

# A STUDY OF THE IMPACT OF LEADERSHIP STYLES ON EFFECTIVE PROJECT MANAGEMENT OF SOFTWARE DEVELOPMENT PROJECTS OF IT INDUSTRY OF PUNE

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## ABSTRACT

*Project managers with effective leadership styles are an exclusive contributor to the success of a software project. A review of the literature reveals the existence of the gap with respect to whether successful attainment of organizational objectives is mainly determined by the quality of relationship that exists between the project manager and his team associates. It also emphasises the dearth of research focusing on significant leadership style in software project management domain. The purpose of this study was to investigate the differences in leadership styles (transformational, transactional, passive/avoidant and technical) of project managers of successful projects as perceived by their subordinates and to explore the relationship between integrated leadership styles of software project managers and the leadership outcomes, like: project team members' willingness to exert extra effort, project manager's effectiveness and satisfaction with their project manager.*

**Keywords:** Transformational Leadership, Transactional Leadership, Passive Leadership, Technical leadership, Project Management.

## INTRODUCTION

Since, the mid 1970's project management started to be known as a separate discipline. During the early phases, project managers were selected on the basis of their technical expertise. Kerzner (2000), point out that project success was measured by the technical merit of the project with little or no concern for the knowledge of business or its clients. Later, when the principles and practices of project management evolved, it focused on the behavioral aspects of project management with main emphasis on the managerial and leadership skills of the project supervisor/manager. Today, it is expected that modern project managers should possess basic technical skills and significant business expertise along with leadership skills. Managers must not only need to be involved in the day-to-day technical activities of their firm, but they must also successfully provide vision that will lead, inspire and stimulate workforces Medley & Larochelle (1995).

## LITERATURE REVIEW

In another research work led by Cambridge University's School of Business and Economics, found that 80% of projects failed because of ineffective leadership found that projects failed to achieve successful results because of three factors: the organizational background, the external environment and the technical basis. Failure in the *organizational framework* can be due to leadership, corporate culture, corporate project knowledge base and top-level support. Failure in the *external framework* is linked to competitors, suppliers, clients, vendors, government and education. Failure in the *technological framework* can be

due to hardware, software and tele-communications or a combination of the trio Kumar (2000).

Leadership can also be considered as an exclusive contributor to failure, as it supersedes all other organizational factors. According to Shore (2005), leadership affects corporate culture, project culture, project strategy and project team commitment. It also marks business process reengineering, systems design and development, software selection, application and maintenance. Without proper leadership, the risk of project failure grows. Burns (1978) sought to establish that leadership can be viewed either as a transactional or transformational process. Transactional leaders tend to focus more on task completion, influence followers through goal setting, well defined performance, feedback and rewarding for achieving the desired outcomes. Burns concept of transformational leadership refers to transforming the thoughts of the followers and creating commitment for the strategies, objectives and mission of the firm.

According to Bass (1985), transformational leaders inspire others, create vision and set direction. This tactic would encourage better loyalty, commitment, trust and admiration from employees and increase the overall effectiveness of the organization. Bass (1985) further expanded and refined the theory of transformational leadership and argued that while transactional leadership is based on the exchange process but transformational leadership appeals to the person's deeply held value structure. The primary focus of transformational leadership style is to achieve organizational objectives through followers' development and empowerment Lai (2017).

Burns (1978) and Bass (2009) along with many other researchers believe that transformational leadership is the key towards future success. Previous researches have indicated that a manager's leadership style can affect an employee's willingness to exert extra effort, satisfaction and effectiveness with the manager. Burns and Bass (2009) have identified a model that focuses on three key leadership behaviours: Transformational, Transactional and Laissez-Faire leadership. Over the period, this model has been refined and current researchers have found that the *term Laissez Faire should be replaced by Passive or Avoidant leadership*. According to Thite (1997), According to the leadership literature, there is no one leadership style that is always fully effective to handle the complexity of IT projects or to achieve desired level of productivity. Project managers who exhibit only passive/avoidant leadership tend to produce less than desirable results, lower follower motivation and are seen by followers as ineffective project managers. Other, group of project managers which exhibit only transactional and technical leadership tend to produce average results like: projects are completed but they do not meet their specific time, quality or cost requirements Lai (2011).

A project will be perceived as an 'overall success' if, the project meets the technical performance specifications, mission and there is high level of satisfaction concerning the project outcome among key project team members as well as key users or client of the assigned project. Project success can be described, as integrating four basic facets. It is generally considered to be successful if it:

1. Meet schedule (time criterion).
2. Meet budget (monetary criterion).
3. Meet all goals set (effectiveness criterion).
4. Is recognized by the clients for whom the project is intended (client satisfaction criterion).

Standish Group's Chaos report divides the project into three categories:

1. Resolution Type 1/Successful Project
2. Resolution Type 2/Challenged Project
3. Resolution Type 3/Failed Project

A successful project, is a project whose solution has been delivered and it meets its success criteria (deadlines, cost, technical efficiency, scope and overall satisfaction) as initially specified or within a range acceptable to the firm Cleland & Kerzner (1985).

A project is considered as challenged, if a solution was delivered but the team did not meet all the project's success criteria within the acceptable ranges. Like; the project's return on investment (ROI) was low, the project exceeded its time limit or its specified cost etc Bass & Avolio (1997).

According to PMBOK, the project manager or the organisation divide projects into phases to provide better management and control with appropriate links to the ongoing operations of the organisation. These phases are: *Project Initiation, Planning and design, Execution, Monitoring and controlling and Closure*. These phases are collectively known as the Project Management Life Cycle or Project Life Cycle.

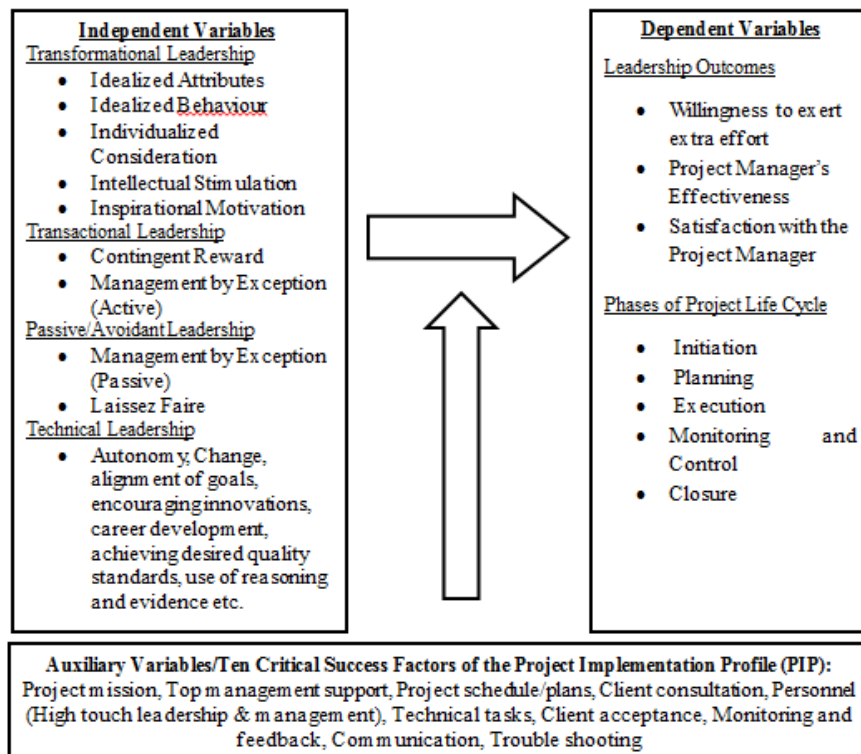
As the project advances through its life cycle, the project leader must be able to effectively transition from strategic to tactical issues in order to enhance project success. Also, there is a need to explore the significant style of project leadership which must be implemented by the project manager at various phases of the project life cycle.

### Conceptual Framework

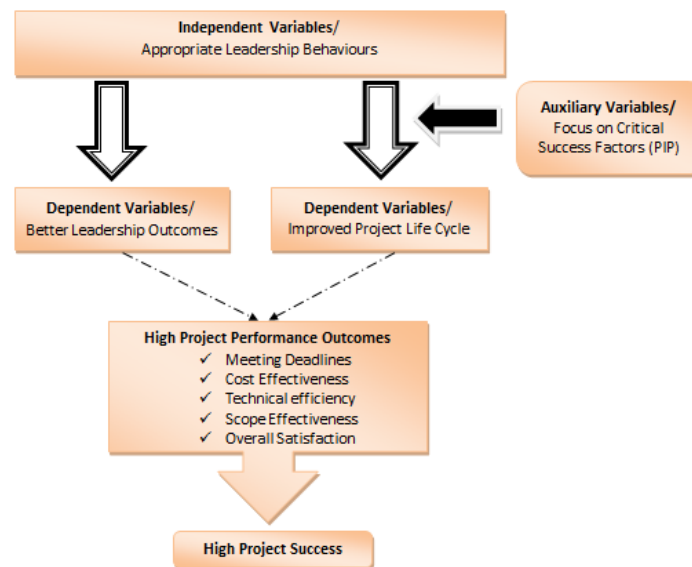
#### Variables of the Research Study

All the variables identified and developed for this research are segregated into two categories: independent and dependent.

The independent and dependent variables which are the basis for the entire research can be understood with the help of Figures 1 and 2 as shown below:



**FIGURE 1**  
**DIAGRAMMATIC PRESENTATION OF INDEPENDENT AND DEPENDENT VARIABLES OF THE RESEARCH STUDY**



**FIGURE 2**  
**DIAGRAMMATIC PRESENTATION SHOWING END RESULT OF ENHANCED RELATIONSHIP BETWEEN INDEPENDENT AND DEPENDENT VARIABLES**

Figure 2, reflects the outcomes of better relationship between independent and dependent variables. It explains that appropriate leadership behaviour displayed by the project manager, would lead to better leadership outcomes and improved project life cycle together with the support of the critical success factors. This will lead to high project performance outcomes like: meeting deadlines, cost efficiency, technical efficiency, scope effectiveness and overall satisfaction which would increase the chances of project success. The Figure: 1; above, shows, that the current research tries to explore the relationship between the independent and dependent variables and tries to find out whether this relationship affects project performance together with the support of the auxiliary/supporting variables, leading towards project success.

### **Development of Conceptual Framework/Model**

After observing the variables used in the study a conceptual framework/model was formulated by the researcher. The conceptual framework postulates that there is a difference in the leadership styles executed by the project managers of successful, challenged and failed projects. It shows that there is a relationship between leadership styles executed by the project manager and the leadership outcomes and also that there is a growth in these outcomes due to introduction of transformational leadership style. It is further explored that transformational leadership when executed by project managers encourages the team members towards extra outcomes and this would further increase the chances of project success.

This model reflects that different leadership styles should be executed by a project manager at different phases of the project life cycle and also that different phases of the project life cycle are dominant by different set of critical success factors. It is further verified

that there is a robust presence of critical success factors of the project implementation profile in successful rather than challenged and failed projects Royce (2004).

The diagrammatic presentation of the conceptual framework is shown in Figure 3.

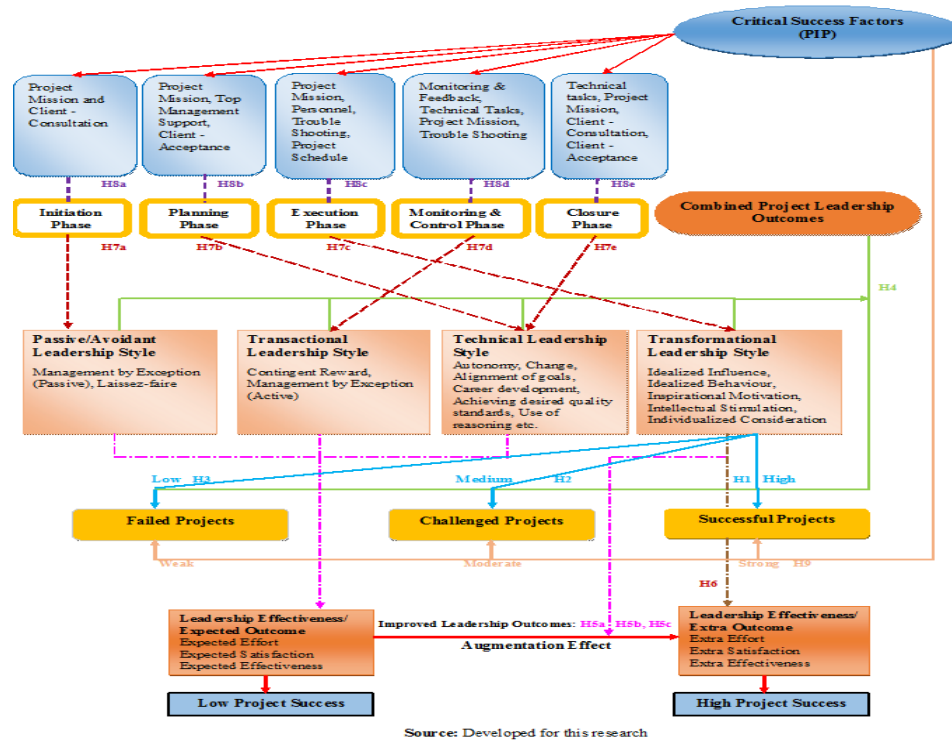


FIGURE 3

THE DIAGRAMMATIC PRESENTATION OF THE CONCEPTUAL FRAMEWORK

Methodology of Research

The current study uses descriptive, exploratory and quantitative approach. It is descriptive as this research presents the percentages of respondents that belong to different categories. These categories are divided into gender, age, qualification, experience, size of project team members etc. Means are also presented to compare the participants’ responses towards the four leadership styles and their outcomes on which the questions are based. The research is exploratory, as after rigorous literature analysis, the researcher identified the gaps in the existing literature and the problems of Indian software industry and tried to find out the alternative courses of action considering the four leadership styles. This research work not only produces certain research questions and hypotheses to investigate the problems involved producing certain key variables and their relationship, but also leaves scope for future research Judge & Piccolo (2004).

The survey questionnaire instrument uses *three different categories of five-point likert scales*. To measure the *leadership behaviours* of project managers, the *scale used* included parameters like- Not at all (1), Once in a while (2), Sometimes (3), Fairly Often (4) and Frequently if not always (5).

To measure the most *effective leadership style* at each phase of the project life cycle, the *scale* includes- Not at all Effective (1), Slightly Effective (2), Effective (3), Very Effective (4) and Extremely Effective (5).

In the end, to determine the *dominant critical success factors* at each phase the scale used includes- Not at all Important (1), Slightly Important (2), Important (3), Very Important (4) and Extremely Important (5).

## RESULTS AND DISCUSSION

### Demographic Information

The demographics of participants consisted of gender, age, level of education, experience, average size of project team members as shown with the help of Table 1.

Demographic Characteristics	Successful Projects		Challenged Projects		Failed Projects	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender						
Male	43	70	43	68	45	75
Female	19	30	20	32	15	25
Total	62	100	63	100	60	100
Age of respondents						
20 – 30 years	11	18	9	14	10	17
31 – 40 years	46	74	46	73	43	72
41 – 50 years	4	6	7	11	7	11
Older than 50 years	1	2	1	2	0	0
Total	62	100	63	100	60	100
Educational Qualification						
Graduation	12	19	18	29	13	22
Post-Graduation	42	68	41	65	41	68
Doctorate	6	10	2	3	5	8
Any other	2	3	2	3	1	2
Total	62	100	63	100	60	100
Total experience in IT						
Less than 2 years	2	3	7	11	2	3
2–5 years	15	24	12	19	10	17
6 – 10 years	43	70	39	62	43	72
11 – 20 years	2	3	5	8	4	6
More than 20 years	0	0	0	0	1	2
Total	62	100	63	100	60	100
Current level of designation in the project						
Developer	29	47	29	46	28	47
Tester	15	24	18	29	16	27
Business Analyst	12	19	10	15	12	20
Software Architect	6	10	6	10	4	6
Total	62	100	63	100	60	100
Approximate size of team members in current project						
11-20	36	58	17	27	0	0
21 – 30	26	42	37	59	5	8
31 – 40	0	0	9	14	38	63
41 – 50	0	0	0	0	17	29

More than 50	0	0	0	0	0	0
Total	62	100	63	100	60	100

Source: Developed for this research.

### Credibility Assessment

Reliability is to the extent an assessment tool produces stable and steady results. The research used cronbach's alpha to measure the reliability of the instrument. Results of the pilot study yielded a value of more than 0.8 for all the variables, confirming the extended version MLQ instrument's reliability. Thus, the reliability test results revealed that cronbach's alpha coefficients calculated for the variables were statistically significant and comparable to normal reliability standards (Table 2).

Sr. No.	Scale	Number of items	Reliability (Cronbach's Alpha)	Result
			Project Team Members	
1	Idealized Influence (Attributes)	4	0.908	Reliability Supported
2	Idealized Influence (Behaviour)	4	0.914	Reliability Supported
3	Inspirational Motivation	4	0.920	Reliability Supported
4	Intellectual Stimulation	4	0.922	Reliability Supported
5	Individualized Consideration	4	0.933	Reliability Supported
6	Contingent Reward	4	0.833	Reliability Supported
7	Management by Exception (Active)	4	0.817	Reliability Supported
8	Management by Exception (Passive)	4	0.627	Reliability Supported
9	Laissez Faire	4	0.895	Reliability Supported
10	Technical Leadership	13	0.967	Reliability Supported
11	Project team members willingness to exert extra effort	3	0.885	Reliability Supported
12	Project manager's effectiveness	4	0.915	Reliability Supported
13	Satisfaction with the project manager	2	0.871	Reliability Supported
14	Project life cycle	1 (including 5 sub items)	-	-
15	Critical Success Factors	1 (including 5 sub items)	-	-
	Sub Total	60	-	-
	Biographical Items	6	-	-
	Grand Total	66	-	-

Source: Developed for this research.

## Hypotheses Testing

Hypotheses testing were carried out using various statistical tools like: *Friedman Chi square test*, *Pearson correlation coefficient*, *Spearman Correlation Analysis*, *Hierarchical Regression*, *MANOVA* and *One way ANOVA*. The results of the hypotheses testing can be seen in Tables 3 and 4.

Referring to Tables 3 and 4, it can be seen that there is a difference in the leadership style of project managers with respect to successful, challenged and failed projects ( $\chi^2(3) = 167.884, 89.569$  and  $147.912$ ; value= 0.000). Thus, H1, H2 and H3 were supported; p values (0.000) for all three models are less than the level of significance (0.05). Further, it can be indicated that transformational leadership is the dominant leadership style for successful and challenged projects and passive/avoidant leadership is the dominant leadership style for failed projects Kuo (2006).

<b>Leadership Styles</b>	<b>Mean Rank Project Team Members- Successful Projects</b>	<b>Mean Rank Project Team Members- Challenged Projects</b>	<b>Mean Rank Project Team Members- Failed Projects</b>
Transformational Leadership	3.58	2.87	1.53
Transactional Leadership	2.33	2.44	2.14
Passive/Avoidant Leadership	1.00	1.75	3.83
Technical Leadership	3.42	2.38	1.50

Source: Developed for this research.

Level of Significance  $\alpha=0.05$ .

<b>Description</b>	<b>Project Team Members- Successful Projects</b>	<b>Project Team Members- Challenged Projects</b>	<b>Project Team Members- Failed Projects</b>
$\chi^2(3)$	167.884	89.569	147.912
<b>P value</b>	0.000	0.000	0.000
<b>Number of respondents (N)</b>	62	63	60

## Findings

This research is one of the limited researches that has examined the impact of different leadership styles on different stages of the project life cycle. Thus, the findings of this research indicated that- First, transformational leadership is the dominant leadership style for successful and challenged projects and passive/avoidant leadership is the dominant leadership style for failed projects. Second, there is certainly a relationship between integrated leadership styles (Transformational, Transactional, Passive/Avoidant and Technical) of project manager and combined project leadership outcomes, which is seen to be stronger, significant and perfect in terms of proportion in successful projects. Third, there is an improvement in the predictive ability of the model (transactional, passive/avoidant and technical leadership predicting all three project leadership outcomes: project team member's willingness to exert extra effort, effectiveness of the project manager and satisfaction with the project manager) for successful and failed projects after transformational leadership is added



to the model. For challenged projects, improvement in the predictive ability of the model (transactional, passive/avoidant and technical leadership) after transformational leadership is added cannot be seen in outcomes: project manager's effectiveness and satisfaction with the project manager, since the models became insignificant Pinto & Mantel (1990).

Seventh, mean values of composite critical success factors in successful projects is different from the other two projects which showed that there is a robust presence of critical success factors in successful projects as compared to challenged and failed projects. Therefore, it can be concluded that in successful projects, there is better clarity of project mission, top management is more supportive, a well-laid-out and detailed specification of the individual action plan is available, client consultation is considered important throughout the project, better management of personnel through high touch leadership and management, enhanced availability of technical resources, boosted client acceptance and satisfaction, enriched monitoring and feedback and communication throughout the project and availability of contingency plans in the form of trouble shooting mechanism in order to handle unexpected crises and deviations from plan. Finally, *the applicability of this model to information technology industry of Pune was well supported by the results of the study.*

## CONCLUSION

### Research Implications for Leadership in Organisations

The usefulness of the current study is evident, as it is providing clear understanding of adopting transformational leadership methods, along with the transactional, passive/avoidant and technical leadership combination model, so that, the project manager can enhance or augment the effectiveness of his/her leadership behaviour which in turn is reflected in the outcomes. *In an 'optimum' leadership model, proactive technical, transactional leadership behaviours and reactive passive/avoidant leadership behaviours should be combined with transformational leadership behaviours, to achieve extra or performance beyond expectations.*

### Research Implications for Project Management in Organisations

The current results of this study might be helpful to organizational leaders and project managers of software development firms, who now become more knowledgeable, about the causes of the failures in their project. They now know that the reasons are not only technical, but they are managerial and can be resolved through effective people management. The software industry and the project management industry are two separate businesses, but they need to be joined together through proficiencies of the project manager Kwak (2005).

### Limitations of this Research

The research study has the following limitations. First, although care has been taken, while selecting the sample respondents of the study, so that they are representative; as the software firms chosen vary from new and small in terms of revenue, number of employees to medium and large well established firms registered with NASSCOM-Pune, with thousands of employees and billions of dollars in revenue; still it raises the question of whether the results are generalizable to all the software firms operating in Pune city (whether registered with NASSCOM- Pune or not). Second, the study was conducted in one region of India (i.e. western region), which might raise concerns about whether the findings can be generalized to project team members working on software development projects in other regions of the country. Third, the study utilized one method of data collection from the project team members as well as the project managers: a self-administered survey, this method prevented

the researcher from asking follow on questions, that could clarify the respondents' perceptions and help gain further insight. Fourth, open ended questions were also deleted from the questionnaire on the request of the delivery manager, so that respondents do not give any comments/ suggestions in writing. Fifth, this study relied on participants' responses, even though followers were assured of complete confidentiality, there is a probability that respondents answer the questions in what they consider socially desirable manner, rather than recording their true perceptions.

### Summary

Thus, there is a need that leadership research should focus more on the diverse workforce operating in any particular industry, who is ultimately contributing to achieve desired objectives of an organisation. This study is an effort in that trend as it focuses on the 'intellectual employees of the information technology industry', identifies gaps in the existing literature of leadership, and suggests a new model which is helpful for the project managers, towards achieving better performances.

### Ethical approval

Informed consent: Informed consent was obtained from all individual participants included in the study.

### Conflict of Interest

The author declares that she has no conflict of interest

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