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 members. It also emphasise the dearth of research focusing on significant leadership style in software project management domain.

The specific research problem under evaluation is despite setting up best project management methodologies and virtuous technologies still, a large number of software projects do not succeed. It is identified that the problem is not due to technological factors but rather because of managerial and organisational factors.

The purpose of this study was to investigate the differences in leadership styles (transformational, transactional passive/avoidant and technical) of project managers of successful, challenged and failed projects as perceived by themselves and 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. The objective was to add to the existing body of project management leadership research by investigating the type of leadership style that is effective at various phases of the project life cycle and what critical success factors of Project Implementation Profile (PIP) need to be focused at various phases by the project manager to increase the chances of project success along with verifying that there is robust presence of critical success factors of the PIP in successful projects rather than challenged and failed projects. It also investigates the augmentation effect of transformational leadership style in the outcomes over remaining leadership styles (transactional passive/avoidant and technical) and also find out whether transformational leadership is able to achieve outcomes beyond expectations. Finally, it attempts to propose a new leadership model which capture the key behaviours of transformational, transactional, passive/avoidant and technical leadership and phases of project life cycle along with critical success factors leading to positive and better outcomes quantitatively and qualitatively.

The research questions address the following issues: First, whether differences in the leadership styles of the project managers (both self-perceived and subordinates-perceived)
exist with respect to successful, challenged and failed projects. **Second**, whether significant relationship between (both self-perceived and subordinates-perceived) integrated leadership styles (transformational, transactional, passive/avoidant and technical) of project manager and combined project leadership outcomes (project team member’s willingness to exert extra effort, project manager’s effectiveness and satisfaction with the project manager) exist in successful, challenged and failed projects. **Third**, whether 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, challenged and failed projects after transformational leadership is added to the model. **Fourth**, whether project managers who scored higher on transformational leadership style get better/extra outcomes from their project team members in comparison to those who scored lower on transformational leadership style. **Fifth**, whether difference in the effectiveness (both self-perceived and subordinates-perceived) of the leadership styles (transformational, transactional, passive/avoidant and technical) of the project manager exist at various phases (initiation, planning, execution, monitoring & control and closure) of the project life cycle. **Sixth**, whether difference in the criticality (both self-perceived and subordinates-perceived) of the success factors of the Project Implementation Profile (PIP) exist at various phases (initiation, planning, execution, monitoring & control and closure) of the project life cycle. **Seventh**, whether successful projects exhibit robust presence of the composite ten critical success factors of the Project Implementation Profile (PIP) in comparison to challenged and failed projects.

The methodology consisted of usage of a **mixed method** (qualitative as well as quantitative) to enhance the rationality of the research. **Qualitative analysis** included interviews with the senior/delivery managers, where they were asked questions pertaining to roles and responsibilities of a project manager, criteria for selection of software development model, criteria for handling the complexities of a software organisation. They were also asked to describe the organisation structure of a typical IT firm, followed by selection of three projects from their organisation as: successful, challenged and failed based on the performance parameters of cost, time, quality, scope etc. **Quantitative analysis** based upon the **survey method** where, the project team members were asked to describe the leadership behaviour of their project managers; also the project managers were asked to describe their self-perceived...
leadership style, followed by questions related with effective leadership style and dominant critical success factors of the PIP at various phases of the project life cycle.

The research used non-probability (purposive) sampling to identify the seven software firms of Pune, by taking into consideration only the CMMI level 5 companies registered with NASSCOM, Pune office involved in IT software development projects. Only CMMI level 5 companies have been chosen, as these companies have matured processes in terms of standard management practices and diverse set of projects which would help in more accurate analysis of research. The data were collected from a sample of 206 respondents (21 project managers and 185 project team members). The research study used the statistical analysis software SPSS program version 21.0 to analyse the data.

The findings indicated the following results: 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.

Fourth, the project managers who display high transformational leadership, his project team members will be further willing to exert extra effort, will find their project managers to be more effective and are more satisfied with their project managers.

Fifth, the most effective leadership style at the initiation phase of the project life cycle is passive/avoidant leadership and at the planning phase is technical leadership. Transformational leadership is most effective at the execution phase while transactional leadership emerged as the most effective leadership style at the monitoring and control
phase. At the closure phase again technical leadership is considered to be the most effective leadership style. Sixth, in the initiation phase of the project life cycle, the top three critical success factors are project mission, client consultation and communication and in the planning phase: project mission, top management support and client acceptance are the top three critical success factors. Project mission, personnel (high touch leadership & management) and trouble shooting are most important at the execution phase while monitoring and feedback, technical tasks and project mission are considered highly important at the monitoring and control phase. In the closure phase, technical tasks, project mission and client consultation are considered to be the top three critical success factors.

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 in comparison 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.

The results of this study are crucial for software organisations and may enable project managers to make changes (improvements) in their existing leadership style, which can result in increased leadership outcomes and can enhance workforce productivity leading to project success.
Quotation

“Ability is God’s gift to Man and Achievement is Man’s gift to God” - Leo Buscaglia