

# CRITICAL FACTORS LEADING TO A SUCCESSFUL PROJECT

**Dr.Gayatri Kulkarni**

*Assistant Professor, Indira Institute of Management , Pune*

“The future belongs to the competent. It belongs to those who are very, very good at what they do.” – Brian Tracy

A project as a temporary endeavor undertaken to create a unique product or service. While project success is an area of debate. Though Project Management is an inherent discipline in itself, there are various dimensions to this subject. Various industries have adopted the concept of project and project management in their business including the Information Technology (IT)sector. The IT sector is also expected to triple its current annual revenue to reach US\$ 350 billion by FY 2025. [1]This sector has played a prominent role in this changing Indian economy. This sector is also considered as one of the project intensive sectors across the globe. In India , Project Management jobs are expected to grow from 14.7 million in 2017 to 21.7 million in the year 2027 [2] However, various reports suggest that a significant amount of projects are not successful . Hence an attempt has been made to understand the features which characterize the success of the project and to identify the critical factors contributing to the success of the project.

The paper is based on primary data built on the responses given by Project Managers working in IT sector in Pune region.

*Key words: Project Manager, Information Technology sector, Successful Project ,Critical factors*

# CRITICAL FACTORS LEADING TO A SUCCESSFUL PROJECT

**Gayatri Kulkarni**

*Assistant Professor, Indira Institute of Management , Pune*

## INTRODUCTION

PMBok (Project Management Book of Knowledge) defines “project as a temporary endeavour undertaken to create a unique product or service”. According to the Association for Project Management, UK (APM, UK), “a project is a unique, transient endeavour undertaken to achieve planned objectives”. Project Management is an application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from the project. According to [3], “a projects success or failure is the result of the leadership of the projects stakeholders”. According to Mohan Thite and Agarwal, the majority of the software professionals are reluctant to give up their technical career and take up managerial positions as it involves administrative job and dealing with people issues [4]. National Skill Development Corporation (NSDC), report titled “Human Resource and skill requirement in IT and ITeS Sector, (2013-2017,2017-2022) talks about the current presence, expected growth and employment generation of Indian IT and ITeS Sector in India. This sector is expected to employ 5.12 million professionals by 2022. Among these the Project Manager is one of the top 20 roles. The role of Project Manager is assumed to be critical in Project success .

## RATIONALE FOR STUDY:

The various statistical data available regarding the success of a project in the IT sector aroused the interest of the researcher to conduct the present study in this area. It was observed by The Economist in 2009 that only six per cent respondents said that their projects were delivered on time and on budget; IBM software group in 2009 released a report which revealed the project success rate was less than 55 per cent while The Standish Group International which had been carrying out research since 2004 indicated that only 33 per cent were successful. According to the 2004 PricewaterhouseCoopers Survey of 10,640 projects valued at \$7.2 billion, across a broad range of industries, large and small, only 2.5 per cent of global businesses achieve 100 per cent project success and over 50 per cent of global business projects fail.

According to a Standish Group study, “IT projects have a 66 per cent failure rate; such projects have either missed the targets or failed to deliver the required business functionality” (Standish Group, 2003).

The National Skill Development Council (NSDC) of India had conducted a skill requirement report for the IT sector in 2013; however a detailed analysis for the role of Project Manager was not conducted. District wise skill gap study for the state of Maharashtra (2012-2017, 2017-2022) by NSDC reported that Mumbai and Pune are the major cities as IT & ITeS hubs. It also draws attention to the shortage of technical skills, soft skills and communication skills across the sector . No major focus on the role of Project Manager is observed. Hence a detailed study was undertaken by the researcher to understand the aspect of Project success and factors leading to project success with respect to IT companies in Pune region .

## LITERATURE REVIEW:

The review of literature focuses on the aspects of the success of a project and the critical factors attributing to project success.

John Wateridge through his research on IT/IS Projects suggests that it is not enough to decide project success only through delivery on time and on budget. Considering the perspectives of users and stakeholders is also important as these can be different from the project managers’ perspective. Identifying the success criteria,

defining and planning of the team according to the criteria is important for project success [5]. Robert Glass throws light on another dimension of project success that is the perception of team members and the organisation context. Organisations define project as a success on the basis of time, cost and scope definitions, while team members value most those projects that gave them the best learning experience and challenge, even though the organisation deems it as a failure on the above three norms. If team members gained learning which can be applied to the next project, team members would rate it as a success. [6] While studying the project success factors for construction and engineering projects, C S Lim and M Zain Mohamed, in 1999 identified two perspectives which are macro and micro. The macro project success factors considered completion on time along with satisfaction on the basis of utility and operational factors. The micro factors considered completion aspects of time, cost, quality, performance and safety. Thus determining the project success depends on different perspectives. [7] Roger Atkinson in his 1999 article titled, "Project management: cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria" in International Journal of Project Management Vol. 17, No. 6, pp. 337-342, 1999; discussed the essence of moving beyond the iron triangle of cost, quality and time as success criteria and move to form a square which includes organisational benefits, stakeholders benefits and the information system. Terre Cooke-Davis studied various aspects of project management in which he found for on-time success criteria of project, risk management practices correlated significantly to project success. Learnings from the project also contributed to project success [8]. E. Westerveld provided the Project Excellence model [9] considering the broad organisation success areas and critical success factors and the results. The model considered six areas of Project Management i.e Scheduling, Budget, Organisational Information, Risk and Quality from the organisation perspective along with leadership and team, stakeholder management, policy and strategy, resources and contracting. The results area were divided into two: the narrow result area and the broad result area. The narrow results area were limited to time, cost and quality of project management and the broad areas included client, stakeholders, project personnel, contracting partners and users. Joyce Fortune and Diana White have pointed out the limited agreement of critical success factor for project success and that only three that is senior management support, having clear and realistic objectives and efficient planning are common in many papers [10]. The research done by Nitin Agarwal and Urvashi Rathod, in 2006, considering view from various elements in the organisation like software developers, project managers and customer account managers in Indian Organisations having higher levels of software process maturity for factors resolved project scope as major criteria for project success and time as a more important factor than cost for determining success. Considering the study of Cooke – Davis; Graeme Thomas and Walter Fernandes further studied project success definition in Australian organisations and divided the project success into 3 categories that is technical success, business success and project management success. In this research, new areas like business continuity, sponsor satisfaction, team satisfaction emerged along with the traditional on-time and on-budget criteria. The endeavour of defining success and then measuring it leads to success [11]. Kumar Neeraj Jha and Sudhir Misra, in 2007, studied the large construction sector, where Planning of the project and Resource handling were found to be critical elements in the coordination of projects leading to the success of project. Project success was defined "in terms of compliance to schedule, economy in cost, adherence to quality, and nonoccurrence of disputes". [12] De Wit (1988) and other writers have distinguished between project success and project management success, success criteria and success factors. In this paper, project success is said to be the one which is measured with respect to the overall purposes of the project while project management success includes the traditional performance measures of time, cost and quality. Project success criteria are the standards which judge the success or failure of project while success factors are those inputs from the management which lead directly or indirectly to the success of the project. [13] Blaiz Reich has studied the knowledge management aspect in project management and its relationship to project success. He argues that in IT Projects, knowledge based risks occur which include learning from past projects, exit of team members, loss between phases, the lack of a knowledge map, problems in integrating and transferring knowledge, volatility in governance and failure to learn. Based on his research with North American and New Zealand project managers, he suggested the creation of a risk and knowledge register to avoid the losses in knowledge/knowledge risk and thereby increasing the project success. [14] Fabriek et.al, in 2008, studied unsuccessful and successful projects, where unsuccessful projects were found to be due to improper planning and less informal mutual adjustments while successful projects had good communication between team members. Also, implementation of standards or certification was not a major criterion for a project to succeed or

fail. [15]Guru Prakash Prabhakar in his review paper on project success underpins the importance of the Project Manager for success of project and his leadership qualities. His review also discussed the aspect of project success criteria which includes technical performance specification and the satisfaction level of project outcome as expressed by various stakeholders. Through his work , Prabhakar, discusses about the general non acceptance of on schedule and budget performance as success aspects as quality also get entwined with technical performance and functional objectives [16]Use of technology in Project management that is Project Management Information System (PMIS) improves their efficiency in planning, scheduling, monitoring and control and thus make a contribution to project success [17]While understanding the perception of the Critical Success factor in large scale Construction Projects in Thailand, Shamas-ur-Rehman Toor and Stephen O. Ogunlana,2008, found out comprehension, competence, commitment and communication as ‘critical COMs’ which included the general success factors of planning and control, clearly defined goals and sufficient resources. Antatmula in his paper titled, “The Role of Technology in the Project Manager Performance Model” discusses the ten factors for success identified by Schultz, Slevin and Pinto(1987).These were clearly defined goals, support of top management, detailed planning and implementation, understanding expectations through consultation with clients and stakeholders, monitoring and feedback, and adequate communication and “ability to handle unexpected problems” [18]. Amongst the company strength and weaknesses, company resources and capabilities have a positive impact on project success followed by strategic decision and strength of relationship with other parties. [19].Traditional measures of time and budget were not found to be indicators of success in manufacturing organisations [20]. Instead project success was measured in terms of intended usage at client level and organisational performance and decision making. Clear project mission correlates to project success; a finding which was initially established by Pinto and Slevin (1989). Competent project personnel directly affects the project success. In case of micro projects, the project personnel competency and project mission that is the goal clarity and goal alignment affects project success. Macro project success depends on management support and project mission. [21]Studied the various risk factors associated with project success viz. Software Requirement Specification risk, risk related to team composition, control processes and the dependability risk. Amongst these,the software specification risk was held to have the maximum impact on project success. Thus stating the importance of proper information flow and defining requirement clearly leads to project success. The senior managers found these risk more controllable than junior managers. C.H.Thi communicates in infrastructure projects in developing economy of Vietnam, project success is a combination of cost, time, performance, technical and client satisfaction. Amongst the competencies; competencies of manager, team members, clear goal requirement and external stability contribute to project success. [22]‘In the construction sector, performance management is measured by the iron triangle that is measures of time, cost and quality. Hence , while studying success criteria in terms of Key Performance Indices(KPI) in Thailand, Shamas-ur-Rehman Toor, Stephen O. Ogunlana observed that on time, under budget, efficiency, safety and as per specifications were more valued KPI contributing to project success. [23]Trust between Project Manager and his team contributes to project success in Indian Organisations followed by providing performance environment and then followed by communication practices followed within the team [24]Based on Young and Jordan’s 2008 critical factors for project success, top management support, user, project methodologies high level planning and staff, Top management support(TMS) was considered in detail by Raymond Young, Simon Poon in Australia. The finding was that TMS is more than sufficiency that is it is necessary for project success while the other three are necessary but to minimal extent [25]

According to a study executed by Bronius Neverauskas, Laura Bakinaite and Evelina Meiliene; clearly defined scope, task according to respondents, reality reflected schedules and plain described goals were described as critical factors of project success. The project success factor were developed based on stages of project life cycle [26] considering the above points. R. M. Verburg et al while studying the critical success factor in a virtual setting identified communication and organisational support as major factors. The communication within the team involved clear communication, openness and trust. While organisational support, involved support in terms of tools, policies, infrastructure rewards and incentives [27]Bhoola and Mallik points out the nascent stage of study of agile projects in India and the various practices leading to high project success. These includes a daily scrum managing the team, defining the criteria and retrospection after each Sprint. The success also depends on the number of clients handled previously [28]. The white paper released by Project Management (PMI) in 2014 explained various forms of complexity induced into the project that is human behaviour, system behaviour and

ambiguity .The competency mapping is essential for project success and knowledge transfer is an important aspect of it. [29]In Brazilian organisations having Level 2 Project management maturity, the presence of a dedicated Project Manager impacted the project success partially that is only in terms of achieving deadlines. Top management support impacted the project success most. The project management maturity does impact the project success. [30]

Although many studies suggest that project success needs to consider various perspectives, a study done by Kate Davis considered project success from various perspectives like users, clients, project manager, project owner and senior management. This has shown that client and user had the most common success factors like communication, time, satisfaction, acceptance of product and cost. The success factor Project manager and client had communication, time, stakeholder satisfaction and cost as success factor in common. There were no common factors within senior management that is executive, project sponsor and owner. Thus there is a variance on opinion amongst experts regarding success factors leading to project success and this gap needs to be addressed [31]Dr. John McManus suggests that for project success it is crucial that the project managers need to work smart. This means spending resources only on useful initiatives and not forcing unwanted outcomes on resistant stakeholders The Project Manager needs to identify issues associated with team and task and address it first. The prime difficulty is to make people accept the responsibility of their tasks and take ownership of the risk associated with the tasks involved. [32]

Thus, while considering literature available in the international arena, project success is considered as a combination of the traditional 'iron triangle' of time, cost, scope and quality intertwined in it. Project Success in recent times has also included the stakeholders' perspective, client and users' perspective and satisfaction at all these levels. Defining the project success, clearly defined goals and objectives, top management support, presence of competent project manager, communication and trust between team and project manager, risk management and alignment of task to appropriate team members are a few of the aspects which affect the project management success. The majority of the literature on the subject is available in the International arena and few studies have been done of Indian scenario. Also, it has been found that a comparatively greater volume of literature is available in the construction sector on project management as compared to IT Sector. The literature review opened the following research questions to be addressed

**RESEARCH QUESTION:** In view of the various reports studied, the researcher was posed with the following questions: The literature review gave various different definitions of Project Success. Hence the researcher was posed with the following research questions

- Q1.What is meant by Project success?
- Q2.What are the critical success factors leading to Project success?
- Q3. What is the role of Project Manager in project success?
- Q4. What are the critical factors contributing to the success of the project and its impact on project success?

## **RESEARCH METHODOLOGY**

The paper is based on primary data built on the responses given by Project Managers working in IT sector in Pune region. Sample frame consisted of Companies registered with NASSCOM. This research has used purposive sampling and snowball sampling technique where 393 responses have been recorded. The responses were stimulated through the use of a structured questionnaire with proven internal consistency. A Forced Choice Scale was used in the questionnaire. Various Data Visualization tools like pie chart, Multiple Bar Diagram, Histogram are used for data interpretation with use of The statistical Package for the Social Sciences Incorporated (SPSSInc) software.

## **OBJECTIVES OF THE PAPER:**

Based on the above research questions, the following research objectives and hypothesis were formulated.

1. To study the factors that characterize the success of a project.
2. To identify the factors which contribute to the success of the project
3. To study the impact of various factors which contribute to project success

## **Hypothesis 1:**

- H<sub>01</sub>:** The competencies of Project Manager are not significant predictors of success of the Project
- H<sub>a1</sub>:** The competencies of Project Manager are significant predictors of success of the Project

**INTERPRETATION AND ANALYSIS**

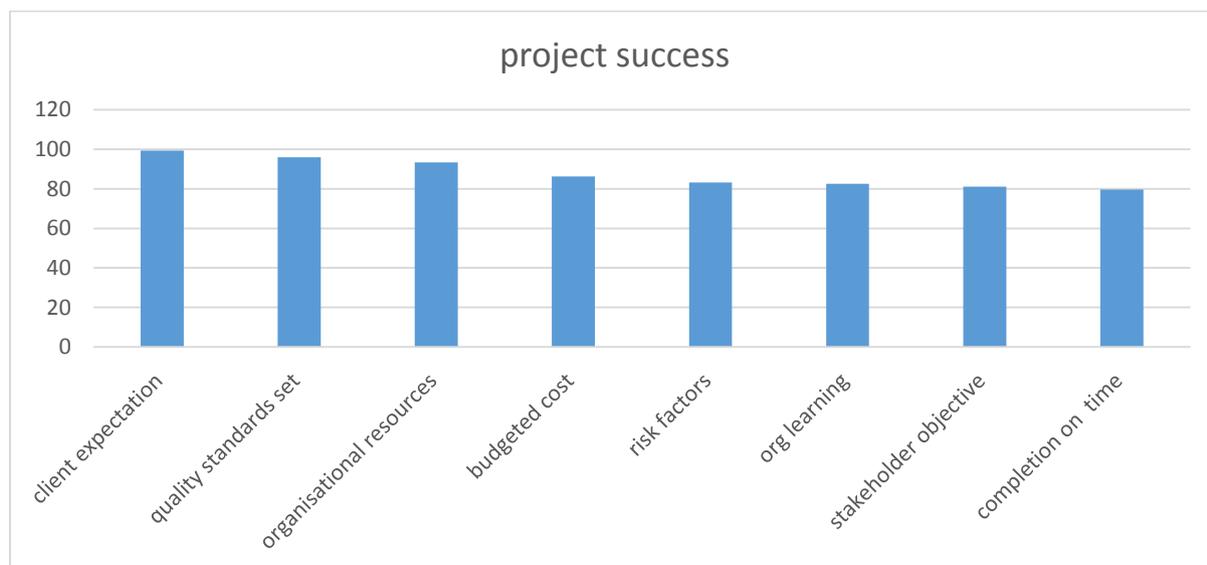
*Objective 1:* To study the factors that characterize the success of a project.

The data was collected through responses given by Project Managers having experience of fifteen years in the industry amongst which 5-7 years the respondents were in the role of a Project Manager. The Project Managers managed the team size of around 5-10 members.

The literature review helped in identifying the eight factors attributing to project success. A project is said to successfully completed, if it achieves the following attributes: completion on time, completion within budgeted cost, completion within expected quality standards, completion considering the risk factors, achieving stakeholders objective, optimum utilization of resources and organizational learning. The research yielded the following results

**TABLE NO : 1  
PROJECT SUCCESS PARAMETERS**

Sr. No	Project success parameters	Percent
1	completion on time	79.6
2	budgeted cost	86.2
3	quality standards set	95.9
4	client expectation	99.3
5	risk factors	83.2
6	stakeholder objective	81.1
7	organisational resources	93.4
8	org learning	82.5



**GRAPH 1:PROJECT SUCCESS PARAMETER**

**TABLE 2: DECREASING ORDEROF PROJECT SUCCESS PARAMETER**

Sr. No	Project success parameters	Mean	median	Mode
1	client expectation	4.7659	5	5
2	quality standards set	4.7455	5	5
3	budgeted cost	4.486	5	5
4	organisational resources	4.3308	4	4
5	risk factors	4.3053	4	5
6	completion on time	4.2748	5	5
7	stakeholder objective	4.1654	4	4
8	organisational learning	4.1425	4	5

From the above table, it can be interpreted that the project is said to be successful when it has fulfilled all the client expectation, followed by quality standards set within the organisation and completed within budgeted cost. Project success often includes meeting project goals and specifications, and it also includes understanding and meeting the expectations of the client. Depending on the complexity level of the project, the plan to meet the client’s expectations can range from having a general discussion with the project leadership team to developing a formal plan that is tracked during the life of the project.

Thus applying the Pareto principle and considering the mean to be about 4.5, the project is said to be successful when it is completed as per client expectation, having achieved the quality standards set by the company and completion within budgeted cost. This reflects on an organisation’s effectiveness as quality standards set by the company and the approach taken towards client satisfaction.

**Objective 2 and 3:**

- 2. To identify the factors which contribute to the success of the project
- 3. To study the impact of various factors which contribute to project success

The literature review identified twenty four parameters contributing to the project success

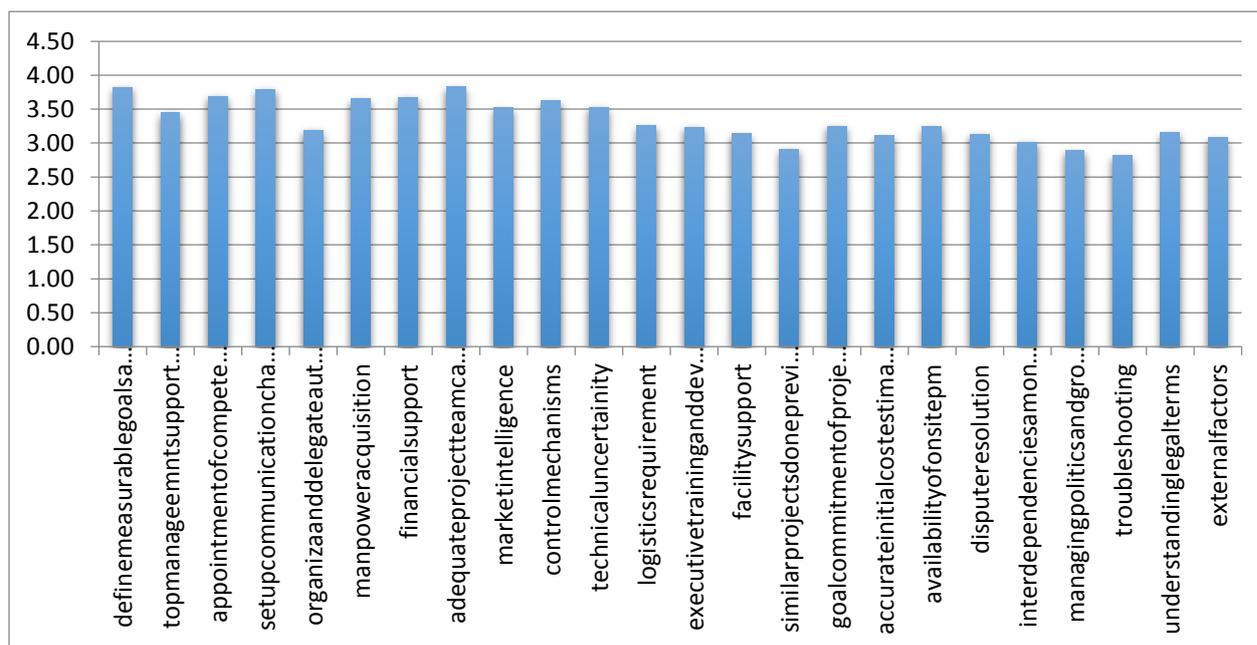
During the literature review, twenty four factors contributing to Project success were identified, which included appointment of a competent Project manager, top management support, communication channels, defining goals, manpower acquisition etc. One of the objectives of this research is to study the role of competent Project Manager in project success which is satisfied by this hypothesis.

The literature has identified 24 critical success factors attributing to the Project success. The mean for the factors based on the responses obtained is as follows:

**TABLE NO.3  
CRITICAL FACTORS AFFECTING PROJECT SUCCESS**

Critical factors for project success	mean
Adequate project team capability	3.824
Define measurable goals and make commitments known to team	3.8214
Setup communication channels	3.7857
Appointment of competent project manager	3.6888
Financial support	3.6684
Manpower acquisition	3.6531
Control mechanisms	3.6224

Critical factors for project success	mean
Technical un certainty	3.523
Market intelligence	3.5179
Top management support or general management support	3.4464
Logistics requirement	3.2577
Goal commitment of project team	3.2423
Availability of onsite project manager	3.2347
Executive training and development	3.2296
Organize and delegate authority	3.1862
Understanding legal terms	3.148
Facility support	3.1378
Dispute resolution	3.125
Accurate initial cost estimates	3.1071
External factors	3.074
Inter dependencies amongst projects	3.0102
Similar projects done previously	2.9107
Managing politics and group dynamics	2.8903
Troubleshooting	2.8112



**GRAPH NO.2**  
CRITICAL FACTORS CONTRIBUTING TO PROJECT SUCCESS

Based on the above graph, it can be interpreted that the critical factors attributing to success of project include defining measurable goals, adequate project team capability, setting up communication channels and the appointment of a competent manager.

Defining measurable goals, adequate project team capability, setting up communication channels are included in the Project managers' job profile and reflects on organisation's practices of communication and resource planning and resource allocation. Keeping the appropriate communication channels open helps to understand the

client expectation as well as deliver client better. Also these communication channels help the team to work efficiently.

Financial support available to the project, manpower acquisition, establishing control mechanisms, managing uncertainty and knowledge of market intelligence are the next important parameters attributing to project success. These factors predominantly speak about organisation practices where the role of the project manager is less. Establishing control mechanisms is the product of both organisation’s practices and project management’s charter which helps to know deviations in advance and rectify them. Managing uncertainty within the project is a Project Manager’s Job

The next group of factors is made of factors related to the team such as the goal commitment of the team, availability of onsite Project Manager, executive training and development, delegation of authority. These factors throw light on organisational practices of talent acquisition and training and development. However team training and development come as a part of the project human resource management and is a part of Project Manager’s profile.

Initial cost estimation of project is seen to get less mean.

Interdependencies among the project do affect the current project success rather than similar projects done previously. Group politics and managing group dynamics is given the least importance which indicates that the Project Manager do not consider effective team working as an integral part leading to project success. His/her role remains limited to making the goal communicating to the team capabilities of team, making the goals known to the team and expects goal orientation from the team. Majority of the factors come under the purview of the Project Manager and hence appointment of a competent project manager is essential.

Based on the above findings, it can be observed that though cost estimation gets less mean, completion within budgeted cost has emerged as the important factor determining project success. Thus the deviation has been observed.

**HYPOTHESIS TESTING**

- H<sub>0</sub>: Competencies of Project Manager are not significant predictors of success of Project
- H<sub>1</sub>: Competencies of Project Manager are significant predictor of Success of project

**Descriptive Statistics**

	Mean	Std. Deviation	N
Success of Project (Q1)	4.4020	.42888	393
Competencies of Project Manager	3.3302	.28861	393

**Variables Entered/Removed<sup>b</sup>**

Model	Variables Entered	Variables Removed	Method
1	Competencies of Project Manager <sup>a</sup>		. Enter

- a. All requested variables entered.
- b. Dependent Variable: Success of Project (Q1)

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517 <sup>a</sup>	.268	.266	.36753

a. Predictors: (Constant), Competencies of Project Manager

b. Dependent Variable: Success of Project (Q1)

r=. 517 indicates moderate positive correlation between Success of project and Competencies of Project manager

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.289	1	19.289	142.800	.000 <sup>a</sup>
	Residual	52.815	391	.135		
	Total	72.103	392			

a. Predictors: (Constant), Competencies of Project Manager

b. Dependent Variable: Success of Project (Q1)

Since p<.05, regression is significant.

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.843	.215		8.570	.000		
	Competencies of Project Manager	.769	.064	.517	11.950	.000	1.000	1.000

a. Dependent Variable: Success of Project (Q1)

Tolerance is greater than. 2 and VIF is less than 10 indicate no problem of multicollinearity. Competencies of PM are significant predictor of Success of project. The regression equation is as below:

$$\text{Success of Project (y)} = 1.843 + .769(\text{Competencies of project Manager})$$

Since the P value <0.5, the researcher rejects the null hypothesis. The competencies of Project Manager are significant predictors of project success.

**SUGGESTION AND CONCLUSION:** The research revealed the definition for Project success for Project Managers in IT sector .A shift has been seen from the traditional iron triangle to the inclusion of the customer centric perspective. Also, amongst the various factors influencing the project success, appointment of a competent Project Manager is an important factor. The few deviations observed can be overcome with the use of uniform or standard practices called as the Organizational practices."An organisational practice is an organisation's routine use of knowledge for conducting a particular function that has evolved over time under the influence of the organization's history, people, interests, and actions." [33]The organisational culture gets developed due to these practices.

1. Identifying and establishing the strategic alignment of project objectives and organisational values which drive the success of project. These have to be clearly communicated to internal stakeholders of the project.
2. Establishing a common framework which defines the success of the project has to be defined across the organization and communicated to all the stakeholders.

3. Documentation of Organisational learning and knowledge transfer mechanisms for the lessons learnt needs to done which will aid in delivering successful projects.
4. Creating a culture of Project Management.

The research also revealed the importance of a competent Project Manager as a major attribute leading to successful project. Hence Talent acquisitions practices geared towards recruiting desired talent is essential. The organizations can follow a competency based recruitment system for this position.

#### **FUTURE AREA OF RESEARCH:**

The research throws light on the Project Manager's perception of project success in IT companies. The research also re-ascertains the role of Project Manager in the project success. The study can be a base for understanding the perception of other stakeholders in the project success. As the Project manager is the backbone of any project success, the study can be taken forward to understand the competencies of Project Manager leading to project success.

#### **REFERENCES**

- [1] "IBEF :India Brand Equity Foundation," September 2017. [Online]. Available: <https://www.ibef.org/industry/information-technology-india.aspx>. [Accessed 1 October 2017].
- [2] AndersonEconomicGroup, "job-growth-report," May 2017. [Online]. Available: <https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/job-growth-report.pdf>. [Accessed twentyfive January 2018].
- [3] D. Cleland, "Leadership and the project management body of knowledge," *International Journal of Project Management*, vol. 13, no. 2, pp. 83-88, 1995.
- [4] A. a. M. Thite, "Human resource issues, challenges and strategies in the Indian software industry," *International Journal of Human Resources Development and Management*, vol. 3, no. 3, pp. 249-264, 2003.
- [5] J. Wateridge, "How can IS/IT projects be measured for success?," *International Journal of Project Management Vol. 16, No. 1, pp. 59-63, 1998*, pp. 59-63, 1998.
- [6] R. Glass, "Evolving a New Theory of Project Success," *COMMUNICATIONS OF THE ACM/Vol. 42, No. 1, pp. 17-19, 1999, November*.

- [7] C. S. L. a. M. Z. Mohamed, "Criteria of project success: an exploratory re-examination," *International Journal of Project Management* Vol. 17, No. 4, pp. 243±248, 1999, pp. 243-248, 1999.
- [8] T. Cooke-Davies, "The "real" success factors on projects," *International Journal of Project Management* 20 (2002) 185–190, pp. 185-190, 2002.
- [9] E. Westerveld, "The Project Excellence Model: linking success criteria and critical success factors," *International Journal of Project Management* 21 (2003) 411–418, pp. 411-418, 2003.
- [10] J. F. & D. White, "Framing of project critical success factors by a systems model," *International Journal of Project Management* 24 (2006) 53–65, pp. 53-65, 2006.
- [11] W. F. Graeme Thomas, "Success in IT projects: A matter of definition," *International Journal of Project Management* 26 (2008) 733–742, pp. 733-742, 2008.
- [12] S. M. a. K. Jha, "Ranking and classification of construction coordination activities in Indian projects," *Construction Management and Economics*, pp. 409-421, 2007.
- [13] G. P. Prabhakar, "What is project success : A literature review," *International Journal of Business and Management* ,vol 3, no 9, pp. 3-10, 2009.
- [14] B. H. REICH, "MANAGING KNOWLEDGE AND LEARNING IN IT PROJEGTS: A CONGEPTUAL FRAMEWORK AND GUIDELINES EOR PRAGTIGE," *PROJECT MANAGEMENT JOURNAL*, vol. 38, no. 2, pp. 5-17, June 2007.
- [15] M. M. v. d. S. F. & H. R. Fabriek, "REASONS FOR SUCCESS AND FAILURE IN OFFSHORE SOFTWARE DEVELOPMENT PROJECTS," 2008.
- [16] G. P. Prabhakar, "What is project success : A literature review," *International Journal of Business and Management* ,vol 3, no 9, pp. 3-10, 2008.
- [17] L. R. & F. Bergeron, "Project management information systems: An empirical study of their impact on project managers and project success," *International Journal of Project Management* 26 (2008) 213–220, pp. 213-220, 2008.
- [18] V. S. Anantmula, "The Role of Technology in the ProjectManager Performance Model," *Project Management Journal*, March 2008.
- [19] D. A. ,. D. ,. M. T. B. Zeynep Isik, ""Impact of corporate strengths/weaknesses on project," *International Journal of Project Management* 27 (2009) 629–637, pp. 629-637, 2009.
- [20] S. Z. Y. F. Chan Wai Kuen, "Critical factors influencing the project success amongst manufacturing companies in Malaysia," *African Journal of Business Management* Vol.3 (1), pp. 016-027, pp. 16-27, January 2009.

- [21] S. S. & A. G. Arpita Sharma, "Exploring Risk Dimensions in the Indian Software Industry," *Project Management Journal*, pp. 78-91, September 2011.
- [22] C. H. T. a. F. W. Swierczekb, "Critical success factors in project management: implication from Vietnam," *Asia Pacific Business Review*, pp. 567-589, 2010.
- [23] S. O. O. Shamas-ur-Rehman Toor, "Beyond the 'iron triangle': Stakeholder perception of key performance indicators (KPIs) for large-scale public sector development projects," *International Journal of Project Management* 28 (2010) 228–236, pp. 228-236, 2010.
- [24] D. V. M. P. D. M. P. R. Ramakrishna Sastry Ghatty, "LEADERSHIP FOR MANAGING CONFLICTS DURING SOFTWARE PROJECTS IMPLEMENTATION. AN INDL4N SCENARIO," *Revista de Management ci Inginerie Económica*, Vol. 12, Nr. 2, 2013, pp. 79-96, 2013.
- [25] S. P. Raymond Young, ""Top management support—almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis," *International Journal of Project Management* 31 (2013) 943–957, pp. 943-957, 2013.
- [26] L. B. E. M. Bronius Neverauskas, "CONTEMPORARY APPROACH TO THE POSSIBILITY OF PROJECT'S SUCCESS INCREASE," *ECONOMICS AND MANAGEMENT: 2013. 18 (4) ISSN 2029-9338 (ONLINE)*, pp. 829-836, 2013.
- [27] P. B.-S. ., M. V. Robert M. Verburg, "Getting it done: Critical success factors for project Managers in virtual work settings," *International Journal of Project Management* 31 (2013) 68–79 69, pp. 68-79, 2013.
- [28] V. B. & D. Mallik, "Determinants of Agile Practices: A Gini index approach," *Vilakshan, XIMB Journal of Management*, Vol.11 (2), , pp. 95-114, September 2014.
- [29] D. G. Levin, "Key Competencies for Success in Navigating Complexity," *PMI* , 2014.
- [30] M. C. F.T. Berssaneti, "Identification of variables that impact project success in Brazilian companies, Int. J. Proj.Manag.," *International . Journal .of Project .Management.*, 2014.
- [31] K. Davis, "Different stakeholder groups and their perceptions of project success," *International Journal of Project Management* 32 (2014) 189–201, pp. 189-201, 2014.
- [32] D. J. McManus, "Creating transformation in Project Management -a point of view," *Management Services*, pp. 20-24, Spring 2015.
- [33] K. Kostova T.& Roth, *Academy of management journal*, pp. 215-233, 2002.
- [34] G. Shermon, Competency based HRM A Strategic Resource for Competency mapping, Assessment and Development Centres, New Delhi : Tata McGraw Hill, 2004.
- [35] P. Gupta, "Concept of Success among Executives," *Vikalpa*, vol. 24, no. 2, pp. 23-33, April - June

1999.

- [36] J. Glaser, "Management's role in IT project failures," *healthcare financial management*, pp. 90-92, OCTOBER 2004.
- [37] Y. M. C. a. C.-W. We , "Multiagent approach to solve project team work allocation problems," *International Journal of Production Research Vol. 47, No. 13,,* p. 3453–3470, 1 July 2009.
- [38] V. I. V. a. Y. D. Gelrud, "Mathematical Models of Project Management For Interested Parties," *PM World Journal*, Vols. Vol. I,, no. Issue III , pp. 1-20, October 2012.
- [39] R. S. • A. K. P. • L. Ganapathy, "An Empirical Study on Flexibility: A Critical Success Factor of Construction Projects," *Global Journal of Flexible Systems Management (September 2012)* 13(3):123–128, pp. 123-128, September 2012 .
- [40] Z. M. & D. B. Marija Todorović, ""Measuring Project Success in Project-Oriented Organizations," *Management Journal for Theory and Practice Management*, pp. 41-48, 2013.
- [41] M. Dutt, "Using Mind Maps to Enhance Creativity When Managing Projects," *The Journal for Quality & Participation July 2014*, pp. 1-11, 2014.
- [42] GPSudhakar, "Challenges Faced by the ProjectManagers in IT Industry," *PROJECT ENVIRONMENT*, pp. 62-65, September 2007.
- [43] M. o. s. d. & e. & N. Government of India, "Human REsource and Skill requirement in IT & ITeS Sector(2013-2017,2017-2022)," National Skill Development Corporation, New Delhi, 2013.
- [44] NSDC, "District wise skill gap study for the state of Maharashtra(2012-2017,2017-2022)," NSDC, New Delhi, 2013.
- [45] P. Coopers, "Insights and Trends:Current Programme and Project Management Practices," PWC, 2007.
- [46] ProjectManagementInstitute, "Projetc Management Practices in India," PMI, New Delhi, 2010.