



Exploring and Evaluating Critical Success Factors of Project Management

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Abstract: Project success can be influenced by components of project management which is known as Critical Success Factors (CSFs). Many elements come under this term which must be judged while ensuring the effectiveness of the project. The main aim of this research study is to determine the critical success factors and the degree of linkage between these factors and achievement of the project. The consequences of the research are expected to help firms while determining the project management's outcome. Moreover the conceptual framework was evolved by determining six (6) variables for attainment of project goal. These variables are Project Planning, Project Execution, Project Management Action, Project Procedures, Human Related Factors and Project Related Factors.

Key words: Project Planning, Project Execution, Project Management Action, Project Procedures

1. Introduction

Various factors are considered critical which takes part in the success of the project. Various studies across the globe highlighted the different factors, which affect the execution and success of project. Success of a project provides more return to the investors and a smooth flow of cash. Dvir, Raz [1] asserted that better planning can help in the success of the project. Similarly, Hans, Herroelen [2], also stated that planning in any project is the key, which will prosper the project. In the same line of footprints, Leus and Herroelen [3], also confirmed the significance of planning for the execution and return of the project.

The project success can be explored as where the expected results for a given contributor meet, whether operator, contract man, engineer, planner, or boss. However, each contributor may have same different expectations than other Hannah, Rakotosamimanana [4], and to enhance the team's delivery effectiveness, the analysis of achievements of project and Critical Success Factors (CSF's) is usually acceded as the best way of all. The building-based venture is risky by nature. Any firm in the sector of Construction industry performing project management practices, do not satisfy project effectiveness. Best management and control system highly ensure the success of construction based project's planning, implementation of the project, time cross limit and expenditure and non-achievement of quality standards have always been considered as the great problem with practices of project team. The CSF's are very helpful while taking a project-based decision; more elements-based work can be done. The main players in the stage of construction and design in the construction project are Architectural, Engineer and Construction, Organizations, and the performance of the construction project can be significantly affected by their decisions [5]. Till now, none of the brief work can be found which expands the vital components of achievement

through project management viewpoint in Pakistani Context. Hence a detailed study on this issue should be conducted.

1.1. Problem Statements

The success or failure of the venture relies on the number of decisions taken by project manager during the managing process of a project. If a manager takes right decision so there will be high probability of a project success. But if decisions are not accurately taken, there will be failure of the project management. This research study focus on the development of Critical Success Factors (CSF's), which enhances the project performance by taking good decisions. As there are very few research studies on the Critical Success Factors across the globe by which manager may evaluate their project performance. These few studies are relating to countries other than Pakistan. As every country has its own sort of projects and Criteria's of project, that is why this study specifically focused on the Critical Success Factor's effect on the project success in the Pakistani context. This study used variables from literature as well as developed some extra variables having significant impact on the project success and ranked these all variables according to their impact and Importance.

2. Literatures Review

2.1. Administration of project

Administration of activities has been disclosed throughout the previous twenty years as researching professionals had tried finding out the reasons of failure of project and different dynamics that blesses success to project. From the requisites of roadwork (Construction) and armor industries for planning, controlling, and managing big and rigid 'sensible' projects, the classical project administration qualities were identified [6, 7]. The "complex" perceptions of success benchmark of venture in the shape of schedule (discipline and management, scope and expenses) has been raised from these requirements [8]. Change management can also be named as administration of project venture [6, 9] and supervisors in that project must be involved as alteration brokers giving an extra concentration on the 'soft' way of customer correlation administration in conjunction with the role of administration of project venture [6]. Furthermore, Bourne and Walker [6], argued that, the successful handing over of the accomplished project is considered a great responsibility of the project manager in most of the organization. Directly, this project success is depending on the processing and utilization expertise and adequacy of project manager which may arise adverse in beginning. Adequacy and affability must be established by a successful project manager in most of area, skills (both soft and hard), cogitating and introvert, extrinsic and social attitude. A lot of attempts for betterment of the practices and art of venture administration have been concentrated on increasing tools, methodologies and techniques concerned with qualities which include efficient time administration, cost management and capacity management. The requirements of managing building related projects are having a good know-how of modern management i.e. understanding the architecture and process of construction. Particularly, a set of goals is encircled by the project management in construction which might be completed by implementation of a set of activities subjected to resource troubles [10]. Afterward, the construction's project management functions are considered as:

- The project's detail of goals and plans which may include scope figuration, budget scheduling, identifying performance objectives and choosing participants for project.
- By the use of labor tools and materials procurement according to described plan and schedule, the enhancement of efficient utilization of resources.
- By proper unity and control of basic management functions throughout the whole process, the implementation of different activities.

2.2. The Process of Project Administration

Tan [11], states that we can apply the concept and tools of project management to any project which may ranges from a very simple goal, amelioration of office to very rigid and complex projects i.e. designing and constructing the complex projects of airport or hospital. The application of technique of managing project is approximately required by all projects. By describing the functions of administration within the firm and then examining every function in brief, the process approach of management accentuates the systematic study of management [10]. The strategic plan, organization and control functions are described by a general agreement. The duty of project manager is to coordinate the procedure of correlated businesses which are not irregular and complicatedly established instead these are naturally energetic with the evolution of procedure. The development of quantitative techniques (specifically formulated to help supervisors while establishing complicated decisions regarding the production, activities, and scheduling) are generally contributed by the management sciences and decision support approach. Managers are provided with accurate and relevant information in decision support system.

2.3. Project Administration Goals

The greatest goal of a project's administration is participating in developing the nation's procedure, help to provide a platform to different residential, industrial, commercial, and recreational activities of the personnel. The customer's satisfaction can be achieved through quality superiority, more quantity, lowest cost, fastest off mark, and highest yield return of the products within any organization [11]. The betterment of already built environment, canning the natural eco system and abodes, satisfaction, and comfort of consumers. On a highly micro global basis, the overall objectives of a project management are constituted by the contribution of nation building and economy. Technical excellence can be another subsidiary objective of project management in the aspects of infrastructural plans and other important perspectives of specialist [11].

2.4. Critical Success Factor (CSFs)

According to the perspective of a project management, the features, conditions, or variables having a direct significant influence over the project's success when sustained, maintained or managed properly are called Critical Success Factors [12]. Distinct CSFs, good administration, and an absence of opinion concurrence between scholars on the judgment criteria for project performance are determined by distinct scholars [13]. Moreover, the effect of context (based on which, different factors considered and categorized most critical) has been observed by many studies describing the CSFs. By spreading the critical success factors that one may enhance the achievement of construction work in most of the construction companies, the management activities can be better understood. The development and popularity of CSFs approach took place since last 2 decades [14]. Despite, most of the researchers emphasize upon the classical approach "Iron triangle" that may include scheduling, costs and performing quality of accustomed procedure of buildings instead of continual construction work [15]. Majority of the researchers just accentuate the analytical venture characteristics rare to verdant buildings project, like initial enrollment of union workers of a project Horman, Riley [16], top level manager's backing [17], experienced architect Kog, Chua [18], experienced venture administrator Chan [19], compensation Belout and Gauvreau [20], worker's group stimulation Kog, Chua [18], engagement of team candidates of a venture [18, 19], effective and brief planning for efforts regarding manufacturing and design Chan [19], suitable channels of transmission [13, 19]. Strong governance like supervision and changing planning accordingly [13, 18, 19], efficient assessment [18, 19], and suitable fiscal estimation [16, 18].

2.5. Project Performance

Project is defined here as the group of operations which should be necessarily accomplished according to defined goals and tasks while utilizing the venture's holding [21]. The venture's achievement is a complicated and mostly delusory build up, but despite this achievement is much important for potent exertion of a work [22]. Different studies developed various project performance indicators that are necessary to the project success, including manufacturing expenses [23, 24]. Timeframe of manufacturing [21, 25], Traits Enshassi, Al-Najjar [26], Manufacturing Standardization, Timeframe Standardization, Faults Standardization, Customer's Amusement by services Enshassi, Al-Najjar [26] and Customer's Amusement by goods [25]. The earlier literature describes several volatile elements that impact an achievement of implementation of a projected venture. Mendoza, Pérez [27], identified and categorized the CSFs in 5 important groups. These are HR pertinent CSFs, Project pertinent CSFs, Project Process factors, Project Administration Action CSFs, and factors of Outside Climate. Variables within a group can be influenced by another group's variable.

3. Methodology

3.1. Population and Sampling

The data of the research study was collected from the project supervisors, manufacturers, professionals, and builders who are much more trained and experts in the manufacturing field of Pakistan. We applied Convenience Sampling techniques for the collection of the data. The population is the same of all engineers, project managers' architectures and builders having experience in the construction field of Pakistan. We used convenience sampling technique and collected the data from 400 respondents for the data analysis of the study. We used questionnaire for the various variables of the study. The questionnaire was used on the 5 Likert base. We initially distributed 600 questionnaires and got back 400 questionnaires completed in sense with response rate of 66.67%.

3.2. Statistical Tools and Techniques

We analyzed the data through Reliability Analysis, Factor Analysis, Correlation and Regression to predict the results. Regression analysis a statistical process which is used to estimate the relationships among an outcome or

regress and one or more than one predictors. Correlation analysis is another statistical method which used to compute the vigor linkage among 2 quantitative variables and also indicates the direction of association as positive correlation or negative correlation. Variables will have three types of association strong, moderate, and weak correlation. A high correlation shows that two or more variables have a strong relationship with each other's. Positive correlation shows positive or candid interrelationship among 2 or more volatiles while correlation with minus sign indicates converse interrelationship among 2 or more volatiles. Reliability in statistics is used to find the overall consistency of a measurement scale or a construct. A measure will be highly reliable if it produces same results under consistent conditions.

Factor analysis is another statistical tool which is used to check correlation between all questions of variable. It is conducted to reduce unrelated questions or factors from a variable in a questionnaire. Factor analysis is used to ensure the relevance and connectivity between factors (questions) of a questionnaire about single variable. Here we used Exploratory Factor Analysis by modifying already used questionnaire and the KMO test is used as a determinant of EFA.

3.3. Variables Definition and Measurement

The Project Planning can be defined as a discipline which states the way of completion of a project within a specific time period, particularly with defined activities, and with assigned resources Herroelen, Leus [28]. Project planning plays very essential role in the achievement of any projected venture [14]. Project Execution is another variable used as a part of Critical Success Factors which mayhap highlighted like the phase in which the plan designed in the earlier phases of the project life cycle is put into action [29]. Pinto and Mantel [30], identified three different aspects of performance of project as a key towards success first of them is the implementation process which is concerned with the project execution process.

Project management actions are the practices of initializing, planning, implementing, controlling, and terminating the project and work of a project team to meet goals and success criteria at time [14]. Zarina, Mishra [31] further explained that best project management actions are benchmark to success of a projected venture. Project procedure mayhap explored like a unique system of steps defined by a management team for a specific project which are most critical towards success of that project [1]. Chan, Scott [14], identified project process as one of the most important factors which can influence the projected firm's achievement.

Human related factors are those factors which are directly related to human resource management Zarina, Mishra [31], similarly Dvir, Raz [1], also defined the human related factor as all actions taken by the management team of a project concern to resolve the human related issues. Chan, Scott [14], states that human related factors in managing a project can directly affect the project success. Chan, Scott [14], identified some factors concerned with specific project which are project related factors. Zarina, Mishra [31], used these project related factors as a variable that may influence the projected firm's achievement.

4. Correlation Analysis

	DV	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆
DV	1.0	0					
X ₁	0.561	1.00					
X ₂	0.461	0.252	1.00				
X ₃	0.310	0.312	0.215	1.00			
X ₄	0.212	0.323	0.336	0.25	1.000		
X ₅	0.362	0.456	0.405	0.31	0.25	1.00	
X ₆	0.437	0.367	0.321	0.261	0.36	0.52	1.00

Here we can see from the table that the Dependent Variable (Project Success) has a strong positive correlation with dependent variable which value is 1.0 or 100%. The project planning (X1) has a strong positive correlation with both DV and project planning. The project execution (X2) has medium positive correlation with DV, weak positive correlation with X1 and strong positive correlation with project execution. Project management actions (X3) has a medium positive correlation with DV and X1, weakest (+) correlation with Project Execution and strong positive correlation with project management actions. The Project Procedures (X4) has a weakened (+) correlation with DV, medium (+) correlation with Planning and X2, weak (+) correlation with Management Action and strong (+) correlation with Procedure. The variable of Human related factors (X5) having a medium (+) correlation with DV, X1, Execution and Management Action while weak (+) correlation with Procedures and strong (+) correlation with

X5. The last variable of Project related factors (X6) has a medium positive correlation with DV, X1, Execution and Procedures while weak (+) correlation with Management Action and strong (+) correlation with X5 and X6.

Regression Analysis

Variables	Beta	St. = b/t	T.	P
X ₁	.28	.103	2.73	0.003
X ₂	.26	.104	2.51	0.004
X ₃	.21	.094	2.23	0.012
X ₄	.17	.081	2.10	0.041
X ₅	.19	.087	2.18	0.030
X ₆	.25	.101	2.48	0.004

From the given table of regression analysis, the results suggest that the Project Planning (X1) having a (+) serious influence over performance factor as the P-Value is significant at 5% level. Similarly, Project Execution (X2) having P-Value 0.004 has a (+) momentous impact over success factor. X3 variable of Project Management Actions also shows a positive momentous influence over a performance factor as its P-Value is 0.012 which is significant at 5% level. The fourth variable of Project Procedures (X4) also displays a momentous (+) impact over a performance factor as its probability Value is significant at 5% Probability. Human related factors (X5) having Probability Value momentous on .05 sig level also has a positive serious influence over a performance factor. The sixth variable of Project related factors (X6) shows a positively momentous impact over a performance factors as its P-Value is significant at 5% probability level.

4.1. F-Value and R Square

F value tells us about the overall model's significance. The F-Value should be 4 or more than 4. Here the result shows that **F value** is **42.50** which identifies that the overall model is highly significant.

R Square shows that how much changes in the value of dependent variable are brought by the change in the values of various independent variables. Here the **R Square** value is **0.48** which suggests that 48% changes in the success factors are made due to the various independent variables.

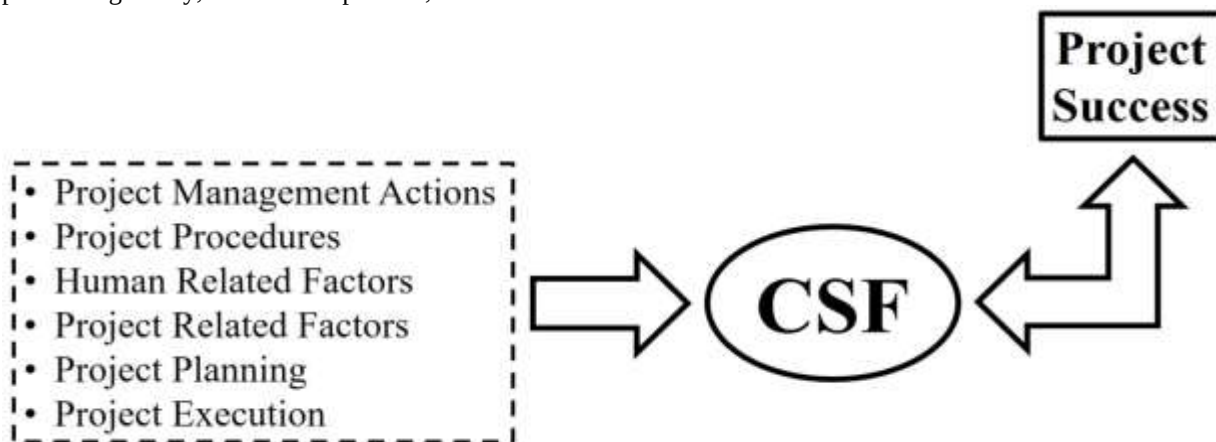
4.2. Discussion

The research findings can be useful for any project-based organization seeking to know project performance indicators to get the project success. This in turn will satisfy the project management company while taking their important decisions specially regarding the variables used here as a Critical Success Factors. This investigation broadly determined six variables of project success demonstrated through Fig 1. These variables are projected firm's Planning, Execution, Management Action, Processes, Human Related components, and Project components. The research is done on the project-based organizations of Pakistan and the whole data has been collected from project-based companies working in Pakistan



Figure 1

The conceptual framework of the investigation should be widened in upcoming findings while the CSF's should be identified subsequently collecting statistics from project-based organizations and treating that data with different statistical tools. This conceptual framework (Figure 2) demonstrates six volatiles of project success used here to get related testimony. This methodological concept of the study used interrelationship among volatiles of project performing ability, Critical components, and that of venture's success.



Conceptual Framework: Figure 2

5. Results and Conclusions

The overall study can be concluded as there is a positive significant impact of various independent variables on the dependent variable of Project Success. Here we concluded one by one the result of various variables from regression analysis and that of correlation analysis through respected tables. We have seen that the regression analysis clearly shown the positive significant effect of various dependent variables on the project success. Similarly, the correlation table also shows the correlation between different variables with each other. Then the F value also suggested that the overall model is significant as the F-Value is significant. And the value of R Square indicated that 48% changes in

the value of dependent variable are caused by changes in the value of various independent variables used in the model. So, we can conclude that a (+) momentous impact of various factors over a project achievement is resulted.

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