



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

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Section

Master

Date

Thursday

18 / 03 / 2021.

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..

Construction Project Risk

Introduction

Construction projects must be carried out in complex, dynamic environments often characterized by uncertainty and risk. The literature contains ample evidence that many construction projects fail to achieve their time, budget and quality, Mulholland and Christian (1999). Ineffective planning and scheduling has been recognized as a major cause of project delay (Assaf and Al-Hejji (2006), Mulholland and Christian (1999). A study by Maes et al. (2006) revealed that inferior planning was the third major cause of company bankruptcies in the Saudi construction industry.

The objective of this project is to description of an integrated risk management methodology and proactive / reactive scheduling for a construction project. Risk management in the construction industry has mostly been used for measuring of potential risks on global project parameters such as time and costs. The literature provides both fuzzy approaches and mixed quantitative/qualitative assessment and risk response methods, Choi et al. (2004), Warszawski and Sacks (2004)). Many of the proposed methods, however, suffer from practical implementation failures because project teams generally are too preoccupied with solving current problems involved with getting work done and therefore have insufficient time to think about, much less carry out, a formal risk assessment program (Oglesby et al. (1989)

Literature Review

The risk is attached to human life and is present in all human attempts. Nevertheless, the complexity of the work involved in construction activities makes the latter more predisposed to risk [8]. The part of the risk involved in construction is also more different and varies in degree owing to this complexity [9]. Several researchers have tried to define risk in various ways; generally, these definitions were tailored to the objectives of the projects they were dealing with at a particular time. Nonetheless, the definition of risk is highly dependent on the importance placed on applied management in an establishment [10]. Risk describes a situation where former documentation and experience exist upon which measures are taken by obtaining a possible result. The sub-categories of human risks associated with construction projects include technical, political, social, economic, legal, financial, health, managerial and cultural risks. grouped risk into ten categories, namely:

➤ Design:

Defective design, inaccurate quantities, not coordinated design, rush design, awarding the design to unqualified designers, lack of consistency between bill of quantities, drawings and specifications

➤ Physical:

Occurrence of accidents, because of poor safety procedures, supplies of defective materials, security of material and equipment, public security, varied labor and equipment productivity

➤ Logistics:

Improper site investigation, inaccurate project program, unavailable labor, materials and equipment, high competition in bids, undefined scope of working, poor communications between the home and field offices (contractor side)

➤ Legal:

Ambiguity of work legislations, difficulty to get permits delayed disputes resolutions, legal disputes during the construction phase among the parties to the contract, no specialized arbitrators to help settle fast

➤ Environmental:

Adverse weather conditions, difficulty to access the site (very far), environmental factors (floods, earthquakes, etc.)

➤ Construction:

Gaps between the implementation and the specifications due to a misunderstanding of drawings and specifications, actual quantities differ from the contract quantities, design changes, lower work quality in the presence of time constraints, rush bidding, undocumented change orders.

➤ Management:

Poor communication between involved parties, ambiguous planning due to project complexity, changes in management

ways information unavailability (include uncertainty), resource management

➤ Cultural:

Religion, cultural custom

➤ Financial:

Delayed payments on contract, unmanaged cash flow, inflation, financial failure of the contractor, exchange rate fluctuation, monopolizing of materials due to closure and other unexpected political conditions

➤ Political:

New governmental acts or legislations, inflation, unstable security circumstances (invasions).

Methodology

In this study we use the identified research questions as per the lecture review to gather the data also from a small group of construction contractor and construction consulting to verify description of the risk and potential impacts, specific risk response strategies to take and Expected Monetary Value (EMV).

Results and Discussion

Risk impact:

- High – Catastrophic (Rating A – 100)
- Medium – Critical (Rating B – 50)
- Low – Marginal (Rating C – 10)

It identifies the timeframe for this risk to affect it. The following is classified as one:

Timeframe	Description
Near Now	- until one month
Mid	next 2-6 months
Far	>6 months

Impact-Probability Matrix:

Impact	Probability			
	High $80\% \leq x \leq 100\%$	Medium high $60\% \leq x \leq 80\%$	Medium low $30\% \leq x \leq 60\%$	Low $0\% \leq x \leq 30\%$
A = High	(Exposure - Very High) (Score 100)	(Exposure - Very High) (Score 80)	(Exposure - Very High) (Score 60)	(Exposure - Very High) (Score 30)
B = Medium	(Exposure - High) (Score 50)	(Exposure - High) (Score 40)	(Exposure - High) (Score 30)	(Exposure - High) (Score 15)
C = Low	(Exposure - Low)	(Exposure - Low)	(Exposure - Low)	(Exposure - Low)

	(Score 10)	(Score 8)	(Score 6)	(Score 3)
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Risk classification:

Risk event	Probability	Impact rating	Score
Changes require additional resources or different resources than predicted causing resourcing conflicts/delays.	30%	C	30
contractual disputes between client and contractor or contractor and subcontractor.	50%	B	60
Multiple Change requests are needed due to unexpected site conditions.	90%	A	100
Total			190

EVM calculation:

Risk	Risk Probability (P)	Cost Impact (IC)	Risk Contingency (P*IC)
A	0.3	10000	3000
B	0.5	15000	7500
C	0.9	30000	27000

The following objectives are addressed in the risk response plans:

1. 'Selling' the risk to a third party, e.g. by outsourcing an activity or activity group.
2. Taking actions to reduce the severity of the risk, e.g. by switching to a different activity execution mode, adding additional workforce, ...

3. Performing an alternative approach which does not contain the risk.

Discussion:

The application of the framework can derive a number of advantages. It contributes from a decision-making point of view to improved project understanding, thereupon improving control over resources, supporting the development and implementation of surveillance strategies and stimulating the better use of ways of identifying and assessing risk with an inherently beneficial effect on contingencies evaluation.

References

- Johnson, T. (2008). Project Management Professional (PMP) exam success series: certification exam manual. Texas: Crosswind Project Management Inc
- Creedy, G.D. (2005). Risk factors leading to cost overrun in the delivery of highway construction pLaryea, S. (2008). Risk pricing practices in finances, insurance and construction. In: COBRA Research Conference, September 4th – 5th, Dublin Institute of Technology projects. PhD thesis, Queensland University of Technology, Australia
- Loosemore, M., Raftery, J., Reily, C. & Higgion, D. (2006). Risk management in projects. London: Routledge