

THE EFFECT OF PROJECT MANAGER'S COMPETENCIES ON SUCCESS OF CONSTRUCTION PROJECTS: MEDIATING ROLE PROJECT MANAGER'S PERFORMANCE

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1. Introduction

1.1. Background

Construction can be termed as contractual, technical, legal as well as relational business. The project manager has to deal with conflicts and disputes arising due to varying sphere of interests, the contractors, subcontractors, design managers, team and other stakeholders all have different and varying goals, judgments, and values. For project managers it is necessary to deal with and come up with a win-win solution through negotiations in order to keep everyone satisfied, this will ultimately end up in a successful project.

“Many tools and techniques available should be followed as a good practice or sometimes as a benchmark by project management for the successful management of a project. Amongst the many structures and practices followed, it is significant to consider the Interpersonal and human aspect of project management, as this will also play an important role in project development ensuring that the project activities are not overseen” (Badewi & Shehab, 2016).

“During project execution, every project manager is different and follow different strategies of leading, managing a project team. If a similar project was assigned to two separate managers to plan, execute, manage and control the choice of project completion would be very much dependent on the project manager, he is the one to complete it in his own particular way different from the other manager managing the same project” (Buvik & Rolfsen, 2015). “The specific manner in which a project is planned, executed, managed and controlled varies according to the perceptions, conceptions, emotions and ideas of the manager as this can effect various aspects of a project such as the decision making process and problem solving skills; these actions are the core which demonstrates the success and failure of a project” (Gherbal, 2015).

1.2. Problem Statement

“There is an immense need to train, educate and inculcate skills of project management in project managers. The performance of a project manager greatly influences outcomes. This study reveals Project failures in the world are still high, despite rigorous attempts by project managers and project management institutes, trying their best to give managers the most beneficial and generally agreed tools and techniques, standards, good practices and formats to make projects successful” (Smith, Bruyns and Evans, 2011). Marnewick and Labuschagne (2011) tells organizations intend to invest their human and material resources in projects with a firm perspective of achieving success. Several surveys have shown that many projects still fail to deliver required results. Akbar and Mandurah (2014) have linked various successful projects with project managers, they have further elaborated project characteristics and project management CSFs (critical success factors).

“There is limited research data available pinpointing the effect of project manager competence on project performance results” (Lindbergh, 2009).

There is a lack of empirical research that inspects the performance of ⁷ project managers in the Pakistani construction industry. This research was carried with a firm intention to look into these crucial issues by pointing critical success factors (CSFs) that effects project success, through manager personal skills and his performance.

1.3. Research Objectives

The main aim of the study was to explore the factors that affect the performance of project managers within Pakistani construction industries. The study also investigates how these factors impact the success of construction projects. The objectives of this study are outlined below:

- To analyze the performance of less competent project managers hindering success in the Construction projects.
- To analyze the factors that may influence continuous performance management in construction projects.
- To identify the main factors that affect the project managers' performance in the construction projects and how these factors contribute to success of construction projects.
- To explore the range of skills, qualifications and competencies required for professionals to manage a construction projects.

1.4. Significance of the Study

This study provides project managers more understanding about the importance of project manager's competencies for project success. The results obtained from this study can be provided to different forums including project management conferences and to the project management bodies which includes project management institute (PMI), who can pass it on to the practitioners of project management across the globe which can benefit especially the construction industry.

The systematic approach to measure performance has interested ¹³ many construction firms, government sectors, public and private clients and other project-orientated companies. ⁵ Performance measurement is the regular collection and evaluation of information regarding input, efficiency and effectiveness of construction project activities. Project performance can be evaluated both financially and non-financially, it can be compared and contrasted with the performance of others within the organization. ⁵ Performance measurement should not simply apply only to product or service quality, i.e. the business performance, but it should also extend further to quality management, customer satisfaction, needs, wants and expectations. This way, all three stakeholders, shareholders, customers and employees, can be satisfied. Measurement can be classified in three main ways. The first method of measurement is the numerical and quantitative indicators, the second method refers to the qualitative/subjective matters, and the third refers to deciding which performances to measure states that there are 'hard' and 'soft' aspects in measuring project success; time and cost are the 'hard' aspects and satisfaction is the 'soft' aspect. ⁸ Project success can be separated into tangible and non-tangible aspects; the tangible aspect includes cost and time parameters, whereas the non-tangible aspect includes customer satisfaction, performance of project manager, weather conditions and other attributes. Even though all the literatures stated above use different ways to characterize performance measures, all literatures agree that results from the measurement have to be compared to the initial plan and reference values in order to identify the standard. One main factor that influences the performance of construction projects and construction organizations is the state of the national economy, the implementation of process improvement programs can have an impact on the

organization both in the long and short term. One way of improving project and organization performance is to integrate process improvement strategies; such as, arranging collaborative partnering, having supply chains in place, developing management-risk strategies, management safety approaches, value engineering, total quality management and quality assurance programs. Since projects are becoming more complex and require sophisticated technologies and financing devices, the integration of these approaches act as pivotal strategies to determine the success of construction projects. Adoption of these strategies may initially incur higher costs to project development but the benefits of having strategies in place will be seen further on in the project.

Many researchers have discussed keeping in view different geographical grounds or dealt with only a few capabilities. The impact of project manager's competence affecting project manager performance and final impact on project objectives is seldom given consideration. The competencies of project managers have always been considered insignificant. There is an immense need for more research in order to formulate the findings of competencies into universally accepted and acknowledged features.

2. Literature Review

The construction industry in Pakistan is undergoing rapid changes in its procedures due to advances in technology and ever increasing competitiveness.

“A construction project acquires input from different parties; there are many stages to a project, inputs from both public and private sectors are used in projects” (Akintoye, 2000). Ritchie (2007) within thirty-five projects, identified that with stakeholder and communications management much better client satisfaction, reduces the risk events, and also elevated the actual achievements on the Project.

“Time, expense and quality parameters are the most famous criteria utilized to secrecy the execution and achievement of development activities” (Chan, Wong & Scott, 1999).

“Several structures and techniques should be followed by the project manager for successful project completion. Along with the technical aspect, he should consider human aspect, the interpersonal soft skills of Project management. This will also play an important role into the development of the project and ensuring project activities are overseen” (Badewi & Shehab, 2016).

“Project managers are distinctive and unique in managing a project, for instance, if a similar project is assigned to two different Project managers, the project will be completed in a certain way that the manager chooses to manage the project” (Bovik & Rolfsen, 2015).

“The way a project is run varies depending on the perception and emotion of manager, as this can impact various aspects of a project such as decision making process and problem solving skills these actions may make the difference between the success and failure of a project” (Gherbal, 2015).

According to the Project Management Institute (PMI, 2004) “Project management is the discipline of planning, as well as coping with sources to bring successful finish the distinct undertaking goals as well as its objectives”. Moreover, PMI (2004) declares that undertaking and

managing with the use of skills, techniques, tool to meet the specifications. It usually involves coping with not just time period, charge, as well as range, but identifying this undertaking stakeholders as well as their particular specifications.

In the same manner, Woodward (2005) mentioned “Evidence shows that an overreliance of the traditional steps regarding success may actually always be obscuring possibilities to create importance in addition to conquering.”

2.1. Project

“A project is a systematic way of performing activities for achieving a goal; during project execution a project passes various phases which are collectively known as project lifecycle. When a project proceeds from one phase to another, everything involved in the project experiences a change” (Nicholas & Steyn, 2008).

“A project is a struggle that is temporary endeavor in order to create a unique deliverable.”

“A project is primarily concerned with a single, elaborated reason and giving end-items, deliverables, end products, results, which can be further explained in the criteria related to project cost, project schedule, and performance requirements of the project. Projects are initiated with an aim to produce a differentiated or unique end product or service” (Nicholas & Steyn, 2008).

Projects are never permanent. They are temporary undertaken for the accomplishment of a specific deliverable, that can be a product, service or output.

Projects can be short term as well as long term, depending on the nature, the constraints incurred.

Projects can be on budget, on schedule while some can be over budget or over schedule.

2.2. Management

In Fundamentals of Management by Robbins, DeCenzo, Coulter & Anderson (2013) stated that Management is systemization and sorting of activities so effectiveness and efficiency could be achieved using resources allocated. The researchers in management have categorized the work of managers according to their functions, roles, and skills. In this section, we'll consider the challenges of balancing efficiency and effectiveness, and then examine the approaches that look at what managers do. In reviewing these categories, it might be helpful to understand that management is something that is a learned talent, rather than something that comes "Naturally" (Robbins et al, 2013).

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2.3. Project Management

In order to meet project objectives, project management good practices are there to adhere to. A project needs to be effective in all manners, its performance, cost and schedule are to be taken in account, whereas maintaining the scope of the project in line with its execution is also important. Scope change takes place when the project manager forgets to take into account some essential details of the project.

“Managers are burdened with the issues regarding coordinating, combining and directing huge and temporary organizations along with the problem of limited resources, tight schedules, and the risks associated with environment. There has been an immense need for dealing with all such complexities of projects” (Nicholas & Steyn, 2008).

Such new practices gave rise to modern practices of project management to comprehend technology related performance goals, market directed performance taking into account all the cost, quality and time related boundaries.

2.4. Performance

There are certain standards available to check the accuracy, performance and end status of the project. As per a contract, performance is termed as the fulfillment of obligation.

There are certain criteria's set by different organizations to check or evaluate the performance of an employee. How well one can perform, or how well one is performing is a matter of comparing it with the preset criteria.

2.5. Performance Management

The project manager's role is highly strategic. There are many area specific skills technical as well as soft skills are required for the project, effective project management.

If the whole organization and the teams are managed by the principle of performance management, better and greater outputs can be expected out of them.

Performance management could be analyzed in a developing country's context of growth and development. Pakistan's context of growth and development could be more dynamic and completely different from a developed country's context. "Performance measurement is a combined, whole and sequential manner that requires comprehension of the organizational strategy and to completely grab the essence of tangible and intangible aspects, considering the qualitative and quantitative criteria, and includes aspects of synergy through collecting and combining information that is useful(Shen, Chen, & Wang, 2016).

2.6. Project Manager's Competence

The Cambridge dictionary defines competence as; “The ability to do something well” “Competence is the ability to render something inclusive of all skills, knowledge and personality traits”(Havila, Medlin & Salmi,2013). “Competence can be regarded as an individual term but the competence of an organization is rated at a different scale”(Gherbal, 2015).

Therefore, using the definitions above, competence is an ability both individuals and the organization can acquire” According to Brière, Proulx, Flores, and Laporte (2015), effective leaders must possess certain competencies, examples of required competencies include; goal setting, interpersonal skills, self-knowledge and technical competence.

In literature several definitions of competencies can be found, in general, competency can be expressed as the cognitive, functional, social abilities and skills; it incorporates all individual resources used to perform diverse tasks, gain required knowledge and achieve good results.

All competencies can be linked to a mixture of numerous skills, knowledge, motivation, or values, beliefs, emotions, and other social and behavioral components that are applicable as a whole in any activity.

2.7. Project Success

Project success can be based on how efficiently and effectively the project objectives are met. Project success can also be based on the criteria if the project is completed within budget, on time, and meeting the scope of the project. All measures are to be taken into account while determining if a project can be stated as a successful or unsuccessful one.

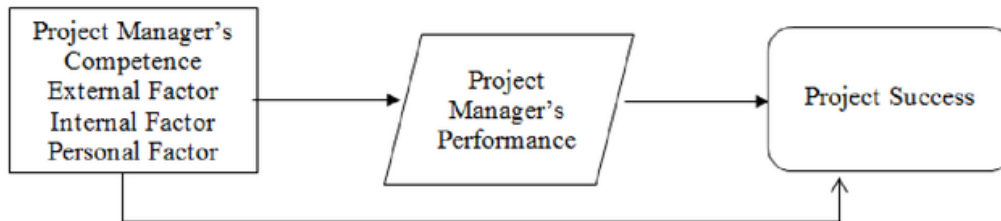
The intent of this study was to define ⁹ project success factors – human performance excellence criteria.

This study is carried out to focus, analyze and to identify such inputs that directly leads to project success.

3. Theoretical Framework

3.1. Conceptual Model

The literature survey enables us to draw the following theoretical framework for this study:



3.2. Research Hypothesis

In light of the above theoretical framework, the following hypothesis are to be tested in this study:

- H1. Project manager's competencies have positive relationship with project manager's performance.
- H2. Project manager's competencies have positive relationship with project success.
- H3. Project manager's performance has positive relationship with project success.
- H4. Project manager's performance mediates between the project manager's competencies and project success.

4. Research Design /Methodology

There are several methods that are widely used for data collection namely; observations, focus group and case studies. In order to collect primary data questionnaires were structured. To collect quantitative data a questionnaire based survey from main respondents was conducted, with stakeholders from construction industry (CI). A survey method is used extensively prior as well so the respondents are comfortable in answering survey questions.

Secondary research refers ³ to the collection, study, evaluation and examination of second hand data, that is already collected and is available. This research intends to be based on a mixture of secondary and primary research. The sources of primary research are articles, journals, websites, newspapers and books that can be useful and beneficial in today's world, with people of different perspectives and several schools of thought.

4.1. The Selection of Research approach

Research approach can be termed as method or procedure which is observed by any researcher in order to decide about the data collection, how it will be presented and how it would be analyzed.

The research approach selected for this study is quantitative approach.

4.2. Research Design

Research design is necessary in order to organize your research in a logical structure.

Once the ¹ variables are identified in the problem area and the theoretical frame work ³ has been developed, the researcher can design the work in an appropriate way, in order to arrive at a solution and make suggestions and recommendations in future. This research is regarded as applied research. design for this study includes:

4.3. Applied Research

“When the already available findings are modified to reach specific solution, adding a little to the already developed body of knowledge. This research will come up with a solution for existing problems of firms in construction industry in Pakistan.

4.4. Descriptive Study

The variables of interest were observed along with their characteristics i.e. the effect of project manager’s competencies on the success of construction projects: mediating role of project manager’s performance. This study also represents various aspects of how a project manager’s competencies tradeoff can be balanced by different organizations to gain a sustainable advantage.

4.5. Hypothesis Testing

Once the Hypothesis are developed they are tested based on logics, various mathematical models theories experiments, inquiry or testing.

This study is based on hypothesis testing as it explains the nature of relationships between the variables under study.

4.6. Type of Investigation

This study can be regarded as a correlation study because it intervenes in a workplace setting in order to find out factors relating to employee's productivity.

4.7. Extent of Researcher Interference with the study

There has been minimum interference from the researcher side in the workplace, the data collected has been done with minimum interference using internet, Google forms, emails, files and the organization workflow interference has been minimum.

5. Study Setting

5.1. Non-Contrived setting

The organizations under this correlation study has been observed in the natural environment, where work proceeds as a normal flow, so it can be termed as a non-contrived study.

5.2. Field Study

This correlation study has been done in Lahore construction companies. It is a field study. There has also been no interference with the normal work routine.

5.3. Time Horizon

In this study data has been gathered only once. The data collection was performed using questionnaires once.

6. Sampling

6.1. Population

All the managers and site supervisors working in the construction industry in Lahore is the population of this study. Since the population size is not known due to the budget constraints and accessibility issue, hence this study considers a large population size.

6.2. Sample

The source of data in this study was primary data personally collected from the managers and site supervisors working in the construction firms, operating in Lahore Region. A total of 250 questionnaires were distributed initially, out of which 196 questionnaires were returned showing the response rate of 72 %. However, out of the 204 respondents 16 respondents were not able to complete the questionnaires up to the satisfaction level of the researcher. Only 180 respondents were able to completely understand and respond accordingly. Hence the sample size of 180 respondents was considered fit for further data analysis. The sampling technique used was convenient sampling.

6.3. Data Collection Methods

There are certain factors to keep in mind while deciding upon the best and optimum data collection method to be used. One should ensure the availability of resources for conducting the study, how much time is available to complete the study and what level of accuracy is needed by the researcher.

The Data used in this particular study is mostly from primary sources, Questionnaires were used as a tool to look at the topic with different dimensions.

This study will not only contribute to the projects in construction industry but would contribute to Human Resource Management as well.

6.4. Unit of Analysis

¹ The unit of analysis of this Research is individual unit.

6.5. Measurement Scales

The measurement scale for this study employed a five-point-Likert-scale. ¹ “Likert scale is one of the most commonly used scale in surveys” (Sekaran, 2006). Questionnaires were adapted from a previous study by (Gherbal, 2015).

6.6. Hypothesis

This study had the following research hypotheses:

HA1: Project manager’s competencies have positive relationship with project’s manager’s performance.

HA2: Project manager’s competencies have positive relationship with project success.

HA3: Project manager’s performance has positive relationship with project success.

HA4: Project manager’s performance mediates between the project manager’s competencies and project success.

7. Data Analysis

Once data collection is done the next significant step was to analyze the data and draw conclusions considering the main aim of the study.

7.1.Descriptive Statistics

To begin with data analysis, the first step was finding out the measures of dispersion and its central tendency. Finding out the mean variance and standard deviation of the data based on the responses of respondents gathered through questionnaires.

7.1.1. Respondents: Category Job Title

Table 1 presents the information about the respondents with respect to their job titles in the organizations they are working.

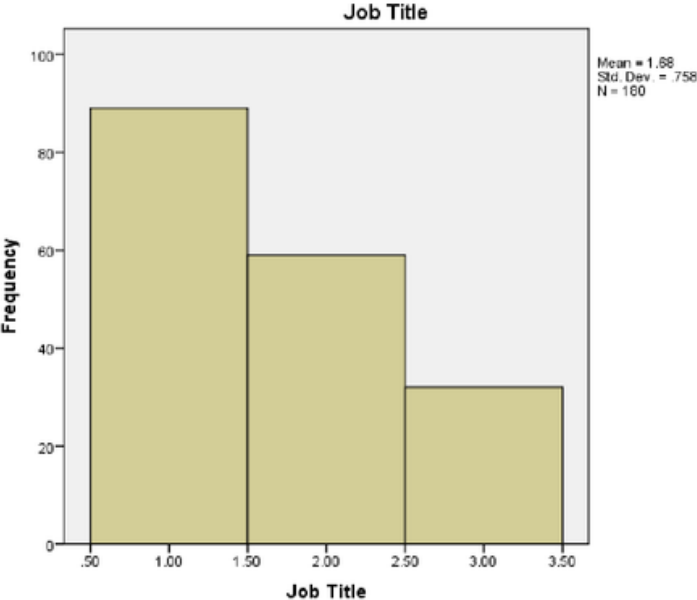
Table 1: Respondents: Category Job Titles

	Frequency	Percentage
Site Supervisor	89	49.4%
Project Manager	59	32.8%
Project Director	32	17.8%
Total	180	100%

Table 1 and Figure 1 both are presenting the same information regarding respondents. As we can see that out of the total respondents approximately 49% respondents were site supervisors.

Whereas the 33 % respondents are project managers and rest of the 18 % respondents are project directors. On an average we can conclude that respondents relevant to the industry were selected on the basis of the relationship to the grand research challenge.

Figure 1: Respondents: Category Job Title



7.1.2. Respondents: Category Gender

Table and Figure 2 represents the information about the respondents from their gender perspective. We can see only 8 % approximately the project managers in the construction industry is female. Which is very low, while rest of the 92 % respondents are male. We can conclude that construction industry in Pakistan is a male dominating industry.

Table 2: Respondents: Category Gender.

	Frequency	Percentage
Male	166	92.20%
Female	14	7.78%
Total	180	100.00%

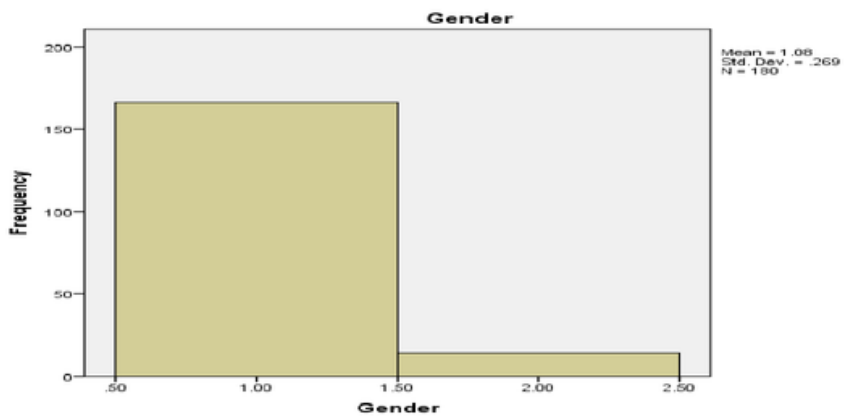
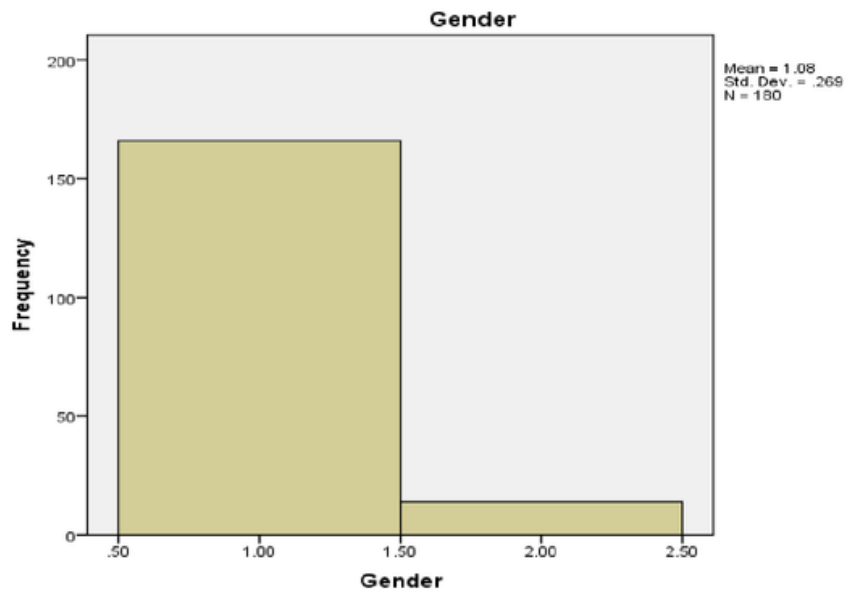


Figure 2: Respondents: Category Gender.



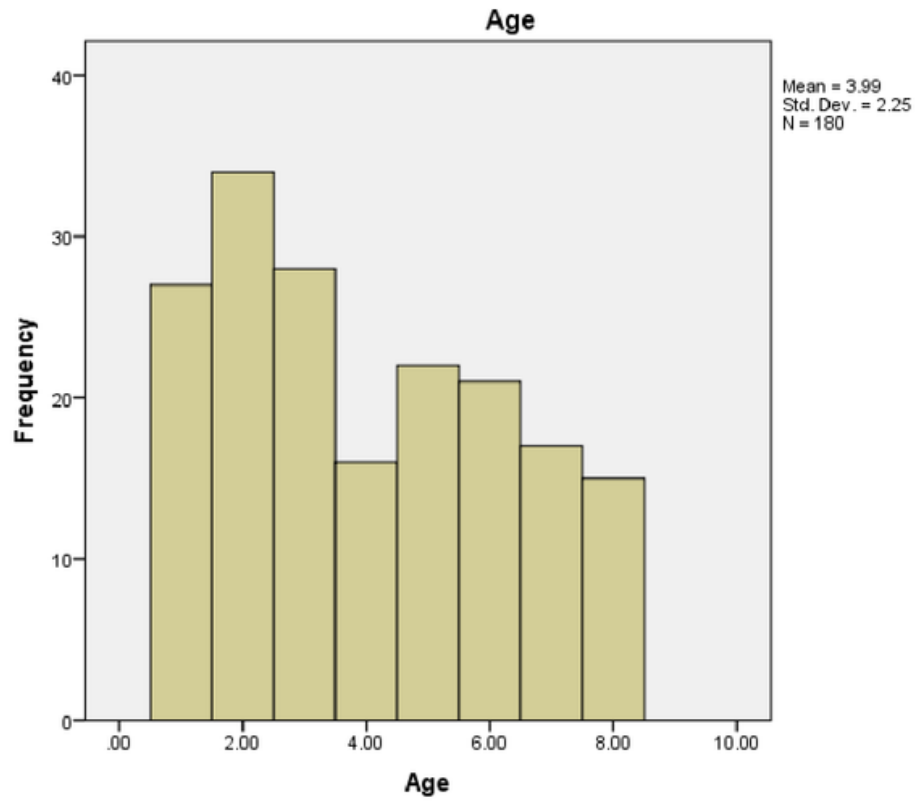
7.1.3. Respondents: Category Age

From the Table and Figure 3 we can see the most of the respondents are young and energetic. The highest percentage out of the total respondent is of the people with age group 25 – 30 years old. Similarly the respondents with lowest percentage in the age group is 55 – 60 years old. However the age group of 30 – 35 years old and less than 25 years old are also dominating in the respondents.

Table 3: Respondents: Category Age

	Frequency	Percentage
Less than 25 Years	27	15.00%
25 – 30 Years	34	18.89%
30 – 35 Years	28	15.56%
35 - 40 Years	16	8.89%
40 - 45 Years	22	12.22%
45 - 50 Years	21	11.67%
50 - 55 Years	17	9.44%
55 - 60 Years	15	8.33%
Total	180	100%

Figure 3: Respondents: Category Age



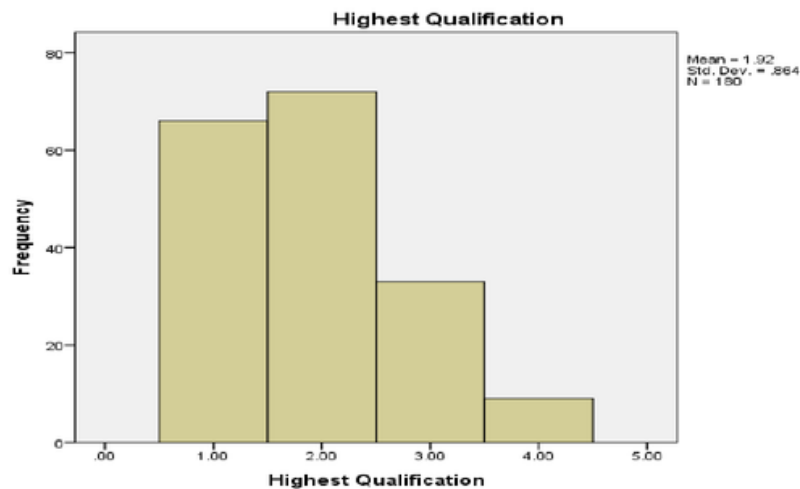
7.1.4. Respondents: Category Highest Qualification

Table and Figure 4 reveals that only 5 % of the respondents were PhD and about 77 % of the respondents are either DAE (Diploma of Associate) or Bachelors as for as their highest qualification is the concerned.

Table 4: Respondents: Category Highest Qualification

	Frequency	Percentage
Diploma of Associate Engineering	66	37%
BE / BS / B Tech	72	40%
MS / M Phil	33	18%
Ph D	9	5%
Total	180	100%

Figure 4: Respondents: Category Highest Qualification



7.1.5. Respondents: Category Job Experience

Figure and Table 5 reveals that about 28 % of the respondents are with no or less than five years of experience in the industry. However, 15 % of the total respondents are with 5 – 10 years of experience and they know better their jobs and are qualified enough to respond accordingly.

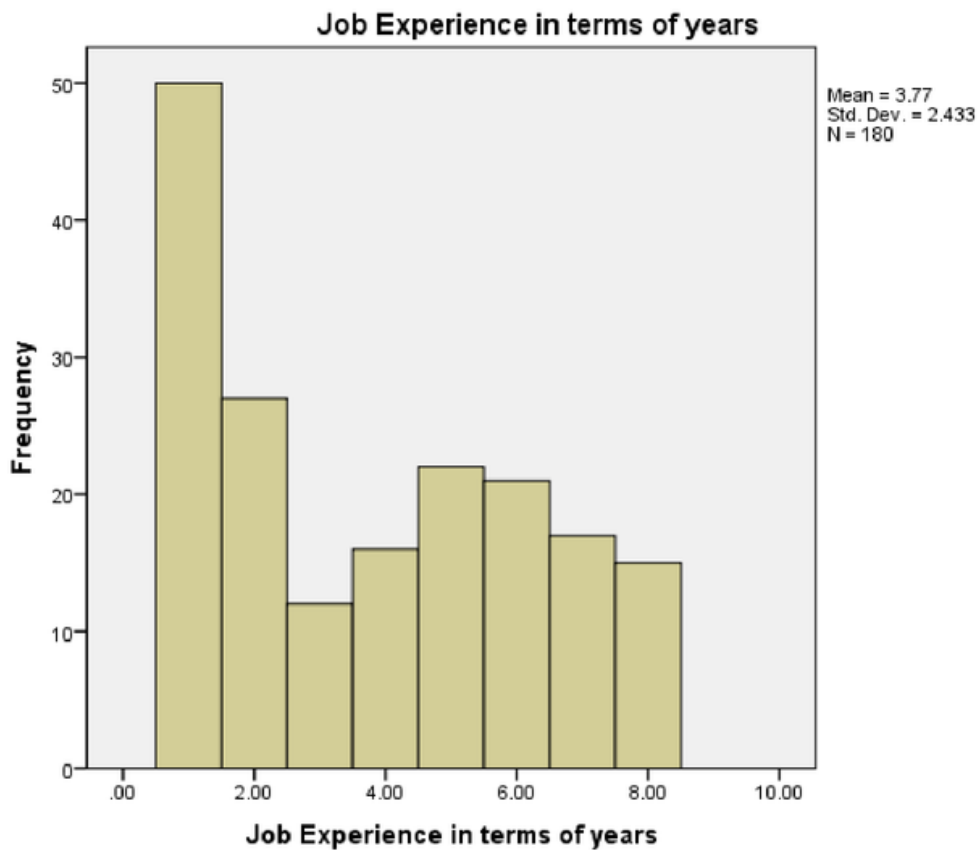
Table 5: Respondents: Category Job Experience

	Frequency	Percentage
Less than 5 years	50	27.78%
05 - 10 years	27	15.00%
10 - 15 years	12	6.67%
15 - 20 years	16	8.89%
20 - 25 years	22	12.22%
25 - 30 years	21	11.67%
30 - 35 years	17	9.44%
35 - 40 years	15	8.33%
Total	180	100%

About 42 % approximately respondents are with experience of more than 20 years. Hence our study is expecting to have more valid and reliable responses from the respondents as they are

experienced enough to see critically as to why and how the competencies of project managers are mandatory for the successful completion of the projects.

Figure 5: Respondents: Category Job Experience



7.1.6. Respondents: Category Project Management Certification

Table and Figure 6 reveals the information about the respondent about having any type of Project Management Certification i.e. PMP or PRINCE 2. We can see that approximately 16 % respondents possess Project Management Certification, while rest of the respondents have no

certification. Meaning that 84 % respondent are not certified professionals by any project management authority in the world.

Table 6: Respondents: Category Project Management Certification

	Frequency	Percentage
Yes	28	15.68%
No	152	84.32%
Total	180	100.00%

Figure 6: Respondents: Category Project Management Certification

7.2. Correlational Analysis

"Measuring the strength of the relationship between two or more variables is generally called correlation and the numerical value that is calculated on the basis of given responses of the variable from different respondents is known as correlation coefficient and is denoted with "r",



this coefficient always lies between 0 and 1 while the direction can be positive or negative. However, 0 means no correlation and 1 means perfect correlation.” (Wisniewski, 2002). Value of “r” close to 0 determines that correlation is weak and values close to one determines that correlation is strong.

Table 7: Multivariate Correlation between Study Variables

Correlations			
	Mean PS	Mean PMP	Mean PMC
Mean PS			
Mean PMP	.903*		
Mean PMC	.869*	.598*	

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** Correlation is significant at the 0.01 level (2-tailed).

Table 7 shows that the variables in the model are having significant correlations at 0.01 level of confidence. We can see that Mean Project Success (Mean PS) is strongly correlated with Mean Project Management Performance (Mean PMP). Similarly, Mean Project Management Performance is moderately correlated with Mean Project Management Competencies.

7.3. Regression Analysis

There are various tools available for data analysis regression can be used as a statistical tool available for the investigation and determination of relationship amongst different variables. While working with different variables we need to analyze their effects on each other.

6

While carrying out the regression analysis the “Statistical significance” of the estimated relationships is assessed, also termed as the degree of confidence explaining how the true relationship is close to the estimated relationship.

7.4. Mediation

In the context of this study there are three variables. These variables are having a conceptual connection meaning that one variable is dependent other is independent and the third variable is mediating between the two variables. This relationship allows us to have three different regression equations for three different relationships. These three relationships are

11

(1) Between independent variable and dependent variable. (2) Between independent variable & mediating variable. (3) Between mediating variable and dependent variable.

Figure 7 shows how an independent variable named X effects a dependent variable Y considering the existence of mediating variable M.

Figure 7 Mediating Variable Relationship Source: Zhao, Lynch, and Chen (2010).

Baron and Kenny (1986) recommended these effects to test for a variable function as a mediator when it meets the following conditions:

$$M = i_1 + aX + e_1. \quad (1)$$

$$Y = i_2 + c'X + e_2. \quad (2)$$

$$Y = i_3 + cX + bM + e_3. \quad (3)$$

This way our regression equations become as follows: -

$$PMP = a_1 + b_1 PMC \quad (I)$$

$$PS = a_2 + b_2 PMC \quad (II)$$

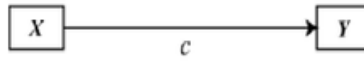
$$PS = a_3 + b_3 PMC + c_3 PMP \quad (III)$$

2 7.5. Total, Direct, and Indirect Effects

2 “In a mediating model, a random variable X effects on variable Y through one or more mediators. Given a sample of data, X’s total effect on Y, denoted in Figure 8 as c, can be 15 represented in a number of ways for example as a path coefficient from a maximum likelihood-based method such as structural equation modeling.” (Hayes, 2009).

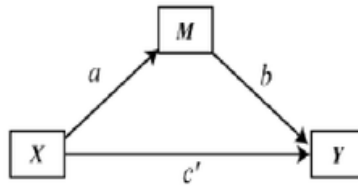
A

Figure 8 A depicts direct proportion by which if a particular thing differs at X it will certainly differ by equal amount at Y



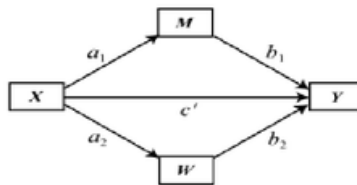
B

Figure 8 B, C, and D represent various possibilities that may be there (Hayes, 2009)



C

Figure 8B represents the simplest mediation model. In more complex models.



D

2

In Figure 8C, the total effect is equal to the direct effect of X on Y plus the sum of the indirect effect through M and the indirect effect through W.

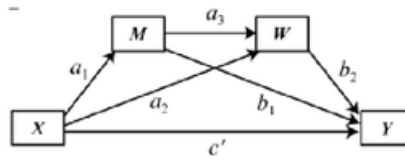


Figure8: Mediating Models Source: Hayes (2009)

Table 8: Regression Results

Ind. & Med. Variables	Dependent Variable: Mean PMP						
	β	SE	t	Sig	R	R ²	F
Mean PMC (Model 1)	0.468	0.047	9.947	0.000	0.598	0.357	98.959

	Dependent Variable: Mean PS						
Mean PMC (Model 2)	0.713	0.031	23.416	0.000	0.869	0.755	548.34
Mean PMP (Model 3)	0.6265	0.012	50.798	0.000	0.992	0.984	5537.6
Mean PMC	0.4208	0.010	43.523	0.000			

Now in the light of the above discussion table 8 presents the results using the Baron and Kenny (1986) classical approach for testing of mediation in SPSS v 22.0.

From the results we can see that for the regression equations – I, II, & III presented above, the beta coefficients of all the equations are positive and statistically significant as 0.468, 0.4208 & 0.6265, and 0.713 are having p-value less than 0.05 ($p < 0.05$) meaning that all the relationships are significant at 5% level of confidence. The value of R^2 denotes that how well the model is fit.

In all of the above three regression models we can see the value of R^2 is 0.3573 for Equation – I, 0.7549 for Equation – II and 0.9843 for Equation – III meaning the model 2 and model 3 are best fit as compared to model 1. Since the value of R^2 in model 1 is more than 0.35 it is still considered a good fit. Since all the effects are significant in all of the above three models, we conclude that the mediation is partial as mentioned by the Baron & Kenny (1986) in their seminal work.

7.6. Hypothesis Testing

This study has the following four hypotheses to be tested:

H_{A1}: Project manager's competencies have positive relationship with project manager's performance.

This hypothesis is accepted on the basis of the regression results presented in the Table 8 above under regression analysis. Since the value of beta coefficient in the above table 0.468 is positive and statistically significant for the Model 1, therefore it is concluded that project manager's competencies has positive relationship with project manager's performance.

H_{A2}: Project manager's competencies have positive relationship with project success.

This hypothesis is accepted on the basis of the regression results presented in the Table 8 above under regression analysis. Since the value of beta coefficient in the above table is positive and statistically significant for the Model 2 i.e. 0.713, therefore, we conclude that Project Manager's competencies has positive relationship with project success.

H_{A3}: Project manager's performance has positive relationship with project success.

This hypothesis is accepted on the basis of the regression results presented in the Table 8 above under regression analysis. Since the value of beta coefficient in the above table is positive and statistically significant for the Model 3 i.e. 0.6265, therefore, we conclude that project manager's performance has positive relationship with project success.

H_{A4}: Project manager's performance mediates between the project manager's competencies and project success.

This hypothesis is accepted on the basis of the regression results presented in the Table 8 above under regression analysis. Since the value of beta coefficient in the above table is positive and statistically significant for the Model 3 i.e. 0.4208, therefore, we conclude that project manager's performance mediates between the project manager's competencies and project success.

8. Conclusion

This chapter of the report will talk about the final findings and limitations to the study and future recommendations for further research in this line. The purpose of this study was to identify the mediating role of project manager's performance between the project's success and project manager's success. This study had following major objectives

- To critically analyze the factors that may influence continuous performance management within construction projects.

- To identify the main factors that affect the project managers' performance in construction projects and how these factors contribute to success of construction projects.
- To explore the range of skills, qualifications and competencies required for professionals to manage a construction project.

8.1. Findings

In line with the objectives, this research study examined the various competencies in the context of construction industry in the literature. Effective organizations are recognizing that improved project management capabilities can maintain and improve their competitiveness. Organizations are requiring competent project managers who can deliver value. This study provides an insight into the industry's perceptions of the relative importance of project management competencies. The findings in this study are based on a literature review and a self-administered survey completed by the supervisors on sites, project managers and project directors of different construction companies.

Conforming to the previous studies (Ahadzie et al., 2014; Loufrani-Fedida & Missonier, 2015; Zhang, Zuo, & Zillante, 2013), we found in literature that a set of external, internal and personal factor competencies are required for an effective leader and since project manager is a leader for a project, therefore, for a project manager as well; these competencies have been proven in many studies. The required competencies are; vision, goals, interpersonal skills, self-efficacy and technical knowledge in regards to certain areas the manager leads. This study found that the competencies identified in the literature supported by the perceptions of the respondents, to a questionnaire given at the end of this study and data collected had a complete support to the conceptual framework of the study.

Fisher (2011) argues that ¹⁰ skills on their own, including their applications, does not make an effective project manager because behaviors drive outcomes, specific behavior for each skill need to be applied to make these skills truly effective. This study contributes to a ¹⁴ better understanding of what practitioners consider makes an effective project manager by highlighting these competencies.

From our point of view, we conclude that the project manager's leadership influences project success. Also, respondents confirmed that they do take account of the manager's leadership. With respect to the personal competencies, the ability to communicate effectively was found to be very significant for project managers to generate greater work performance.

8.2. Practical Implications

The findings of this study have important practical implications in that the competences established in this study can equally be used to assist in the following:

- Disseminating the findings to other firms in the construction industry of entire country.
- Providing information on competencies to stakeholders, ⁹ for the selection of project managers, in order to have high success rate and a successful portfolio for getting higher business and market share.

- Determining, as per the market needs, the prioritized requirements for training in the industry.

As a consequence, this would lead to a far wider understanding of competencies, the role thereof in project management, as well as the need for the development of project management competencies in Pakistan.

Furthermore, the competency listing supports a range of HRM applications, including recruitment of managers, selection criteria, training, promotion, reward management and succession planning, leading to better organizational performance (Dainty et al., 2005).

9. Recommendations

The construction projects faced many challenges with lack of experienced project managers, time and cost overruns. Many construction projects are not completed on time or within budget. Reasons for this may be unrealistic times and budget set at the initiation phase of project implementation. The following recommendations can be made based on the study's findings:

- In order to enhance the managerial skills for construction professionals, training courses should be offered.
- Universities should teach construction project management as a degree in Pakistan so that individuals can be aware of the skills and roles of construction project managers. In

Pakistan they only teach project management as module which is not enough to become a competent project manager.

- Technical institutions should be set up by the government in order to encourage unemployed youth to develop skills and train them to work for construction companies that will give them more experience, more confident and give them chance work placement.
- Funding should be provided by project owners in order, the project to commence more efficiently and avoid any unnecessary time overruns; which can also affect project cost. Project owners should be engaged all the way throughout the starting project from planning stage all the way to completion.
- There should be time allocated for preparing feasibility studies such as planning, designing, documenting information and submitting tenders; to avoid the changes in timing and plans and can be minimized throughout the course of the project.
- As result of poor communication in construction industries, effective and constant communication between the project managers, project workers and participants during all the stages of the project is imperative.
- The project plans should be planned clearly and scheduled as accurately as possible in order for operations to run more effectively and efficiently and the project objectives can be achieved faster.
- Performance should be enhanced and work hard to solve any problems faced the project during the process efficiently. In order to discuss issues relating to the project regular meetings should be arranged.

- In order to meet contractor requirements, it is the project managers' duty to ensure subcontractors are adequately experienced and all work is planned.

10.1 Research Limitations & Future Research Gap

There are many limitations to this study that this section will briefly discuss. Whilst the questionnaires and results generated great outcome, some limitations are as follow:

- This research was done within Lahore and surrounding area in Pakistan; it only applies to construction organizations in Pakistan.
- The scope of this research topic generated a long, time-consuming questionnaire. Reducing the instrument can also be another future research gap.

- Respondents misinterpreted some questions and this caused confusion and made it hard for respondents to answer the questions. The pilot questions used to avoid misunderstandings.
- Due to limited resources and research material in the construction industry in Pakistan, it took a long time to find appropriate information regarding the topic.
- The Communication with companies are not easy.
- The study itself evaluated the performance of construction project managers. The literature review discussed all factors that effects the performance of project managers within construction industry. ¹⁶ In order to fully understand the full role of project managers within construction projects other factors must be investigated in detail. Other factors that can be examined are how newly recruited managers change from their operations role to a leadership role. Also, the overall skillset, complete package for successful project managers, needs to be clearly defined.
- For future studies, a pilot study should be carried out and several different construction firms, should be visited in order to obtain data that portrays different opinions of construction professionals and project managers.

THE EFFECT OF PROJECT MANAGER'S COMPETENCIES ON SUCCESS OF CONSTRUCTION PROJECTS: MEDIATING ROLE PROJECT MANAGER'S PERFORMANCE

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