



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	Ali Abdullah Ali Al Zahrani	اسم الطالب
Students I.D	2021201702	الرقم الجامعي

Section

Master

Date

Thursday

18 / 03 / 2021.

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 الإنجليزية.
- 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 **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 مبنى على مشروعك الذي اخترته فى 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 إدارة 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 الآثار السلبية على المشروع.

قد تحبذ 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 تضييع 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) للاحتتمالية 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 Plan for Riyadh Metro Project

Project Manager: Ali Al Zahrani

1 Risk Identification

The Riyadh Metro Project was initiated on 15th January , to upgrade the rail infrastructure and its associated rail assets in our local region. The successful delivery of this project will mean a fast, comfortable, reliable and more accessible rail transport service for the local public. Yet, this project is subject to a high level of risk. To ensure that all medium and high priority risks have been identified up front before we begin the project execution phase, five Risk Workshops were undertaken with government staff, engineering specialists and rail transport staff. This report documents the risks identified during these Risk Workshops and schedules the suite of actions needed to avoid, transfer and/or mitigate them.

1.1 Risk Categories

The following general categories of risk were identified for this Riyadh Metro Project:

- Political.
- Return on Investment
- Logistical
- Planning
- Execution

1.2 Risks

The following key risks have been identified under each risk category:

Risk Category	Risk Description	Risk ID	Likelihood Score	Impact Score	Priority Score	Priority Rating
Political	Changes in Project Board membership during the Project Lifecycle lead to a change in scope or priorities	1.1	20	40	30	Low
Return on Investment	Passenger numbers do not meet forecasts, thereby lengthening the time required for a return on investment	2.1	80	40	60	Medium
	Unforeseen project costs (such as an increase in loan interest rates, an increase in the price of raw materials) lead to budget over-runs	2.2	60	80	70	High

Risk Category	Risk Description	Risk ID	Likelihood Score	Impact Score	Priority Score	Priority Rating
Delivery Timeframe	The overall delivery timeframe is insufficient to produce all of the project deliverables	3.1	60	20	40	Low
	The required project delivery dates are brought forward	3.2	60	80	70	High
	There is insufficient time for the project team to make a complete assessment of the existing rail infrastructure	3.3	60	80	70	High
Logistical	The large numbers of required staff, suppliers, deliverables, equipment and materials place this project's overall delivery at risk	4.1	80	80	80	High
	There is an insufficient number of skilled resources in the market to undertake this project	4.2	20	40	30	Low
	Suppliers contracted to this project do not produce the required deliverables on time, within budget or to the level of specification required	4.3	40	80	60	Medium
Planning	Infrastructure data (describing such assets as rail fixings, sleepers and ballast) is outdated and inaccurate, making it difficult to know which assets require upgrading	5.1	80	100	90	Very High
	Planning consents may be denied or may be subject to conditions that increase project costs	5.2	60	40	50	Medium
	The windows of time available in the rail schedule may be insufficient to perform the work needed to upgrade the infrastructure	5.3	80	100	90	Very High

Risk Category	Risk Description	Risk ID	Likelihood Score	Impact Score	Priority Score	Priority Rating
Execution	Unanticipated site conditions (such as earth instabilities or prior contamination) lead to increased construction costs	6.1	80	40	60	Medium
	A delay in payment may result to Rail Maintenance Teams stage a strike, leading to project delays	6.2	60	80	70	High

2 Risk Quantification

Each of these risks identified has been quantified below as to its likelihood and its impact on the project should it occur.

2.1 Likelihood

The following table describes the scoring mechanism used to identify the likelihood of each project risk stated above:

Title	Score	Description
Very Low	20	The risk is highly unlikely and will be recorded but not monitored.
Low	40	The risk is unlikely but will be monitored throughout the project.
Medium	60	The risk is likely as it is clear that the risk may occur.
High	80	The risk is very likely , based on the circumstances of the project.
Very High	100	The risk is highly likely , as the circumstances that will cause this risk to occur are also very likely to occur.

2.2 Impact

The following table describes the scoring mechanism used to identify the impact on the project, should the risk actually eventuate.

Title	Score	Description
Very Low	20	The risk will have an insignificant impact on the project.
Low	40	The risk will have a minor impact on the project (<5% deviation in scope, scheduled end-date or project budget).
Medium	60	The risk will have a measurable impact on the project (5%-10% deviation in scope, scheduled end-date or project budget).
High	80	The risk will have a significant impact on the project (10%-25% deviation in scope, scheduled end-date or project budget).
Very High	100	The risk will have a major impact on the project (25%+ deviation in scope, scheduled end-date or project budget).

2.3 Priority

During the Risk Workshops undertaken, each risk identified was assigned a Likelihood and Impact Score using the scoring mechanisms listed above. The overall Priority score was calculated as the average of the Likelihood and Impact scores (i.e. Priority = [Likelihood + Impact] / 2). As seen in the table of the risks.

3 Risk Plan

To ensure the success of Riyadh Metro Project, we will need to implement a suite of actions to avoid, transfer and/or mitigate the risks we've identified. This section lists such actions and provides a schedule for their completion.

3.1 Schedule

The following table itemizes the preventative actions to be taken to reduce the likelihood of each risk occurring, as well as the contingent actions to be taken should the risk actually occur. The person assigned to complete each action is specified, as well as the dates upon which the action needs to be completed.

Risk Rating	Risk ID	Preventative Actions	Action Resource	Action Date	Contingent Actions	Action Resource	Action Date
Low	1.1	Approve a mandate to maintain the project scope	Project Board	17-Feb	Enforce the approved Project Board mandate when required	Project Sponsor	As required
Medium	2.1	Assign a marketing budget to promote the new route for increased passenger numbers	Project Leader for Passenger Services	20-Feb	Create a contingency marketing plan to promote the new route in the event of low passenger numbers	Project Leader for Passenger Services	31-Mar
High	2.2	Fix the price of raw materials, interest rates and other costs up front	Project Procurement Manager	15-Feb	Obtain contingency funding of 5% above contract prices	Project Sponsor	15-May
Low	3.1	Request an extension in the overall delivery timetable	Project Manager	7-Feb	Allocate 5% of elapsed time in the project schedule as contingency	Project Manager	18-Feb
High	3.2	Request that the Project Board approve a high level schedule of deliverables and delivery dates, before project execution begins	Project Manager	7-Mar	Prioritize the deliverables, so that key items can be produced within the required dates	Project Sponsor	7-Mar

High	3.3	Allocate additional time to assess the existing infrastructure	Project Manager	7-Mar	Utilize the 5% of elapsed time in the project schedule, allocated as contingency	Project Manager	As required
High	4.1	Recruit a senior team of leaders for the project, experienced at managing such quantities of resources	Project Manager & HR Manager	5-Apr	Sign <i>backup contracts</i> for additional managerial resource from overseas should it be needed	Project Manager & HR Manager	21-Apr
Low	4.2	Recruit additional skilled resource from overseas markets to assist with the completion of this project	Project HR Manager	15-Apr	Sign <i>backup contracts</i> for the supply of skilled resource from overseas should it be needed	Project HR Manager	21-Apr
Medium	4.3	Negotiate formal contracts with all project suppliers, to include penalties for non-delivery	Project Procurement Manager	2-May	Sign <i>backup contracts</i> with alternative suppliers, in case a preferred supplier fails to perform	Project Procurement Manager	15-May
Very High	5.1	Allocate time in the project schedule for the review of all rail assets	Project Asset Manager	7-Mar	Obtain asset information from Rail Maintenance Companies	Project Asset Manager	20-Mar
Medium	5.2	Fully research the planning consent process to identify requirements and initiate the consent process early	Project Manager	15-Mar	Allocate additional funds in the budget to gain consent for site works	Project Manager	7-Mar
Very High	5.3	Request increased route capacity at peak times. Communicate route interruptions well in advance	Project Logistics Manager	1-Aug	Implement <i>disruption management procedures</i> (e.g. alternative road transport and ticket refunds in the event of a disruption to service)	Project Logistics Manager	As required
Medium	6.1	Conduct geological surveys well ahead of construction	Project Site Works Manager	21-May	Identify alternative routes in case land along the planned route is not suitable	Project Planning Manager	15-Aug
High	6.2	Resolve Rail Maintenance Team issues ahead of potential strike action	Project Logistics Manager	1-Jun	Take legal action where necessary	Project Logistics Manager	1-Aug

3.2 Expected Monetary Value (EMV)

Expected Monetary Value (EMV) is a statistical technique in risk management used to quantify risks and calculate the contingency reserve.

Risk ID	Risk Probability	Cost Impact	Risk Contingency
1.1	0.2	7,050,000	1,410,000
2.1	0.8	1,500,000	1,200,000
2.2	0.6	5,000,000	3,000,000
3.1	0.6	500,000	300,000
3.2	0.6	1,800,000	1,080,000
3.3	0.6	2,500,000	1,500,000
4.1	0.8	15,000,000	12,000,000
4.2	0.2	17,000,000	3,400,000
4.3	0.4	20,000,000	8,000,000
5.1	0.8	15,000,000	12,000,000
5.2	0.6	3,300,000	1,980,000
5.3	0.8	5,000,000	4,000,000
6.1	0.8	4,000,000	3,200,000
6.2	0.6	15,000,000	9,000,000
Total		\$112,650,000	\$62,070,000

References

- Project Risk Management Guidelines: Managing Risk in Large Projects and Complex Procurements by Dale F. Cooper, Stephen Grey, Geoffrey Raymond and Phil Walker.
- The Essentials of Risk Management by Michel Crouhy
- Fundamentals of Risk Management 5th Edition: Understanding, Evaluating and Implementing Effective Risk Management by Paul Hopkin
- [Short Guide to Expected Monetary Value](#)