

IT project management and success criteria

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Abstract: This paper provides literature survey about IT Project Management and its success criteria. Formerly, IT projects were handled as normal projects and this brought problems because of their different nature, so a new approach was necessary. This approach involved additionally to the classic approach, clear business objectives, minimized scope, user involvement and support. Hereby time, quality, and cost components of the project are defined more precisely. In the mean time, systems development life cycle became part of the project life cycle which describes software engineering phases and become vital for the IT Project Management.

Keywords: IT Project Management, Project Success Factors, System Development Life Cycle

INTRODUCTION

History of Project Management starts with erecting buildings and goes to ancient times. Civil engineering projects were generally managed by architects, for example Roman architect Vitruvius (first century BC). In 1950s corporates began to apply project management tools and professional techniques to complicated engineering projects. There were three criteria developed to measure the performance of the projects, cost, time and quality (often called The Iron Triangle, figure 1) [8].

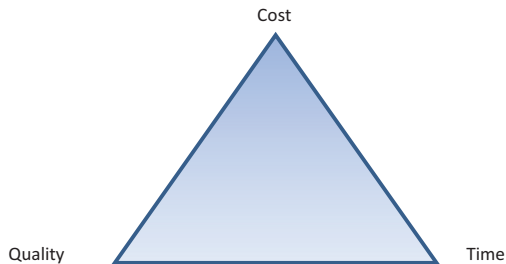


Figure 1 - The Iron Triangle [8]

Because of the needs in the late 1900s, IT Project Management has been derived from Project Management with its own methodology and success criteria. Main motivation was that technology, business models and markets change so rapidly that a project that takes more than a year can be obsolete before they are completed.

INFORMATION TECHNOLOGY PROJECT MANAGEMENT

IT Project Management combines traditional Project Management with Software Engineering / Management Information Systems to reach higher levels of success on IT projects. One of the first surveys about IT Project Success was the CHAOS study (published in 1995) by the Standish Group reporting that 31 % of IT projects were cancelled before completion, 53 % of them were completed over budget / schedule (called challenged projects), and did not meet all of the project requirements. Only 16 % of IT projects were successful. A more detailed graph can be seen in figure 2.

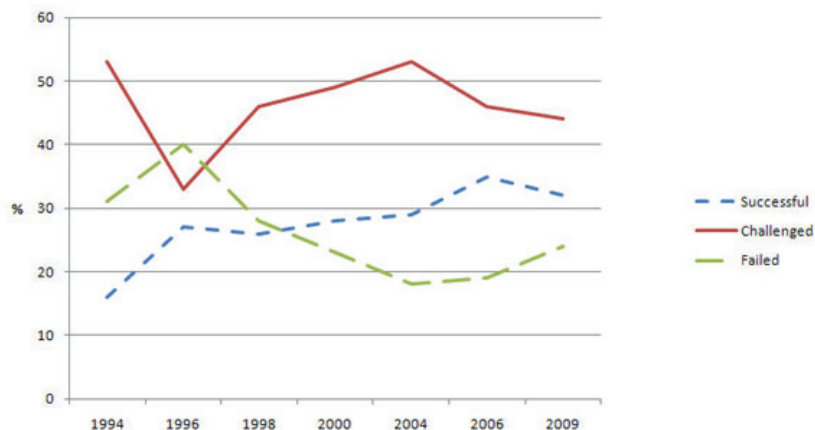


Figure 2 - Chaos Report findings by year [1]

On the figure 2, it's clear that portion of the successful projects has raised while number of failed projects was decreasing.

IT projects have different success factor and different criteria than normal projects. In table 1, criteria from different researches have been summarized.

Table 1 - IT Project Success Factors

Year	Research	Criteria leading to success
1992	De Lone [9]	Post criteria like system & information quality, information use, user satisfaction, and individual & organisational impact are important.
2001	Standish Group [10]	Executive Support User Involvement Experienced Project Manager Clear Business Objects Minimized Scope Standard Software Infrastructure Firm Basic Requirements Formal Methodology Reliable Estimates Other
2002	Hartman [6]	Owner is informed of the project status and his/her approval is obtained at each stage. Owner is consulted at all stages of development and implementation. Proper communication channels are established at appropriate levels in the project team. The project has a clearly defined mission. Top management is willing to provide the necessary resources (money, expertise, equipment) The project achieves its stated business purpose A detailed project plan (including time schedules and milestones) with a detailed budget in place. The appropriate technology and expertise are available. Project changes are managed through a formal

		process. The project is completed with minimal and mutually agreed scope changes.
2005	Robert N. Charette [2]	Failure reasons are more determining. They are: Unrealistic or unarticulated project goals Inaccurate estimates of needed resources Badly defined system requirements Poor reporting of the project's status Unmanaged risks Poor communication among customers, developers, and users Use of immature technology Inability to handle the project's complexity Sloppy development practices Poor project management Stakeholder politics Commercial pressures
2011	Joseph Gulla [7]	Five Factor Model: Project Management People Business Technical Method
2012	Selcuk Kiran [5]	Timing Individuals with knowledge and/or experience Partners and software selection Time Management Lower level workers Project Management After installation phase
2013	Brousseau, P, and He´roux, D [11]	Risk management as a part of IT project management, is till overseen or pitied by project managers.

Success factors are focusing intensively on the people who are participating in the project or who are part of the organisations. Secondly, project scopes, milestones, and auditing are important. Another important part of the project is methodology. These methodologies are summarized in Table 2.

Table 2 - Software Development Life Cycles (SDLC) [3]

Methodology	Content
Waterfall	Complete a phase before the next phase
V – Model	Development vs. testing
Iterative – Cyclic Phases	Basis for many SDLC's
Spiral – Waterfall & Iterative	Risk management at regular stages
Agile	Lean: Based on Just In Time Scrum: Fast Standup meeting Test-Driven Development (TDD): Write a unit test before coding Extreme Programming (XP): Fine scale feedback (pair programming, TDD), Continuous Process (small releases), Shared Understanding (Coding standards), Programmer welfare (sustainable pace)
Cleanroom	Formal Methods, Statistical Quality

Rapid Application Development (RAP)	Control, Statistically Sound Testing
Rational Unified Process (RUP)	Construct Prototypes Adaptable Process Framework

For the success of the project different SDLC's are used for different types of projects as in table 3.

Table 3 - Suitability of Different SDLC's [3]

Agile Home Ground Adaptive methods (Lean, Scrum, XP ...)	Plan-driven Home Ground Predictive Methods (Waterfall, Iterative, Spiral ...)	Formal Methods (Cleanroom ...)
Low Criticality	High Criticality	Extreme Criticality
Senior Developers	Junior Developers	Senior Developers
Requirements change often	Requirements do not change often	Limited requirements, Limited Features (Wirth's Law*)
Small Number of Developers	Large Number of Developers	Requirements that can be modelled
Culture that thrives on chaos	Culture that demands order	Extreme quality

* Software is getting slower more rapidly than hardware becomes faster [4]

CONCLUSIONS AND FUTURE WORK

IT projects are not usual projects and they should be handled differently. Success of the IT projects depends on this different treatment. People, methodology, scope are more important than other projects. Especially after the introduction of major ERP projects, meaning of workers and company culture have become vital for the IT projects.

Top management should support the project intimately like shareholders. They have to define the goals carefully and realistic. Scope and benefits of the IT projects should be very clear for the employees. Company employees should be involved in every phase of the IT projects independent from their position. At the beginning they should be informed how their processes and jobs will be affected from the IT project. They must be aware that their benefits will grow if they take part actively in the project like reporting, testing, improving. They have to be informed continuously about the scope and progress of the project. Project Management should be aware that if they don't have the support of the workers, they can't succeed.

Meanwhile, System Development Life Cycles play a very important role on the success of the projects. First of all, information technology of the corporate should be analysed very carefully and by defining the needs of the company this analysis has to be considered. After this phase, proper methodology selection is vital for the project and it has been shown that third party experienced experts involvement (like consultants) can improve the outcome. Wrong methods and selections can lead to irrecoverable results like bankruptcy as well.

By running surveys, interviewing experts and using actual figures, success of the projects can be measured more precisely and future IT projects' results can be improved. In the new age, establishing and using these success factors will be more important because IT projects will spread more quickly and there will be less tolerance to failures.

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