**Learning Journal**

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**Course:** Software Project Management (SOEN – 6841)

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**Key Concepts Learned:**

During the second week major focus was given to understand what are the various cost and effort estimation techniques and how they are applied in a project. In addition to this, the various risks in a project and its mitigation strategies were covered. The key takeaways from chapter three and four are:

* Effort estimation is a crucial process in software project so that the time of the high salaried resources we require are planned in an optimal manner to bring out their maximum usage of time.
* A project can have a better estimation once more information about it is available, so it is ideal to revise project estimate regularly to get a more accurate value. Some of the common effort estimation techniques are Function Point Analysis, COCOCO and Wide Band Delphi approach.
* When we have data for both the current and previous projects, we can go with Function Point Analysis technique as it uses the historical data to derive adjustment factors and productivity for the current project
* In FPA the number of function points to be build is derived based on the customer requirements, the number of parameters to these functions and its complexity.
* A suitable function count depending on the project (development, enhancement, or application) is selected. The specific type of Function Point Count is used to determine how the number of function points will be added up.
* The bounty of a function count is determined based on the integration requirements of the application with other applications.
* The unadjusted FP count is determined based on data functions and transaction functions.
* In summary the function point is calculated as FP=UPF x VAF where UPF is the unadjusted function point and VAF is the value adjustment factor.
* Function Point Analysis cannot be applied to all types of software, and it is a difficult and time-consuming technique that requires an expert to use it.
* Wide Band Delphi is a technique in which the actual people who are involved in work are contributing towards the effort estimation, these values are expected to be much closer to the actual values.
* This is an example for experience-based approach, and the effort estimate is calculated as (pessimistic estimate + likely estimate x 4 + optimistic estimate)/6
* COCOMO is an original effort estimation model that is used in projects where the previous data is not available. It used the industry averages as input to provide an effort estimation.
* In COCOMO source LOCs, cost drivers and scale drivers are used influence the effort.
* For any estimations at the early stage of project the basic COCOMO equation can be used which Effort = 2.94 x EAF x (KLOC)^E.
* COCOMO is a Well-documented, independent model and is not tied to any software vendor.
* Once the effort estimations for a project is calculated the cost estimation is calculated based on the salary of the software professionals and the number of hours they will be working on the project.
* Schedule for a project is calculated once the effort is estimated, as there could be tasks that could run in parallel and might require more effort.
* The resource estimation is done based on the list of tasks in the project for which we identify the required skills and level of experience needed from resources.
* In a project risk is categorized as internal and external. If a risk arises due to some aspect within the project team, then it’s an internal risk, all other are considered as external.
* The various risk that can arise in a project are meeting quality requirements, resource unavailability, lack of interest in the project, attritions, scope creep, cost constraints, bad negotiation, unrealistic estimations and poor management.
* To tackle budget risks, allowances should include reserve funds. To tackle time risks a schedule allowance can be taken. A knowledge transfer mechanism can be used to reduce the impact by a team member leaving a project during middle of development. Quality risks can be reduced by integrating quality checks during project schedule itself.
* Some of the risk response strategies are acceptance, avoidance, transference and mitigation.
* In acceptance the project decides not to change the project plan to deal with a risk, in avoidance the project plan is changed to eliminate the risk, in transference a third party owns the responsibility for a risk and its management, and in mitigation we take measures to reduce the risk exposure factor of a given item.

**Reflections on Case Study:**

The case study reflects the proper application of effort, cost and resource estimation by developing the project in an iterative model. The plan to develop features in an incremental model gives them more ideal on the actual effort required for each iteration, which gives them more clarity on the actual effort required for the entire project. They did a proper estimation on the resources required and their cost, based on the immediate requirement and the long-term development. The software vendor did implement the risk mitigation methods to overcome the risks they faced during development, such as bridging the communication gap between the onshore and offshore teams using a standard template, providing the employees best salary to overcome the attrition rates, making sure there was someone in the team to take up the overtime work if someone from the team was unavailable and finally maintain the software quality through regular reviews and checks.

**Collaborative Learning:**

Couldn’t get a chance this week to meet my peers and engage in a collaborative learning.

**Further Research/Readings:**

Took some YouTube tutorials to know more about FPA and COCOMO model of effort estimation.

**Adjustments to Goals:**

Schedule to have meetings with team members at least twice a week to have more detailed discussions on the project activity and discuss more on the topics learned.