THE MOST COMMON SUCCESS FACTORS IN COST ESTIMATION – A REVIEW

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Abstract

Cost estimation process becomes a crucial factor in any software development project. An effective software estimate provides the information needed to design a workable software development plan. An effective software estimate provides important information for making project decisions, projecting performance and defining objectives and plans. Without the proper guidance in a project, the results could be disastrous. It begins by covering the fundamental problems of unreasonable software estimation: not planning up front; failure to use viable estimates as the bases of an achievable project plan, not updating the plan and estimates when a project changes, and failing to consider the uncertainties inherent in estimates. This paper proposes the success factors that bring to the effectiveness of cost estimation in software development project.

Keywords: Software Project Management, Project Success, Project Failure.

1. INTRODUCTION

Too many software projects fail and more of these failures are due to planning inadequate than unachievable technical objectives, failed technology, or unachievable requirements. The accuracy of cost estimation result is important in any software development project. The crucial question in software development project is how to complete a project in specific time, budget and resources. A software estimation process that is integrated with the software development process can help projects establish realistic and credible plans to implement the project requirements and satisfy commitments. It also can support other management activities by providing accurate and timely planning information. Overestimation and Low estimation is also the inaccurate estimate. Most importantly, however all estimates have uncertainty. This paper discusses on success factors in software development project.

II. SUCCESS FACTORS IN COST ESTIMATION

1. A Good Plan

The Plan, Do, Check, act cycle is fundamental to achieving project quality. [16] The overall project plan should include a plan for how the project manager and team will maintain quality standards throughout the project cycle. Time spent planning is time well spent. All projects must have a plan with sufficient detail so that everyone involved knows where the project is going. A good plan provides the following benefits:

- Clearly documented project milestones and deliverables
- A valid and realistic time-scale
- Allows accurate cost estimates to be produced
- Details resource requirements
- Acts as an early warning system, providing visibility of task slippage
- Keeps the project team focused and aware of project progress

2. Appropriate Communication

Despite good project planning scheduling, poor or absent communication with team members and stakeholders can bring a project undone. Project managers need excellent communication skills and a comprehensive scheme that encourages formal and informal discussion of expectations, innovation, progress and results. Effectively communicating with a team means making each teammate feel included, engaged and valued. This means preparing
well, listening reflectively, responding clearly and asking for feedback. Then you have to take that feedback and make good adjustments, remembering to always under-promise and over-deliver for the team.

3. Clear requirements and specifications

A Software requirement is a sub-field of software engineering that deals with the elicitation, analysis, specification, and validation of requirements for software. The software requirement specification document enlists all necessary requirements for project development. To derive the requirements we need to have clear and thorough understanding of the products to be developed. The planning process identifies needs and capabilities of an organization; these two dimensions form the rationale for purchasing new systems. Needs are translated into business requirements, i.e., “what we want”. Specifications describe exactly how the system, will fulfill the requirement.

4. Clear objectives and goals

Goals are generically for an achievement or accomplishment for which certain efforts are put. Objectives are specific targets within the general goal. Objectives are time-related to achieve a certain task. A goal is defined as (i) The purpose toward which an endeavor is directed. (ii) The result or achievement toward which effort is directed; aim; end. An objective has a similar definition but is supposed to be a clear and measurable target.

5. Support from top management

[1]Top management commitment is the factor that determines the tipping point between potential success and failure when developing and implementing business continuity management projects and systems. In almost all of the cases where we were able to successfully develop, implement and validate a business continuity management system, the topmost contributor to the success was the keen interest exhibited by top management. When we say top management, it implies the Steering Committee formed for the execution of the business continuity project. A project charter issued by the top management ensures organization wide commitment for the project and the availability of resources.

6. Effective Project management skills / methodologies (Project manager)

A successful [2]Project Manager must simultaneously manage the four basic elements of a project: resources, time, money, and most importantly, scope. All these elements are interrelated. Each must be managed effectively. All must be managed together if the project, and the project manager, is to be a success.

- [6]Resources: People, equipment, material
- Time: Task durations, dependencies, critical path
- Money: Costs, contingencies, profit
- Scope: Project size, goals, requirements

Most literature on project management speaks of the need to manage and balance three elements: people, time, and money. However, the fourth element is the most important and it is the first and last task for a successful project manager.

7. Proper Tool Selection

Choosing the right proper tool is important in cost estimation process. The right proper tool produce an accurate results. The traditional common tool used in estimating the cost is spreadsheet or Microsoft Excel and Microsoft Project. The biggest challenge in using the traditional method is the level of accuracy. Software development communities faced difficulty to achieve high accuracy in producing cost estimation result. Therefore, many studies have been done to develop automated tool for cost estimation process. However, no one claimed their proposed tool can produce accurate result.

8. Suitable estimation technique

In software cost estimation process, there are few techniques that can be applied to estimate the cost. For examples, the expert judgment, top-down approach, bottom up approach, price to win, analogy, and many more. However, until the date, there is no research that can ensure which technique is the most suitable in cost estimation process. Therefore, many researchers have been done investigating the most suitable technique that can be applied. Choosing the right cost estimation technique is important to ensure the result is accurate. There are few researches have been carried out to integrate more than one technique which is called the hybrid technique.
9. Changes of company policy

Business ethics have always been an important part of a Corporate World; some organizations have strict rules when it comes to their ethics. Ethics are a set of rules that people in the organization follow with strict adherence. It brings lots of discipline in the organization and you really get to learn what advantages of business ethics policy are after implementing days within certain period of time. There are lots of responsibilities, which go in to handling company’s goals and objectives. A company needs to be ethically prepared to attain a good reputation in the market and it’s very important from their survival point of view.

The multinational companies always follow a fixed set of rules, which the workers in the organization adhere to. Business policies and strategies in an organization are set in accordance with their work culture and some companies manipulate the policies based on their work culture and ethics. Here are some of the very good advantages of business ethics policies in an organization:

- The business ethics help the investors and customers of the company to practice themselves the ethical values practiced in the companies they partner with. It helps them achieve a common business goal.
- The ethics in an organization helps to bring out superior employee performance in terms of productivity and establishing cordial relationships amongst the employees and the management. Ethics help built in morals amongst the employees of a company.
- For a company to grow, Reputation is one of the most important possessions a company should have in order to stand in the market amongst its competitors. If the core management of the company is based on ethics, it sends out a strong message in the markets as well.
- Ethical education in an organization brings in for International regulatory developments, which provides for strong financial and legal incentives for bigger corporations to grow and develop their business.

The companies are regularly upgrading their ethical programs to encourage the employees to aim for bigger goals so as to maximize the profits of a company. The ethics policy has been proved beneficial to companies especially during turbulent times, it provides integrity to an organization to stand by its rules and regulations.

10. Testing

Testing is critical to understand how the application will work in the installed environment, if it performs according to expectations, and to identify any problems with the software or processes so they are addressed prior to the live event.

- Document what type of testing must be done (i.e., database conversion, data flows, user front end, business flow). Include who will be involved in testing and how it will be performed.
- Write Test Scripts that detail all scenarios that could occur. Business end users should be involved in this as they are most likely to understand all aspects of their business.
- Test items that are standard operations as well as those items that occur infrequently.
- Conduct user testing with staff members who are familiar with the business for which the application is designed. They should be validating the application for their business.
- Allow time in the schedule to retest anything that did not work initially. If any changes are made to software or setup, run through most tests again to assure there is no negative impact in other areas.
- Determine security access, setup, and test user accounts prior to live.

11. Training

Without training, the implementation will take longer, adaptation will be more problematic and frustration will be higher. A training plan should be developed that includes everyone who will either support or use the new system. Components of a successful training program, as reported by practitioners, include business process reengineering training and team training prior to project work, Extensive documentation, Appropriate timing, coordinating between project schedule, trainer availability and trainee availability.

12. Good Quality Management

The challenge to any software development effort is that quality management is a tricky balancing act that must factor in time, cost, and risks. Get it wrong, and you could face issues ranging from unsustainable costs, missed windows of opportunity, and unhappy customers, to a massive recall or the complete failure of a system at a critical moment. Get it right, and you can achieve a positive operational return on investment from efficiencies.
gained in development activities. With effective quality management, you can also create opportunities to deliver critical (but difficult-to-qualify) benefits, such as improved market share, higher customer satisfaction, and increased brand equity.

III. WHY DO SOFTWARE PROJECTS FAIL?

The possibility of software projects [13] failing due to various reasons—including costs, scheduling and quality issues and/or achievement of objectives to outsource their software development needs. These failures, which often cause huge losses in time and money, can prove to be detrimental to a company’s growth and development. Being able to identify the causes of failure and categorizing them can lead to lower failure rates in future endeavors. [14] A good starting point is by addressing some of the key reasons software projects fail.

- Not Enough Time
- Insufficient Budget
- Poor communication
- Never reviewing project Progress
- Inadequate Testing
- Testing in the Production Environment
- Lack of Quality Assurance
- Not Conforming to Industry Standards

There are many things that lead to project success and many that lead to failure. [15] Good project management is a process of continuous improvement. It is a process of making mistakes and learning from those mistakes. It is a process of continuous study and learning. For those who cannot devote themselves to this never-ending process, there will be few successes.

IV. CONCLUSION

Software process improvement is both possible and essential. A key to successful software process improvement is making a step-by-step endeavor, which gradually evolves, into a paradigm shift in the way the organization does business. The processes and practices complement each other for improvement and both require human effort from everyone in the organization. In Conclusion all of these factors need to be well-considered and defined in making sure of the success estimation process. This study has looked at the success factors of cost estimation process in software development project. Therefore, by considering these factors, perhaps cost estimation process can produce more accurate result.

REFERENCES

[1] Eight Key Factors to Ensuring Project Success by Duncan Haughey.


