Western

The University of Western Ontario

ENGSCI 9510 Engineering Planning & Project Management

Assignment # 4

- ✓ **Start Date: All sections June 15, at midnight in the Owl assignment area**
- ✓ **Due Date: All sections June 29, at midnight in Owl drop assignment area.**
- ✓ **Question 1 value = 2.5; Question 2 value = 2.5**
- ✓ **You will generally need the information from topic 11 to complete this assignment**
- ✓ **Submit just one file of type .doc, .docx, .ppt, .pptx, .xls, .xlsx, or .pdf**

Question 1 – Expected Monetary Value Make or Buy Analysis

You are part of a project team that develops a new V6 DOHC engine. The company does currently not have the expertise to make their own pistons. You have come up with the greatest piston geometry to minimize fuel consumption and emissions. Now you have to go into production. One of the first questions answered will be if you make the piston in house or if you buy them. In order to better facilitate the answer you gather the following information:

- the sell price will be $60.
- if you make the pistons yourself, you expect a cost of $12/pc, and the investment you would have to make is $200k for the machines and the tooling.
- the best supplier has quoted $35/pc for the piston, with a tooling charge of $100k
- due to the superior technology you think that there is a 80% likelihood for strong sales which mean 5000pcs/year. The name brand of your supplier, if you use them, will boost your sales by another 2000pcs/year.

- if the sales are weak, you think you still will sell 1500 pcs. If the sales are weak and you use the supplier it would hurt your sales because of their attempt to sever the contract and you would only sell 1000pcs.

A. Your decision regarding production in house or outsourcing has to be the cheapest one in the first year. What would you do, make or buy the pistons? Show your work how you come up with your decision and support the decision with the result.

B. List 5 risks you might see in this project and offer contingency strategies for each. Reference at least 4 different types of mitigation strategy – accept, transfer, etc.

Risk	Contingency

Question 2 – Decision Tree Analysis

You are the project manager for a medium sized general contracting firm. Three projects present themselves and you are certain you will only be able to staff up to handle two of them. All are equally strategic to your firm. Risk analysis is going to play a huge role in your decision since it is your corporate mandate that all your jobs are quoted at the same margin.

Opportunity 1 – Installation of a hospital telemetry system including all parts and smarts. The cost of the system installation is $400,000. The primary risk is that of interference with wireless systems such as COWs (computers on wheels) in the hospital causing additional

engineering costs. Such a risk if realized would cost $40,000. The likelihood of its occurrence is 20%. A secondary consideration is that if the system installs flawlessly and on time, a bonus of $20,000 is added to this cost + incentive contract.

Opportunity 2 – Installation of a new terrazzo floor costed at $500,000 for the local high school. The risk in this installation is that it occurs well into the installation phase for other finishing trades and the operations produce a tremendous amount of dust. The flooring installation therefore could damage equipment in the vicinity. The likelihood of such an occurrence is 10%. If it happens the flooring has to be torn out and completely reinstalled again incurring an additional $400,000 in costs.

Opportunity 3 – Installation of a new $500,000 tar and gravel roof on a 500,000 sq ft government building. The government imposes stiff penalties for the late delivery of these types of civil works. The history of your company is not good for on time delivery and this is a pretty typical project. Historically, there is a 20% chance of being 1 month late which would incur a $50,000 penalty and a 10% chance of being 3 months late which would incur a $150,000 penalty. There is a 70% chance of delivering the project on time.

Which two of the three projects should your company consider? Show your work.