Quantitative Risk Analysis for Advanced AI Powered SaaS Platform for Image Processing

Date: 19th July 2024

In order to perform the quantitative risk analysis for this project, the "Expected Monetary Value (EMV) Analysis" method is chosen as studied in the lecture.

Inputs (variables) needed:

- Probability or P value
- Consequence or financial impact

Outputs produced:

- EMV
- Total risk exposure (EMV total)

Steps followed:

1. Identified risks (identified risks are already listed in the risk indicator).
2. Determine probability.
3. Calculate financial impact.
4. Calculate EMV.
5. Calculate total risk exposure by adding all EMVs

1. Risk Identification

Id	Risk Description	Risk Category	Identified By	Date Identified
1	Unclear project requirements.	Project management risk	P.U.Nisansa	June 22, 2024
2	Difficulties understand new advanced technical concepts and new tools.	Technical risk	P.U.Nisansa	June 29, 2024
3	Limited technical expertise on some technical areas such as cloud services and SaaS.	Technical risk	P.U.Nisansa	July 6, 2024
4	Unavailability team members to the meetings.	Resource risk	P.U.Nisansa	July 6, 2024
5	Market competition	External risk	P.U.Nisansa	July 13, 2024
6	UI designing Time Overruns (>60% tasks are	Schedule risk	P.U.Nisansa	July 13, 2024

	in schedule)			

2. Determine Probability and Impact
   Note: since currently the team doesn't have subject matter experts for marketing and finance to perform expert judgment, I researched and analyzed *similar past projects* to find the probability and impact. Therefore these variables are estimated using *historical data*.

   Probability has categorized as,

   - Very High (80% - 100%)
   - High (60% - 80%)
   - Medium (40% - 60%)
   - Low (20% - 40%)
   - Very Low (0 - 20%)

   Financial impact has categorized as,

   - Catastrophic (> 100,000 lkr)
   - Critical (50,000 lkr - 100,000 lkr)
   - Moderate (10,000 lkr - 50,000 lkr)
   - Minor (< 10,000 lkr)

   Financial impact quantified according to,

   - Cost of extended project duration due to delays.
   - Cost of rework
   - Labor costs
   - Material cost

Id	Risk identified	Probability	Impact
1	Unclear project requirements.	High Captured in 4 out of 5 past projects **80%**	Cost of additional meetings Requirement rework LKR 16,000. **Moderate**

		0.80	
2	Difficulties understand new advanced technical concepts and new tools.	Moderate Captured in 3 out of 5 past projects **60%** **0.60**	Cost of additional training from external subject experts and resources. LKR 40,000 **Moderate**
3	Limited technical expertise on some technical areas such as cloud services and SaaS.	Low Captured in 2 out of 5 past projects **40%** **0.40**	Cost of additional training from external subject experts. LKR 300,000 **Catastrophic**
4	Unavailability team members to the meetings.	Very low Captured 0 out of 5 past projects. **0%** **0.00**	Cost of delays in decision-making and project slowdowns. LKR 32,000 **Moderate**
5	Market competition	High Captured 4 out of 5 past projects. **80%** **0.80**	Need for additional marketing efforts. LKR 50,000 - LKR 100,000 **Critical**
6	UI designing Time Overruns (>60% tasks are in schedule)	Very Low Captured 1 out of 5 past projects. **20%** **0.20**	Cost of additional design time. $5/month for Figma LKR 3,034 **Minor**

4. Calculate EMV for each identified risk.

Risk (EMV) = Probability x Consequence

Id	Risk	EMV
1	Unclear project requirements.	16,000 * 0.80 = **12,800 LKR**
2	Difficulties understand new advanced technical concepts and new tools.	40,000 * 0.60 = **24,000 LKR**
3	Limited technical expertise on some	300,000 * 0.40 = **120,000 LKR**

	technical areas such as cloud services and SaaS.	
4	Unavailability team members to the meetings.	32,000 * 0.00 = **0 LKR**
5	Market competition	(50000 + 100000) / 2 * 0.80 **= 60,000 LKR**
6	UI designing Time Overruns (>60% tasks are in schedule)	3,034 * 0.20 **= 606.80 LKR**

5. Calculate total risk exposure

EMV_{total} = 12,800 + 24,000 + 120,000 + 0 + 60,000 + 606.80 = **217,406.80 LKR**