SOEN 6841 - Software Project Management

Learning Journal [Feb 4 to Feb 10]

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Key Concepts Learned:

-> In this week, I went through the slides and learned about the fundamental concepts in Software Project Risk Management. One crucial aspect highlighted was the categorization of risks, encompassing budget risks, schedule risks, resource risks, quality risks, and technology risks. So a good project manager must ensure that all these criteria is met and must have a proper risk mitigation plan and it must be formed before starting the project.

-> Also I learned about **Types of Risks**. They are

a) Internal Risks

If the risk occurs in a project due to the team members then they are Internal Risks. Like technology selected to develop a project may not be well known by some of the team members, not providing proper training to the employees, team members quitting the job, inaccurate allocation of budget etc… falls into Internal Risks.

b) External Risks:

If the risk occurs due to some environmental factors like if the team starts developing a project with a technology and after sometime that technology is not supported by the vendor the it falls into External Risks.

-> Also I learned about the **Causes of Risks**. Here I learned about some important factors that causes Risks in a project. They are,

a) Quality Constraints:

If the quality of software product is poor, then it will not satisfy the customer needs and also it will negatively impact the company. When customer uses a product with lot of bugs and quality issue, then a company need to form a separate team for handling bugs which will cost lot of money. So to avoid this, a company should form a Quality Assurance(QA) team before starting the project. Before the new feature is deployed to the user, QA team will completely test it, so that if there is any bugs it must be resolved before releasing it to customer.

b) Resource Unavailability:

Finding right resource for the project is quite challenging for companies. Also people who are working in a project may join some other companies if they get good salary. So this will cause a risk to the project.

c) Poor Management of Team:

If the project manager lacks experience in handling a team, then team member will lose interest in the project and as a result their productivity decreases. This will also affect the outcome of the project. So project mangers must be chosen correctly based on their skills, experience, success rate etc…

-> Also I learned about **Risk Analysis**. This one is very important while developing a project. Dealing with risks in a project requires thorough analysis to assess their potential impact. This involves creating a Risk Matrix. It is a tool used to assess and prioritize risks based on their impact and probability. The matrix categorizes risks into different levels of severity, with high-impact and high-probability risks receiving the most attention and mitigation efforts. This structured approach allows the project manager to systematically address potential threats throughout the project lifecycle. Additionally, the risk matrix needs regular revisiting and updating to ensure it reflects the evolving nature of project risks, enabling proactive management and timely intervention.

-> I learned about the **Importance of Agile Model in Project Risk Management.** Utilizing a waterfall model for project execution presents significant risks, primarily because the project outcome is only revealed after the entire project is completed, which could take a considerable amount of time. This lengthy wait to know the project's success or failure poses a substantial risk. To mitigate this risk, iterative approaches to software development have been adopted. Instead of tackling all requirements at once, they are

broken down into smaller, manageable sets. Each set is then used to develop a small, demonstrable product within a shorter timeframe, typically 4–6 weeks or less which is called sprints. This iterative approach allows for continuous testing and feedback, reducing the overall risk associated with the project. In contrast to the waterfall model, where risks are magnified due to the prolonged development timeline, the iterative model minimizes or eliminates these risks by focusing on smaller, more manageable iterations.

-> I also learned **Risk Management Document.** It is a crucial component of project planning, encompassing a comprehensive list of identified risks, their potential impact, probability of occurrence, and proposed mitigation measures. It begins by identifying potential risks across various project aspects, evaluating their potential impact on objectives, timelines, budget, and quality. Each risk is then assessed for its occurrence, categorized based on severity, and accompanied by proposed mitigation strategies tailored to the specific risk characteristics. Furthermore, the document establishes mechanisms for monitoring, reviewing, and updating the risk management process throughout the project lifecycle, ensuring proactive risk mitigation and enhancing project success probabilities.

Application in Real World Projects:

- In real-world software projects, the application of risk management principles is crucial for ensuring project success and minimizing potential failure of the project. By proactively identifying and addressing risks, project teams can effectively manage uncertainties and improve project outcomes.

- One key aspect of applying risk management principles in software development projects is the early identification of technical risks. Technical risks encompass a wide range of potential challenges, including compatibility issues, performance bottlenecks, security vulnerabilities, and scalability concerns. By identifying these risks early in the project lifecycle, teams can allocate resources more effectively and implement appropriate mitigation strategies to address them. For example, suppose a software development team identifies a compatibility risk related to integrating a new third-party library into their application. This risk could potentially lead to compatibility issues with existing systems or platforms, resulting in project delays or functionality issues. To prevent this risk, the team may choose to conduct thorough compatibility testing during the development process, ensuring that the new library integrates seamlessly with the existing infrastructure.

- Similarly, performance bottlenecks are another common technical risk in software projects, particularly for applications with high user traffic or complex functionality. By proactively identifying performance risks early in the project lifecycle, teams can implement performance tuning strategies, such as code optimization, caching mechanisms, or load testing, to address potential bottlenecks and ensure optimal system performance.

- Also, adopting an Agile risk management approach enables teams to adapt to evolving project requirements and stakeholder expectations more effectively. Agile methodologies, such as Scrum or Kanban, emphasize iterative development cycles, frequent collaboration with stakeholders, and continuous feedback loops. This iterative approach allows teams to identify and address risks in a timely manner, incorporating changes and adjustments to project plans as needed. For instance, in an Agile software development project, if new requirements or priorities emerge during the development process, the team can quickly assess the impact on project risks and adjust their plans accordingly.

Peer Interactions:

- I discussed various aspect of Risk Management and also developed Risk Mitigation plans for our project. We created a Risk Matrix, outlining potential risks that could affect project progress. This matrix served as a guide for identifying, assessing, and prioritizing risks, enabling us to proactively address them.

- Also I discussed about different approaches to risk management adopted by organizations in software projects, gaining a comprehensive understanding of industry best practices. Analyzing how various organizations handle risks provided valuable insights to effective risk management strategies.

- Also I had discussions with my project team members regarding Project Initiation and Market Analysis submission.We examined our project objectives and potential risks. We explored similar projects developed by other companies. By studying competitors' projects, analyzing their websites, and identifying their target customers, we gained valuable insights into market trends and customer preferences. This information allowed us to refine our project's features, the exact requirements of the target audience of the project.

Challenges Faced:

- One of the challenge I faced is complexities of risk categorisation and prioritization. Finding the exact criteria for classification was difficult. Determining how to effectively categorize risks demanded a thorough consideration of various factors, including project objectives, stakeholder expectations, and resource limitations. After attending the class and reading lecture notes, I got deeper understanding on how to categorise risks. From the lecture notes, I got to know about various categories of risks like Budget Risks, Time Risks, Resource Risks, Quality Risks, Technology Risks. Here budget, time, resource availability, project quality, technology used in the project are the important criteria for categorising the risks.

- Also understanding the practical implementation of Agile risk management techniques, such as incorporating risk reviews into sprint planning meetings or conducting iterative risk assessments, requires additional exploration and hands-on experience. So I am planning to read some blogs, discuss with my peers on how to incorporate Agile Risk Management techniques. Once I get deeper understanding about this topic, I will implement this approach in our final project.

Personal Development Activities:

- I have read some blogs on current risk faced by IT companies while developing the software product. In that blogs, technological advancement in AI/ML makes the existing product outdated. So in order to overcome this, most of the IT companies trying to incorporate ML/AI into their product, integrating with GPT Models and plugins.

- Also I explored about Agile Methodology and watched some tutorial videos. I have gained considerable amount of knowledge in this topic. I got to know about sprint planning, iterative builds, end to end testing before the release of the product. Also I got know about roles and responsibilities of scrum master.

- I discussed with my senior who works in Montreal based IT Company and discussed the kind of software risk he faced while developing the new features of the product. Also I discussed the Risk Mitigation plans they used to follow during the release of the product to the customers. I also discussed about the roles and responsibilities of a good project manager.

- I also explored about the Cyber threats and risks faced by the companies. As this topic is new to me, I am planning to explore in depth by reading articles, blogs etc…

- I attended a Alumni Meet-up events organised by my department. It was a wonderful experience, met some of alumni, discussed about their job roles, work experience. I had of lot of take aways from this event. Also I am planning to attend more events in the upcoming weeks.

Goals for next week:

- I am planning to further study on effective categorisation and prioritisation of risk. As this is a complex topic, I will dedicate some considerable amount of time in this topic. Once I get a solid knowledge, I will try to implement this in my final project.

- I will be preparing for next week's Project Pitch event. I am planning to have meeting with my team members, discuss the objectives, problem statement, finding feasible solution. Also I will prepare the contents to deliver for next week's project pitch to effectively communicate our project's goals, approach, and value proposition.

- I plan to further deepen my knowledge on Software Project Management tools like Jira, Monday.com. Gaining this skills is essential because most of the companies use these software for managing their team. Mastering these tools will enhance my ability to effectively manage teams and projects in real-world scenarios.

- Also I will be preparing for my mid term exam. Will be reading the lecture notes, e-Book mentioned by the professor and watch some tutorial videos on some of the complex topics.