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Part 1: Identifying project risks via Boehm’s top -10 list

(a) Select 6 items from Boehm's 10 risk factors. For each factor, identify one concrete risk the project you are managing is facing. Briefly describe each of the 6 risks you identified (one sentence per risk).

1) Personal Shortfalls: The portions of information that the team gathered required the use of tools at the team was inexperienced with.

2) Unrealistic Schedules and Budget: The time estimates for tasks assigned to team members were un-realistic due to the lack of sufficient information to gather for the project within the allocated time.

3) Requirements volatility: Due to the insufficient amount of information available for the contents of the project, the requirements for each section was changed and increased the rework.

4) Real-time shortfalls: The real-time performance of the parts of the system used to implement the project was inadequate.

5) Bad external tasks: The information presented by some sources presented the team with inadequate skills to complete the project.

6) Capacity shortfalls: The team encountered the understanding of how new technologies work in order to perform tasks, posing a risk to the development schedule.

(b) For each risk you identified, compute the risk's risk exposure. Give each effect E and each risk exposure RE in terms of team member hours. Justify your calculations briefly (one sentence per risk).

For each risk, the risk exposure was calculated in terms of team member hours by multiplying p with E (i.e. p x E) where p the probability that the risk will actually occur and the effect E is the effect in terms of team member hours. Additionally, the probability for each risk is calculated by dividing the specific risk event that can occur by the number of total risk possible outcomes (i.e. event/s **/** number of outcomes)

1) Personal Shortfalls:

RE = 0.5 \* 4 = 2 hours, where P = 2 risk /4 total possible risks and

The team member hours = 4

2) Unrealistic Schedules and Budget:

RE = 0.25 \* 5 = 1.25 hours, where P = 1 risk /4 total possible risks and

The team member hours = 5

3) Requirements volatility:

RE = 0.4 \* 5 = 2.2 hours, where P = 4 risks /9 total possible risks and

The team member hours = 5

4) Real-time shortfalls:

RE = 0.33 \* 2 = 0.66 hours, where P = 2 risks /6 total possible risks and

The team member hours = 2

5) Bad external tasks:

RE = 0.4 \* 3 = 0.12 hours, where P = 2 risks /5 total possible risks and

The team member hours = 3

6) Capacity shortfalls:

RE = 0.25 \* 2 = 0.5 hours, where P = 1 risks /4 total possible risks and

The team member hours = 2

Part 2: Compare risk mitigation options

(a) Develop a reasonable mitigation strategy that either transfers or completely avoids the respective risk. Describe this strategy briefly (up to 50 words per strategy).

Personal Shortfalls: This specific risk can be mitigated by making sure that the required number of skills are available for the project. Additionally, the team should work on tasks that closely matches their skill in order to utilize the limited amount of resources (time). The team should also look into doing cross training if possible in order to have the tasks completed.

Requirements volatility: Even though this risk cannot be avoided, it can be mitigated. The project manager should be basically be able to deal with change management effectively. Additionally, the team should understand the reasons and source of changes and should be familiar with guidelines to manage changes effectively in regards to efforts and quality of the project.

Unrealistic Schedules and Budget: To avoid this risk, the team should set realistic estimates with respect to the requirement of each task that was allocated to them. That is, we should not assume time estimates for the task allocated for each team member, set realistic goals, identify which team member can do a certain task well and identify weakness.

(b) Compare the two options (default option and mitigation option) according to their combined risk exposures. See the table from Dr. Kung's textbook we discussed in class for an example of such a comparison. Justify your calculations briefly (up to 50 words per strategy).

The combined risk exposure = Risk exposure + “default situation as a risk” exposure

CRE = (pR\* ER) + [(1-pR) \* ED]

For each risk, the effect ED is taken to be zero and the calculations demonstrate each option according to the combined risk exposure. The 2nd outcome is also considered to be the number of hours it would take if the first outcome wouldn’t have occurred. The CRE is the sum of these two outcomes. The default option is unlabeled while the mitigation option is. This is done by comparing the CRE of the two options.

Personal Shortfalls

Option 1: This would be our risk mitigation strategy since it reduces E

Probability Loss RE CRE

Outcome 1: 50% 4hrs 2hrs 2.5hrs

Outcome 2: 50% 1hr 0.5hr

Option 2:

Probability Loss RE CRE

Outcome 1: 50% 6hrs 3hrs 3hrs

Outcome 2: 50% 0hrs 0hrs

Requirements volatility

Option 1:

Probability Loss RE CRE

Outcome 1: 40% 5hrs 2.2hrs 4hrs

Outcome 2: 60% 3hrs 1.8hrs

Option 2: This would be our risk mitigation strategy since it reduces E

Probability Loss RE CRE

Outcome 1: 40% 3hrs 1.2hrs 1.2hrs

Outcome 2: 60% 0hrs 0hrs

Unrealistic Schedules and Budget

Option 1:

Probability Loss RE CRE

Outcome 1: 25% 5hrs 1.25hrs 3.5hrs

Outcome 2: 75 % 3hrs 2.25hrs

Option 2: This would be our risk mitigation strategy since it reduces E

Probability Loss RE CRE

Outcome 1: 25% 3hrs 0.75hrs 0.75hrs

Outcome 2: 75 % 0hrs 0hrs

The mitigation strategies are used to avoid or transfer risk. It guides to act immediately in terms of probability, effect or both. As shown above in the project I managed, the effects could have been reduced through the mitigation option strategy.