MISM 4165 Project Management Assignment 3
Project Risk and Procurement Management

Instructions: The following questions are related to Project Risk Management and Project Procurement Management. Examples and additional resources for questions 1 and 2 are at the end of these instructions and additional resources are posted on the course website.

Assessment: Quantitative Risk Analysis questions 1 and 2 – 20 points/ each. Project Procurement Management questions 3-6 – 15 points each. To receive credit, all calculations for each problem must be shown including all appropriate formulas and cell references. Please submit an Excel file with all problems on a single worksheet. Note: this is an individual assignment.

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1. Quantitative Risk Analysis: Campus Mobile App Project

As the project manager for the new Campus Mobile App project, you have identified several risks associated with the project. For each risk, you have estimated the monetary impact (known as EMV) and the probability of the risk occurring. You now need to determine the total EMV for the project to determine the contingency reserve to include in the cost estimate. Use the example on pg. 2 as a guide for creating a table to show the calculations for each risk, total EMV, and contingency reserve. (Note: use formulas, cell references, and clearly identify the total EMV and the Contingency Reserve).

Campus Mobile App Project Risks:

Risk #1: Financial Constraints (P =.50, estimated monetary impact –$75,000)
Risk #2: Software Issues (P=.30, estimated monetary impact -$40,000)
Risk #3: Loss of Top MGNT Support (P =.10, estimated monetary impact -$50,000)
Risk #4 Vendor Discount (P=.70, estimated monetary impact $20,000) (benefit)
Risk #5 Integration Issues (P=.30, estimated monetary impact -$40,000)

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2. Quantitative Risk Analysis: Facilities Management Project

You are preparing a risk analysis for a project to deliver training programs for a local company and want to determine the total amount of contingency reserves to budget for. You have identified 6 risk events and determined the probability and estimated impact/benefit in monetary terms.

Risk	Probability	Impact/Benefit	EMV
Risk 1	20%	$ (4,000)	$ (800)
Risk 2	50%	$ (5,000)	$ (2,500)
Risk 3	45%	$ (300)	$ (135)
Risk 4	22%	$ 500	$ 110
Risk 5	35%	$ (4,500)	$ (1,575)
Risk 6			
		Total EMV	**$ -**
		Contingency Reserve	**$**

a) Calculate the probability, impact/benefit, and EMV for Risk Event 6 based on the following information: You are 60% certain that you can lease the training facility needed for the project for $45,000, which is $7,000 less than was planned for.
b) Calculate the total EMV and contingency reserve to complete the analysis.

3. Project Procurement Management: Make vs. Buy Decision

You have been assigned to manage a project to set up a fiber optic cable connecting two cities. The project is complex several outside vendors involved. You and experts in your organization are evaluating if the equipment needed to install the underground cable should be purchased outright or if it would be better to lease it. The cost of leasing the equipment is $1200/ per day while the cost of an outright purchase is $96,000 plus a daily cost of $200.The project is expected to take 150 days and the equipment will be needed for the duration of the project. Should you purchase the equipment or is it more cost effective to lease it?

4. Project Procurement Management: Make vs. Buy Decision

As project manager for the USG Enrollment Management System project you will need to have access to a multi-function printer/copier for the team. You are considering whether to buy, rent or lease the new printer to support the work of your project team. The estimates you have received for funding the printer are:

- **Purchase:** The cost to purchase the printer is $24,000 and includes a training and set-up fee of $1000.
- **Lease:** If you lease, the cost is $395/day with a 10% discount; There is also a one-time down payment of $2500, Supplies are not included.
- **Rent:** The cost to rent the printer is $425/day with supplies included. A daily page limit is also imposed and additional copies over the page limit are charged at 5 cent each.

The project is expected to last 60 days. With no additional information provided on projected usage, which option is most cost effective for the project?

5. Project Procurement Management: Make vs. Buy Decision

You are the project manager for a software development project for a web-based accounting system that will operate over the Internet. Based on your research, you have estimated it will cost $25,000 to write the code in-house. Once the code is written you estimate it will cost $3,000 per month to update the software with client information, government regulations, and maintenance. A vendor has proposed to write the code for your company and charge a fee based on the number of clients using the program every month. The vendor will charge you $5 per month per user of the system. You estimate there will be 1200 clients using the system per month. You will also need an in-house accountant to manage the time and billing of the system, at a cost of an additional $1200 per month. How many months will you have to use the system before it is better to write the code in-house vs. outsourcing the project to the vendor?

6. Project Procurement Management: Make vs. Buy Decision

Your company is trying to decide whether it should buy special equipment to prepare high-quality publications in-house or lease the equipment from another company. Leasing the equipment costs $240/day. If you decide to purchase the equipment, the initial investment is $6,800 and operations will cost $70 per day. After how many days will the lease cost be the same as the purchase price for the equipment? Assume that your company will only need the equipment for 30 days. Should you lease or buy the equipment?

How to Calculate the Total EMV for a Project

Expected Monetary Value (EMV) is a statistical technique that is commonly used for both decision and risk management. EMV is used to quantify the monetary impact of each significant risk (or opportunity) identified for the project. The total EMV for a project is the sum of the EMV calculated for each risk. This amount is generally a negative number. The positive amount of a project's total EMV is the amount that should be included in the project cost estimate as a Contingency Reserve.

Expected monetary value (EMV) is expressed as follows:

Expected Monetary Value = Probability of a Risk Occurring x Impact (USD)

The use of the Expected Monetary Value method starts with the identification of project risks. Once the risks are listed, the probability of occurrence of each risk and the cost impact, if the risk happens, is estimated. The total Expected Monetary Value of all identified risks is calculated by multiplying each risk's probability by the estimated impact (in USD). **Impact can be negative or positive**, however, they are most commonly negative impacts. The total EMV for all risks in the example below is ($1,100) and the amount that should be included in the project cost estimate as the **Contingency Reserve** is the positive value of the total EMV ($1,100).

Risk ID	Risk Name	Probability	Impact/Benefit (USD)	EMV (Probability * Impact)
1	Data Loss	10%	-$4,000	-$400
2	New Regulation	30%	-$1,000	-$300
3	Vendor Discount	25%	$2,000	$500
4	Hardware Delays	60%	-$1,500	-$900
Total EMV			-$4,500	-$1,100
Contingency Reserve *(positive value of total EMV)*				$1,100

For example, in the case above you will need to add $1,100 to your project cost estimate as a contingency reserve to cover the potential impact of all identified risks. This amount is the **Contingency Reserve Funds**.

Learn More About EMV: https://www.projectcontrolacademy.com/cost-contingency-calculation/

Additional Resource: https://pmstudycircle.com/2015/01/a-short-guide-to-expected-monetary-value-emv/
This resource has several examples for calculating EMV.