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 in Building Residential Complex

Introduction:

Building a residential complex is one of the challenging projects. This type of project usually has to deal with many parties. Many regulations, different standards, and rules are highly associated with this type of project. These regulations and rules are important in all lifecycle of the project.

In Advanced project management course I have done my project in Construction of residential complex. This residential complex has ten number of villas, central garden with play yard, and small mosque. This project will be designed by an engineering company and excited by a contractor. Moreover, the engineering company will supervise the contractor work. The owner of the project which is real estate investor will supervise also the project form initiation phase till closing phase. The ten villa will be offered for sale for local costumers.

Risk is very wide topic specially when it associated with project. Risk should not mean only negative outcomes, it may have negative or positive outcomes. Risk definition according to The Institute of Risk Management (IRM) “ The combination of the probability of an event and its consequence”[1]. This definition guide us to take the positive outcome risk and try to avoid or eliminate the negative risk. Project risk is something about uncertainty of outcome for example uncertainty of budget needed for project. As we are in initiation phase we should attach the risk management plan along with project charter. Risk management plan document is used to manage and control risk events in our project which may have negative impact. This document will address:

- Risk Identification
- Risk Assessment
- Risk Mitigation
- Risk Contingency Planning
- Risk Tracking and Reporting

The following risks are the common risks which we may face in our project[3]:

- Safety hazards that lead to worker accidents and injuries
- Managing change orders
- Incomplete drawings and poorly defined scope
- Unknown site conditions
- Poorly written contracts
- Unexpected increases in material costs
- Labor shortages
- Damage or theft to equipment and tools
- Natural disasters
- Issues with subcontractors and suppliers
- Availability of building materials
- Poor project management

LITERATURE REVIEW:

The process of risks management includes assessing risks and taking appropriate measures that aim at resolving them[4]. Risk should be identify in early stage of the project so a propitiate action should be taken. The response action to risk we have identify will be either tolerate, transfer, terminate, or treat the risk. This response will be based on the risk its self after we study it. Also identify the risk at early stage we help us to use the most effective and efficient control type. There are four major type of risk control which are preventive control, directive, detective, and corrective control. Preventive control is used to eliminate the hazard, so that no further consideration of it is required[5]. Directive is used to achieve particular outcome such as instructions to employ. The best example of detective control is fire alarm. Detective control will identify satiations when an undesirable outcome has occurred. Corrective control is when the risk has been happened we will try to reduce the impact of the risk.

Experience of project manager will help him in identify the risks and taking appropriate action. Risk management plan will have all risks and how to response to it and also to mitigate it. Project manager should develop risk contingency plan. Project manager should consider the following:

- Deviation of risk management plan
- Impact and response and mitigate plans
- Alternative response strategies
- Risk matrix and other technic may use

Methodology:

In our residential complex project we will use 8 Rs and Ts process, which will help in identify risk probabilities and risk impact. Risk management team will use the data from previous similar project and will have brainstorm meeting to identify risks in our project.

The following risks are the risk which project will face:

1. Unknown site conditions.
2. Damage or theft to equipment and tools
3. Unexpected increases in material costs
4. Incomplete drawings and poorly defined scope
5. Poorly written contracts
6. Natural disasters
7. Safety hazards that lead to worker accidents and injuries

#	Risks Identified	Probability	Impact
1	Unknown site conditions	20%	25%
2	Damage or theft to equipment and tools	50%	70%
3	Unexpected increases in material costs	15%	15%
4	Incomplete drawings and poorly defined scope	15%	80%
5	Poorly written contracts	30%	65%
6	Natural disasters	10%	70%
7	Safety hazards that lead to worker accidents and injuries	70%	80%

Probability	0.7-1	high	high	medium
	0.3-0.69	high	medium	low
	0-0.29	medium	low	low
		0.7-1	0.3-0.69	0-0.29
		Impact		

According to above risks table we can find the following:

Probability	0.7-1	7		
	0.3-0.69	2	5	
	0-0.29	4, 6		1, 3
		0.7-1	0.3-0.69	0-0.29
		Impact		

#	Risk Description	Response plane	Mitigate plan
1	Unknown site conditions	Take a soil test before start	Use sub-base materials
2	Damage or theft to equipment and tools	Preventive maintenance , guard in the site	make contract with supplier to provide equipment once its needed, Buy insurance
3	Unexpected increases in material costs	Make a framework agreement with supplier	Buy from international market
4	Incomplete drawings and poorly defined scope	Scope and drawings will be review by third party company and stakeholders	Scope and drawing will reject and return to be modify and complete
5	Poorly written contracts	Use a contract templet provided by Saudi Contractors Authority	Add addendum to main contract to specify the work needed
6	Natural disasters	Read and study weather forecasting and act before the disasters	Put regulations and specify every one role to reduce loses
7	Safety hazards that lead to worker accidents and injuries	Work permit shows all rules and procedures of work to avoid hazard	Use personal protective equipment

#	Risk Description	Risk probability	Impact Cost (SAR)	Risk contingency (SAR)
1	Unknown site conditions	0.20	1,000,000	200,000
2	Damage or theft to equipment and tools	0.50	500,000	250,000
3	Unexpected increases in material costs	0.15	1,000,000	150,000
4	Incomplete drawings and poorly defined scope	0.15	1,200,000	180,000
5	Poorly written contracts	0.30	2,000,000	600,000
6	Natural disasters	0.10	4,000,000	400,000
7	Safety hazards that lead to worker accidents and injuries	0.70	1,300,000	910,000
Total			11,000,000	2,690,000

After we defined the response plan and mitigate plan we should find the expected monetary value. This will help us to calculate contingency reserve which will use after the risk occurs to reduce its impact to the project. The table below will shows calculation of expected monetary value and total contingency reserve:

DISCUSSION:

Risks can affect schedule of the project, quality outcome of the project, cost of the project..ets. Each risk should be studied and have its own response and mitigate plan. Though the lifecycle of the project, you may find new risk which has not been identified in risk management plan. This risk should be written in risk management plan once its identify. The response to risk may be change in risk management plan if we find better response than before. Risk contingency reserve is taken to cover the impact of risk . Each risk has its own impact cost however we cannot ask for all impact coast

for each risk. We will calculate through contingency value then will ask for expected monetary value. We should focus on high risk which has high probability and huge impact.

REFERENCES:

- [1] The Institute of Risk Management (IRM)
- [2] <http://www.phe.gov/about/amcg/contracts/documents/risk-management.pdf>
- [3] <https://www.constructconnect.com/blog/identifying-managing-construction-project-risks>
- [4] Williams Laurie (2004). Risk Management. Retrieved 28th January 2016, from:
<http://agile.csc.ncsu.edu/SEMaterials/RiskManagement>
- [5] Project Risk Management course lecture 9.