

# UNDERSTANDING THE MEANING OF “PROJECT SUCCESS”

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## ABSTRACT

Fortune 500 organizations are executing their tasks using projects. Project management is the area of concentration across the world. Different stakeholders have a different perspective about project success. The meaning of project success has been explained in this paper. In addition, the Project Critical Success Factors (CSFs) are mentioned. The research of Standish Group on project success and project success metrics is presented. Earlier research on the meaning of project success and project critical success factors is highlighted. The works of Jeffery K. Pinto and Dennis P. Slevin, David and Adam, DeLone and McLean, and The Standish Group Research will be discussed in this paper. The methodology includes secondary research based on literature view of prominent empirical studies and the literature reviews by making note of findings and observations from those studies. The initial literature collected leads to further search of articles based on their references. The research findings indicate that the top of the most success factors for many projects include project objective, top management commitment, competent project team and user involvement.

**Keywords:** project success, Critical Success Factors (CSFs), software projects

## INTRODUCTION

Billions of global IT spending is becoming waste or failure because of several reasons (Krigsman, 2012). If the people issues are kept aside, project management is one among the critical areas which may make a project success or failure. The main research questions are when people say a project is successful, and what the success factors for any project are. These become research questions because there are different perspectives, opinions, and practices to these questions in the literature. This research problem is addressed using the secondary research with several steps. First, keywords are identified related to the research problem. Then, the literature review based on the keywords are gathered using scholarly articles available over the Internet. The theoretical studies which give inputs to the problems in the questions include Haleem et al. (2013), Holgeid and Thompson (2013), Mian (2105), and Goff (2011). A project is considered a success if the project management is a success and the project

product is a success (Shojaie *et al.*, 2016).

People say that a project is successful as far as project management is concerned if the project is complete within time, within the given budget and meets the customer requirements with the specified quality (Bodicha, 2015). Similarly, there are various parameters based on which people consider project product is successful. Different stakeholders of the project such as project manager, team members, senior management, functional managers, CEO, directors, suppliers, vendors, customers and third parties have a different perspective on project success (Ramos & Mota, 2016). For example, a project which is considered as successful by senior management may not be considered as successful by team members. This is because the team has worked extra hours and weekend as well (Project Management, 2016). Similarly, a project considered as a success by a project team may not be considered as a success by the customer. This is because the project is delayed by 20% and the costs go out of the track by 30%. Thus

different stakeholders interpret the project success differently (Beleiu *et al.*, 2015). This paper highlights those meanings.

The results of the research should provide the critical success factors of the project and important success factors for the project. The benefits of this research include the application of these success factors to the projects can increase the success rate of the projects in organizations. Also, it can reduce the failures and challenges to the projects such as schedule overruns and cost overruns. The paper is organized as next section presents research methodology, followed by project success factors, then the Standish group research and project success metrics, results and discussion.

## METHODS

The objective of the study is to find out the meaning of project success by considering various parameters/factors of projects. The factors impacting project success are identified to understand the meaning of project success. This is done using the literature review by secondary research. The tools such as Google, Google Scholar, DOAJ, ResearchGate.net, and Academia.edu are used to find the literature of the topics identified. The keywords used to search the reference articles include "Project Success", "Critical Success Factors", "Critical Failure Factors", "Product Success", and "Project Success Metrics".

The success factors and critical success factors mentioned in the literature review section of the articles and the findings sections of the articles are considered. The outcomes of empirical studies and the factors identified in those empirical studies are observed and noted down. The references mentioned in the initial round of literature collected became search sources for further literature. Systematic literature review method is followed in gathering the related articles. Those specific factors are mentioned in the results and discussion section. Next section discusses the results and discussion.

## RESULTS AND DISCUSSIONS

The various success factors are identified using the keywords. In addition, the relationships between the identified factors are observed and presented in this paper. Project success can be represented in Figure 1.

Project management success depends on many factors as shown in Figure 2. Besides, product success depends on technology success and the process success as well (Klongpayabal & Thawesaengskulthai, 2014). According to figure 2, the factors such as project team (Taherdoost & Keshavarzsaleh, 2015), resources (Wang *et al.*, 2015), environment, project manager skills, organizational environment (Taherdoost & Keshavarzsaleh, 2015) and technical factors (Taherdoost & Keshavarzsaleh, 2015) affect the project success in organizations.

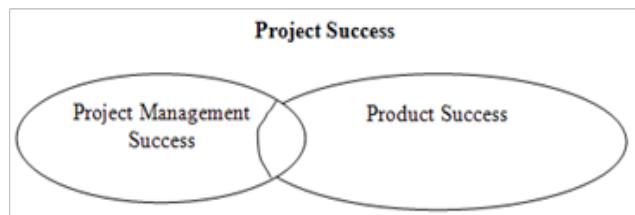


Figure 1 Project Success

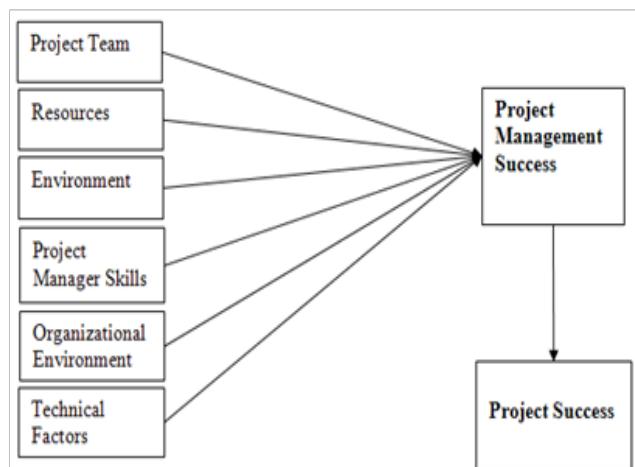


Figure 2 Factors Impacting Project Management Success

Project team factors which give impact to the success of the project include project coordinators and team members, their skills and competencies. While, resources such as hardware, software, machinery, tools, and components used in the project execution and planning have an impact on project success. Next, environment factors include external environment such as political, social, economic, legal, regulatory, and financial environments of the project which will affect the project success. Then, project manager skills like communication, leadership, persuasion, negotiation, influencing, motivating, directing, decision-making, problem-solving skills also influence project success. Moreover, organizational environment such as organizational culture, organizational structure, organizational processes, organizational goals and objectives, top management support, senior management commitment, organizational reputation, organizational climate, organizational policies, and procedures affect project success. Last, technical factors give impact to project success with its factors like hardware factors, response times, access methods, the speed of devices, the accuracy of the output, usability, accessibility, troubleshooting, etc.

The meaning of project success includes project success factors, project success criteria (Masrom *et al.*, 2015), project success measures (Satankar & Jain, 2015), project success metrics and project success outcome evaluations. The presence of project success factors for project increases the probability of success of the project (Lech, 2016). Similarly, there are certain critical success factors for projects.

The presence of these factors is mandatory. Project success can be measured using different techniques. Some organizations take the customer satisfaction surveys (Ellis, 2015). Some organizations use senior management or project manager feedback (Harwardt, 2016). Some conduct team project surveys. While the others measure the success of the project in financial terms (Parisi & Rossi, 2015). Therefore, it can find out the cost deviance, schedule deviance and quality deviance of the project to measure the project success. While, some organizations may take the user ratings for the project. Thus, different measures are used to check the project success. Next section, it discusses the earlier research done regarding project success factors. Other factors regarding the project success include team communication, team cooperation, team coordination, team cohesion, team conflicts, team climate, team productivity, and team performance. These factors impact the success of the project in many domains. This is shown in Figure 3. Team skills and competencies also take part in project success (BMG Research, 2014).

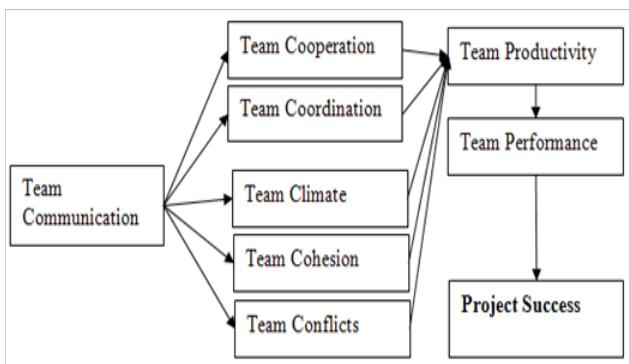


Figure 3 Impact of Team Processes on Project Success

Similarly, some conflicts impact the project success (Prieto-Remón, 2015). The conflicts such as relationship conflicts, task conflicts, and process conflicts affect the team cohesion. Team cohesion, in turn, impacts the team performance positively or negatively based on the type of conflict (Lunenburg & Lunenburg, 2015). The task conflict creating task cohesion is positively correlated to the project success. However, the relationship conflict creating social cohesion is negatively correlated to the project success. The process conflict at the beginning of the project is good for the project, and the process conflict at the end of the project can hamper the project progress. The project manager behavior has an impact on team processes and team behavior (Goff, 2011). The team behavior has also got the effect on project manager in the project success.

Organizational factors including organizational structure, reporting hierarchies, organizational strategy, organizational principles, procedures and policies, organizational culture, and organizational values have an impact on project success. The CEO, top management behavior, senior management

commitment, organizational reputation, financial situation, customer relationship management, vendor relationship management, employee satisfaction levels, employee turnover, and attrition rates also have the influence in project success. There are environmental factors which affect project success like financial markets, stock exchanges, GDP, economic growth rate, the fiscal situation in the country, financial reserves, relationship with banks and financial institutions, relationship with governmental regulatory bodies, the political situation in the country. Moreover, the legal situation in the country, the legal framework in foreign lands in case of international projects, expatriate payments, relocations, the societal background of the organization, demographic background of the founders, etc. can also have impact on project success are also a part of environmental factors. This research also indicates that the educational background, age, a demographic background such as geography, ethnicity, income levels, qualifications, and networking also have an impact on the financial success of the organizations.

Innovation is also a distinguishing factor between the successful project and unsuccessful project (Mian, 2015). Organizational culture, individual skills, and creativity affect innovation in organizations. Innovation gives impact to project productivity and performance. Thus, innovation is also a success factor for projects.

Technical factors which have some effects on the project success irrespective of the domain consist of machine return times, processing times, access times, troubleshooting, availability of technology, feasibility of implementation, cost of technology, commercialization of technology, technology transfer issues, understanding technology, availability of skilled manpower in that specific technology and training the team members on technology related products. In the case of software, mobile and digital technologies, hardware, software, firmware and middleware technologies also take part in project success. Moreover, innovation is also an important factor. Even though technology is important, the majority of the projects fail due to people related reasons (Holgeid & Thompson, 2013). Hence, soft factors should be carefully considered by the project team to make the project success.

Different researchers such as Pinto and Slevin, David and Adam, DeLone and McLean, and the Standish Group Research have brought different factors related to the success of projects. Realistic time and cost estimations are among the critical success factors for software projects. Pinto and Slevin (1987) have studied the critical success factors in effective project implementation. According to them, the critical success factors for the effective project implementation include project mission, top management support, project schedule/plan, client consultation, personnel (recruitment, selection, training), technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting. The project mission is nothing but the project goal or objective. There should be sync

among team members on project mission. Otherwise different individuals go in different directions.

Next, Shenhari and Wideman (1996) have studied the linking between the project success criteria and project type. Frese (2003) explains that the meaning of project success and failure. Sofian (2003), in a research report, has given the project success about organizational roles and capabilities and project manager's skills and capabilities. Parsons (2004) has given the framework for categorizing the important project variables. Moreover, Marshall (2007) has studied the contribution of earned value management to the project success on contracted efforts. In the research conducted by Baccarini and Collins (2003), the critical success factors for the projects are identified as follows with decreasing order of importance as given by the respondents of their study. There are project understanding, competent project team, communication, realistic time and cost estimates, adequate project control, client involvement, risk management, resources, team work, project planning, top management support, stakeholder involvement, project managers authority, external factors and, problem-solving.

In Marshall's study and Pinto and Slevin's study about project understanding or project mission or project objective or project goal, they identify the top of the most critical success factor for projects. The absence of this factor may lead to project failure. Baccarini (1999) has summarized project success as: Project Success = Project Management Success + Project Product Success.

Project Management Success is focused on the dimensions of 'within time', 'within budget' and 'according to the requirements' (Westhuizen et al., 2005). According to DeLone and McLean (1992), the project product success depends on the following six dimensions. There are system quality, information quality, information use, user satisfaction, individual impact, and organizational impact. DeLone and McLean (1992) have also explained four aspects which can be incorporated into a success project model. It consists of simplicity, acceptability, the similarity of intention, reusability.

According to Crowston et al. (2003), Information systems, success is one of the most widely used dependent variables in information systems research. Then, according to Verner and Evanco (2000), there is an effect of estimation practices on the success or failure of software development practices. They have studied the impact of estimation practices on project success or failure.

According to Haughey (2014), a good project plan should have a valid and realistic time scale with accurate cost estimates. Moreover, Willard (2005) has expressed that project management has traditionally viewed as success or failure based on three metrics. They are on time, on the budget, and meets specifications.

According to Attarzadeh and Ow (2008), the factors which cause the project success include

user involvement, good planning and estimations, good leadership and team member's technical skills. Next, Verner et al. (2005) have studied the effect of requirements engineering on project success. Differently, according to DeMarco and Lister (2003), good effort and schedule estimates have a huge effect on project success. Meanwhile, politic, legality, culture, technic, management, economic, environment, society, corruption, and physic are the critical success factors for international development project management as stated by Kwak (2002).

According to Reel (1999), software systems development is very complex and unrealistic deadlines lead to project failures. While Amberg and Wiener (2006) have studied the critical success factors for offshore software development projects from German Perspective. Then, according to Gido and Clements (1999), project success consists of four components such as budget, time, performance (quality and utility), and customer satisfaction. Next section discusses the Standish Group research on project success factors.

According to Standish Group (2001), in 1994 only 16% of the projects met the criteria for success, i.e. completed within budget, within time and all the features originally specified. In 2001, 28% of the projects became successful according to Standish group research. In 2009, 32% of the project completed successfully on-time, within budget. Year on year project success rate is slowly growing across the world because of the maturity of project management discipline. However, the challenges faced by projects and the project failures are in billions of dollars. According to Standish Group (2001), the ten success factors for software projects identified by the original CHAOS study are executive support, involved user, experienced project manager, clear business objectives, minimized scope, standard software infrastructure, firm basic requirements, reliable time estimates, reliable cost estimates, and other factors.

As the years go on, Standish research indicates that there is an increase in project success percentage year on year. However, there are deviations such as increases and decreases in project success percentages in consecutive years. The standard deviation of these percentage variances is not much. In next section, it discusses the project success metrics. These metrics are widely used in industry and research community.

According to Willard (2005), the metrics for project management success are project time, project cost, project accuracy (specifications met), changing requests, quality, and safety (if applicable). Moreover, the metrics for project success include benefits to the organization, stakeholder satisfaction, user satisfaction, solving problems project, unintentional improvement, processes, and procedures. Similarly the metrics for business success consist of cost savings, return on investment, return on expectations, competitive advantage, enhanced productivity, opportunities in the future, expanding or improving core competency, real-time processing or real-time reports, reducing paper work, increased flexibility, customer service

improvements, resource management improvements, reducing manual processes, building external linkages, empowerment, etc.

For example, in the case of a software project, a project success metrics can be collected at different stages of software development life cycle. For example, metrics can be defined at requirements (Haleem *et al.*, 2013), analysis, design, coding and testing stages of a software project. The example of metrics are related to the number of requirements implemented in a week, number of requirement errors, number of requirements implemented in a phase, number of pages of the design document, number of diagrams in design, number of design defects, number of sources lines of code implemented per week, number of lines of code a software component has taken, number of test cases developed, number of test cases executed per week, number of test cases failed, number of defects found per week, number of defects propagated to next level of testing, and number of defects fixed. These are sample metrics which can be used in measuring the success of software projects. Meanwhile, for the project, return on investment, customer satisfaction ratings, cost overruns, schedule overruns, quality deviations, product call backs, and a number of support calls received can be success metrics.

According to Pinto and Slevin (1987), and Baccarini and Collins (2003), project understanding and clear objectives are critical success factors. While, based on Standish Group (2001) and Pinto and Slevin (1987), top management support is one among the critical success factors. Then, according to Pinto and Slevin (1987), and Baccarini and Collins (2003), communication is also critical success factor.

The research indicates that the top most success factors for the project include project objective or mission, top management commitment, competent project team and user involvement. Meanwhile, measuring project success regarding cost, time and quality are the traditional approaches. Generally, project success includes project management success and project success. The broad factors affecting project management success include project team, project resources, environment, organizational environment, technical factors and project manager skills. Project manager skills, in turn, impact the project success.

For project success, team factors like conflict resolution, team cohesion, team climate, team communication are also success factors. The conflict resolution techniques used changes for different projects. The most widely used conflict resolution techniques are avoidance and compromise. Similarly, team climate has an impact on project productivity and performance (Kissi *et al.*, 2013).

A product is known as a success if the product is widely used, has very few defects, is accessible, usable, compatible, portable and marketable. Based on different parameters or factors one can say that the product is successful. Also in financial terms, if the return on investment is profitable to the organization and investors then, only it can be said that the product

is successful.

Top management factors such as top management commitment, top management support, providing resources, quality orientation, setting goals and objectives are also factors of success in projects. Without top management support and dedication, a project may not be successful. It has to be in all phases of the project. For example, if the top management drops their support in the middle of the project, the project may not be successful. Next, organizational factors such as organizational structure, organizational culture (Stare, 2011), organizational principles, procedures and values, reporting hierarchies, business processes, organizational reputation, organizational financial stability, organizational internal and external environment such as social, politic, economic and legal factors impact the project success in organizations.

Further, this research can be extended using an empirical study to find out the impact of individual factors on project success. The statistical techniques such as correlation and regression can be used to find out the strength of the relationship between the dependent variable, of project success and the independent variables. The project success can be measured in financial terms or stakeholder perspective terms. Thus, the impact of the relationships can be observed.

## CONCLUSIONS

The project success has become a concern for the industry. Because of the invisibility, complexity, and flexibility of software projects, the success rate of software projects is just 32% (Standish Group Report, 2009). Hence, there is a need for the study about project success and finding out the critical success factors of projects globally. This need has been stressed in this paper. It is evident from the work of Gido and Clements (1999) that project quality and project performance are related. Hence, people need to concentrate quality angle for the projects to make them successful. For the success of the project, organizations have to concentrate on team, organization, project management, product, environment, resources and related technical factors.

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