



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

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 ٢٠-٠٥-٢٠٢١ 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 ١٢.
- 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 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 الاثار 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 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..

Budget Estimate for Home Building

Introduction:

I'm looking to build a home so I decided to estimate how much it will cost, but this is not an easy question to answer. There are many factors and actions to consider when estimating new home construction costs. So, let's start the process piece by piece so I have a framework for better estimating my new home construction costs.

Home Building: Creating a Budget

A budget estimate is a financial plan for the Building process. It is the riyal equivalent for all the work it takes to create and build a new home. You are not expected to build this document correctly at the outset of your experience so its best, to start with, estimate, and refine the financial plan as time goes by.

The main goal of preparing a budget is to know and control costs. Starting with the estimates, one can calculate the total money amount for the style and size of a house on a particular lot. At the very least an Owner should be able to consider if the project is available once estimates are made. The whole money amount can be broken into two categories: hard costs and soft costs. Hard costs involve workers and materials to build the house. Soft costs include everything else. The budget format provided here outlines products and services which one uses during the Building process.

The budget estimate for material and labor is a starting point for considering the scope of Designs and Specifications. These budgetary concerns BEGIN early in the planning phase of the building process. Consider the original study of costs as an exercise in project probability. Based on your projection of costs for material and labor, the Owner should be able to weigh and analyze the Building options. With estimates prepared, attention can be given to the Budget review process:

- 1-identify priorities
- 2-know trade-offs
- 3- Perform cost analysis
- 4- Develop cost estimates.

How to Estimate the Cost of a New Build Home

1. Determine Your Floor Plans

Start by choosing a floor plan for your new home that's been completed by or arranged by a local general contractor or architect, or search online or in books to find the plan of your dreams. Next, you should get the right local builder.

2. Determine How Consumer Plans Can Influence the Cost

A full custom home build requires the most support, but you can work directly with an architect to build exactly the kind of home you want.

3. Learn How Pre-Designed Choices Can Save You Money;

With a pre-designed home, and maybe already in progress, many decisions and choices have already been made.

4. Identify What Style, Quality, and Traits Refer to about Estimating You're New Construction Cost:

The last price of your new home won't be determined just by the size. Style, quality, and features must not be viewed when planning new home construction costs.

6. Leave Place in Your Budget to Help Ant Additional Construction Costs:

When estimating the cost to build a new house, don't forget to factor in some basic expenses that can be faced in the excitement of a new home build. These include: Site Preparation and Permit Fees

Methodology:

The first step is the definition of a common Work Breakdown Structure (WBS) able to properly account for and analyze the construction costs of all the company's projects. Here, twenty-five out of the thirty constructions were randomly selected to test the method and the remaining were set aside to finally confirm its accuracy. The first twenty-five were divided into five groups (A, B, C, D, and E) considering their similarities under the following criteria:

- a) Usage: Residential or Commercial;
- b) Size (Gross Building Area): under 10,000 m², around 15,000 m², around 20,000 m² and over;
- c) Class of Specification: A (superior), B (medium), C (basic). In Brazil, real estate market buildings are usually very related in respect to their chosen construction technology and process adopted;
- d) Make Small Towers (at least 10 stories), Medium Towers (at least 16 stories), and High Towers (more than 16 stories).

Group A got 6 residential constructions with areas around 20,000 m², Specification Class "C" and Small Towers; Group B got 3 residential constructions with areas over 20,000 m², Specification Class "A" and Small Towers; Group C got 4 residential buildings with areas around 15,000 m², Specification Class "B" and "C" and Medium Towers; Group D got 6 residential constructions with areas around 15,000 m², Specification Class "A" and "B" and High Towers; Group E got 6 commercial constructions with real areas up to 10,000 m², Specification Class "A" and "B" and Small Towers.

Methods of Cost Estimation:

Cost estimation methods can be classified into different techniques;

1- Quantitative and Qualitative Technique

Qualitative methods rely on expert opinion or heuristic rules, and quantitative methods are classified into statistical models, analogous models, and generative analytical models.

The quantitative approach has been divided into three main techniques;

a) Analogy-Based Techniques

This sort of technique enables obtaining a rough but good estimation of the future costs. It is based on the description and analysis of the degree of similarity between the new project and another one. The underlying theory is to derive the estimation from actual information. However, many problems exist in the application of this method, such as:

1-The problems in the measure of the concept of „degree of similarity“.

2-The problem of incorporating in this parameter the effect of technological development and context factors.

b) Parametric Models

According to these techniques, the cost is shown as an analytical function of a set of variables. These regularly consist of some characteristics of the project (performances, type of materials used), which are supposed to influence mainly the final cost of the project (known also as „cost drivers“). Commonly, these analytical purposes are named „Cost Estimation Relationships“ (CER) and are built through the application of statistical methodologies.

c) Engineering Approaches

In this case, the estimation is based on the full analysis and characteristics of the project. The estimated cost of the project is determined in a very analytical way, as the sum of its elementary components, comprised by the value of the resources used in each step of the project process (raw materials, labor, equipment, etc).

Three-point Estimate

Another method is the three-point estimate, which comes up with three scenarios: most likely, optimistic, and pessimistic ranges. These are then put into an equation to develop an estimation.

Reserve Analysis

Reserve analysis decides how much contingency resources must be allocated. This program tries to wrangle uncertainty.

Cost of Quality

Cost of quality uses money spent throughout the project to avoid failures and money applied after the project to address failures. This can help fine-tune your overall project cost estimation. And comparing bids from vendors can also help figure out costs.

Dynamic Tools

Whenever you're estimating costs, it helps to use online software to collect all of your project data. Project management software can be used in government with many of these methods to help facilitate the process. Use online software to determine your project teams, tasks, and goals. Even manage your merchants and track costs as the project unfolds. We'll show you how.

Bottom-Up Estimating

The term bottom-up estimating gives a clue about the underlying concept: costs, durations, or resource requirements are estimated at a very granular level.

Pros

- Bottom-up estimates can be very accurate. This is because team members are estimating the work they are responsible for.
- Estimation mistakes can balance out across the components of a project.
- Bottom-up estimating can be used in conjunction with other estimation techniques

Cons

- The underlying theory is that the project estimate consists of the sum of its parts. This may ignore cost and integration efforts that may happen in addition to the work defined in activities. This holds for large and complex projects, in particular.
- The bottom-up estimation itself needs a lot more resources than other methods such as analogous estimating (top-down estimation).
- The cost estimation is based on the duration estimation.

2- Preliminary and Detailed Techniques

For both preliminary and detailed methods its organizations, especially since preliminary methods are less numeric than detailed methods. However, most researchers seek a perfect preparatory method that gives good results. Ostwald (2001) outlined common methods that are divided into two sets qualitative preliminary methods as opinion, discussion, and comparison similarity or analogy and quantitative preliminary methods as the unit method, unit quantity, linear regression...etc.

3- Traditional and Artificial Intelligence Based Techniques

Most of the first traditional methods fall into one of the following classes; Time referenced cost records, cost capacity factors, element rate, and parameter costs.

New methods were introduced in the latest years based on the concept of parametric models that are based on digital techniques such as artificial intelligence, which try to imitate human intelligence such as Artificial Neural Network, Fuzzy logic, etc.

Challenges of Cost Estimation

Many factors are possible when cost estimating. For example, if the design is not like the former ones, then skill won't help guide you. If the planning range is further out, the greater the risk. That said, the longer the house building duration, the less in focus cost estimations will be.

Then there is the team: the level of skill and experience available is going to have a big part of the overall costs of the plan.

Results and discussion:

Cost estimation is an important process for any organization. It helps them decide whether or not to bid for a project. For house design, it gives an idea of how much money you are going to spend. It is important to see that the more specific the method, the more costly and time-consuming it becomes. You will use the estimation technique best suited to your situation. It is not always advisable to use bottom-up estimating when you are short on time or resources.

Advantages & disadvantages of budgeting

Advantages

- coordinates actions across departments.
- Budgets change strategic ideas into action.
- Budgets give an excellent record of organizational activities.
- Budgets enhance communication with employees.
- Budgets adjust resource allocation because all requests are clarified and justified.
- Budgets give a tool for corrective action through reallocations.

Disadvantages

- The main problem happens when budgets are applied mechanically and rigidly.
- Budgets can demotivate workers because of a lack of participation. If the budgets are arbitrarily forced top-down, workers will not know the reason for budgeted expenditures, and will not be committed to them.
- Budgets can cause thoughts of unfairness.
- Budgets can build competition for resources and politics.
- A rigid budget structure decreases energy and innovation at lower levels, making it impossible to obtain money for new ideas.

References:

1. R. L. Ackoff, The Effect of Reasoning Logics on Real-Time Decision Making, Redesigning the Future: a Systems Approach to Societal Problems, Wiley, New York, NY, USA, 1974.
2. G. E. G. Beroggi and W. A. Wallace, "The effect of reasoning logics on real-time decision making," IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans, vol. 27, no. 6, pp. 743–749, 1997.View at: Publisher Site | Google Scholar
3. S. M. Trost and G. D. Oberlender, "Predicting the accuracy of early cost estimates using factor analysis and multivariate regression," Journal of Construction Engineering and Management, vol. 129, no. 2, pp. 198–204, 2003.View at: Publisher Site | Google Scholar
4. S.-H. Ji, M. Park, and H.-S. Lee, "Cost estimation model for building projects using case-based reasoning," Canadian Journal of Civil Engineering, vol. 38, no. 5, pp. 570–581, 2011.View at: Publisher Site | Google Scholar
5. R. J. Kirkham, Ferry and Brandon's Cost Planning of Buildings, Blackwell Publishing, Hoboken, NJ, USA, 8th edition, 2007.
6. P. Teicholz, "Forecasting final cost and budget of construction projects," Journal of Computing in Civil Engineering, vol. 7, no. 4, pp. 511–529, 1993.View at: Google Scholar