

Impact of project management certification on project performance

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ABSTRACT

In general, certified project management professionals are perceived to enhance project performance. However, this narrative has quite often been challenged in previous literature. We investigate this controversy by including professionalism and psychological capital as intervening variables. The research is based on an empirical survey of certified project managers in the region of Rawalpindi/Islamabad. 373 data samples were collected and further analyzed on the basis of critical success factor theory. The impact of project management certification along with intervening variables were hypothesized and validated to have direct and indirect relationships with project performance. Responses from certified project management professionals in the region of Rawalpindi/Islamabad support the perception but reflect that professionalism plays a supporting role between certification and performance. However, the study dismisses the role of psychological capital between professionalism and performance. We conclude that project management institutes and associations should ensure professionalism in the certification process to actually enhance project performance. The findings contribute to the body of knowledge in predicting improved project management performance by employing certified project managers with strong professional skills. Consequently, the research will help professional institutes to review the conformity of the required professional skills rather than just focusing on just passing an exam.

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1. Introduction

The need for project-based work is increasing day by day in the modern world (Lundin *et al.*, 2015). Recent statistics put project work at about one-third of developed countries' GDP (Schoper *et al.*, 2018). Project management studies have gained attention on various tiers of the organization (Aubry and Tremblay, 2018). The capability and knowledge of the project team members and the project manager have been much more critical than any resources such as investments and infrastructure (Hadaya *et al.*, 2012; Wu *et al.*, 2012). Project management certifications have thought to reflect the required capability and knowledge, and therefore have developed immense popularity over the recent past (Blomquist *et al.*, 2018). The trend of attaining professional certifications has increased rapidly as compared to three decades ago (Pinto & Winch, 2016). Practitioners with professional certifications and the followers of standards issued from the institutions of project management are expected to deliver better project management performance. This expectation is significant for the management of projects and crucially important for project management institutions and connotations. The trend of hiring certified project management professionals has also grown in Pakistan. Project based organizations in Pakistan especially in the construction and IT industry tend to hire certified project managers more recently.

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There is limited research that highlights the benefits of professional certifications. Catanio *et al.*, (2013) claimed that even if certification is not the sole factor but it holds a vital position in predicting the future performance of project managers. Project management certifications may have turned widespread and practitioners respect it all over the world as a complete gauge for determining the ability and skills of the project manager for managing any threats and meet project prospects (Lundqvist & Marcusson, 2014; Powers-Twichell & Murphy 2010) but understanding how the project management certification directly predicts project performance consequences continues to be a gap in the research (Svejvig and Andersen 2015).

The current study attempts to explore and bridge this gap with the help of critical success factor theory as the basis and by introducing the intervening role of professionalism and psychological capital to determine the impact of project management certification on project management performance. The objective of this research is to explore whether a project manager's training and development, as evidenced in project management related certifications, acts as a critical factor to impact project performance especially in the local context. Furthermore, the study also aims to examine the mediating role of the professionalism between the relationship of project management certification and the project performance. Lastly examine the moderating role of psychological capital between professionalism and project performance. The result of the study will provide managers with insight into the perceived benefits of project management certification. Moreover, the results will enlighten the importance of positive psychology at work. It will give the managers the empirical evidence that will help them nurture the psychological capital and improve project performance. Most of the studies on project management have been done in western nations and it is ideal to study in eastern cultures to recognize project performance consequences on the bases of certification and positive psychology. This study provides accommodations to validate the procedures in local context, which were established in western cultures. The outcomes of the study are intended to be generalized for other professions which may provide avenues for further research. Concluding evidence with regards to the effect of professional certification and professionalism on an individual will help those delegated to select project managers while predicting their future project performance and suggest improvements for the certification process to the project management institutes and associations.

2. Theory, Research Model, and Hypotheses

The overarching theory used for this study was the Critical Success Factor (CSF) theory. The CSF theory was first introduced by D. Ronald Daniel in the management literature in 1961. The theory emphasizes on focusing on related CSFs that are relevant in a profession. In this research we use the theory to hypothesize the relationship between the variables which are perceived and propagated to prove critical for increased project performance.

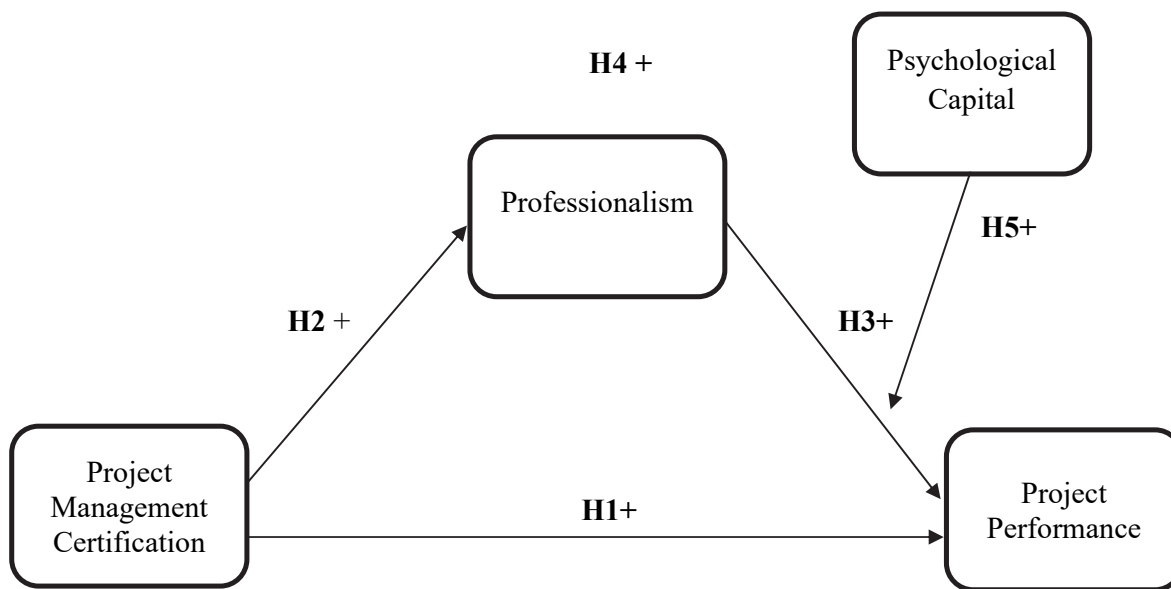


Fig. 1. Research Model

2.1 Project Management Certification

There is scarcity of empirical studies that have explored the benefit of certification for a practitioner, an employer, or even at the strategic level (Morris, 2014). Also, few studies exist to study the impact of having a certification on refined behavior, performance, and attitude of professionals (Morris, 2014). Many have advocated the significance of changing culture towards

practice more than just knowledge attained through certification. Other professions too require an empirical examination on the effect of certification to validate and legitimize the basis for giving due importance to such certifications. A professional credential may help the human resource department selecting professionals. Information technology and human resource research have established that human resource professionals are of the view that information technology professionals with credentials are more competent than the professionals without credentials, consequently, it is also believed that recruiting credential holders minimizes the responsibility of recruiters for predicting technical capability (Cagielski, 2004). On the other hand, information technology practitioners do not believe that there is a correlation between credential and capability, therefore, they deny that having a credential is some reliable criterion to make decisions while recruiting (Cagielski, 2004). When analyzing the service sector, the professionals are generally expected to provide a better quality of service (Walker & Johnson, 2009). The literature on project management certification and level of performance suggests that a professional certification in the field of project management may prove to be a critical factor to gauge the future successful performance of the project manager. With the view and findings of literature found in other professions (Walker & Johnson 2009) and using the CSF theory (Daniel, 1961) as the basis, the following hypothesis is formed:

H₁: Project management certification has a positive impact on project performance.

2.2 Project Management Certification and Professionalism

Project management certification denotes understanding the relevant knowledge of project management that is required and helpful and is also a practical profession (Morris, 2014) where expertise and liability have the same significance as knowledge and knowing; hence, another factor that can be critical in affecting the performance would be professionalism. Professionalism, as the construct name indicates refers to the expert level of the skill or capabilities that will go beyond the typical models. Moreover, having the ability to execute and implement the knowledge practically within the perspective (Morris et al., 2006), also known as an addition to certification. Jung *et al.* (2014) studied the mediating role of professionalism in explaining the association between accountability and participatory governance. Similarly, Idris *et al.* (2017) also discussed the mediating role of professionalism between compensation and performance. Therefore, professionalism has been used as a mediating variable in previous studies especially when it comes to assessing the performance of professionals. Taking the test and obtaining a professional certification reflects that the individual has attained the requisite knowledge for practical application. Although project management certifications do not act as a license like in law or medicine and also do not limit the freedom to practice in the field, academic awards and certifications are developing over time and creating a body of knowledge for standardization in practice, ethics, and professionalism.

The literature on project management certification and level of professionalism suggests that a professional certification in the field of project management may prove to be a critical factor to gauge the professionalism a project manager has attained, as a professional certification in a way ensures the requisite theoretical knowledge and the practical work experience required for mastery in the field. With the view and findings of literature found in other professions (Crawford *et al.*, 2006), and using the CSF theory (Daniel, 1961) as the basis, we form the second hypothesis:

H₂: Project management certification has a positive impact on professionalism.

2.3 Professionalism and Project Management Performance

Hodgson and Paton (2016) identified that a good project manager should know the working environment i.e. organization and technical expertise. Schön (1987) documented that in the period of ambiguity, rationality (i.e., certification) is not enough to tackle the ground realities, and need specialists to address specific issues, a capability to adjust, to overwhelmed impulsive events and intricate defies. Likewise, scholars have suggested that project management specialists should not be fantasized as trained experts who cautiously follow techniques and procedures arranged by project management framework but as thoughtful specialists who can function, learn and adjust swiftly (Cicmil *et al.*, 2006; Crawford *et al.*, 2006). Professionalism, therefore, referred to as mastery knowledge and the ability to the execution of that knowledge practically in the given circumstance (Crawford *et al.*, 2006).

The literature on the project management professionalism and project performance suggests that a required level of professionalism in the field of project management may prove to be a critical factor to gauge the future level of project performance of the project manager, as professionalism is mastery in the field and increases the likelihood to perform more successfully. With the view and findings of literature found in other professions (Crawford *et al.*, 2006) and using the CSF theory (Daniel, 1961) as the basis, the third hypothesis is formed:

H₃: A higher professionalism has a positive impact on the project performance.

2.4 Mediating role of Professionalism

A recent study by Khullar *et al.*, (2018) investigated the effect of professionalism on performance while talking about the future of physician incentives. It was found that several factors contributed to the failure of performance improvement programs, but among them was inconsistent physician professionalism and failure to harness what motivates most physicians:

autonomy, mastery, and purpose. Similarly, this study investigates the effect of professionalism on performance of project managers. Project management certification denotes to understanding the relevant knowledge of project management that is required and helpful and is also a practical profession (Morris, 2014; Fertig et al., 2009) where expertise and liability have the same significance as knowledge and knowing; hence, another factor that can be critical in affecting the performance would be professionalism. Professionalism, as the construct name indicates refers to the expert level of the skill or capabilities that will go beyond the typical models. Moreover, having the ability to execute and implement the knowledge practically within the perspective (Morris et al., 2006), also known as an addition to certification. Jung et al. (2014) studied the mediating role of professionalism in explaining the association between accountability and participatory governance. Similarly, Idris et al. (2017) also discussed the mediating role of professionalism between compensation and performance. Therefore, professionalism has been used as a mediating variable in previous studies especially when it comes to assessing the performance of professionals.

The literature on project management certification, professionalism and performance suggests that relying merely on a professional certification may not be enough to gauge the future performance of a project manager, the project manager has to be a professional in the field to justify his certification and hence prove that with his increased level of performance on the project. With the view and findings of literature found in other professions (Scott, 2016) and using the CSF theory (Daniel, 1961; Kessler et al., 2015) as the basis, we form our fourth hypothesis:

H4: *Professionalism mediates the relationship between Project Management Certification and project performance.*

2.5 Moderating role of Psychological Capital

Psychological capital is a personal resource that explains many human behaviors, performances, and attitudes (Bouckennooghe et al., 2014). The term defined by Luthans et al. (2007), which states it as a positive frame of mind comprising hope, resilience, self-efficacy, and optimism. Due to its unique nature, it has been the center of attraction for many scholars and researchers (Avey et al., 2011; Newman et al. 2014), but still, there are hardly any studies which explore the role of psychological capital in the current setting. The vast majority of the literature has explored the psychological capital and its work-related relationship but still, there is a scarcity of research which has explored the moderating mechanism of this variable (Newman et al., 2014). Previous studies proved psychological capital as an effective moderator. It effectively moderates the negative association between organizational politics and work performance as well as satisfaction (Abbas et al., 2013) emotional labor and job satisfaction (Cheung et al., 2011), between stress and incivility (Roberts et al., 2011) such that adverse relationships become weaker in case of a higher level of psychological capital. It is argued that individuals with high psychological capital, because of their higher optimism, confidence in accomplishing difficult tasks (Bandura, 1997), Ability to survive challenging times (Stajkovic & Luthans, 1998), capability to think of workarounds towards success, and their ability to bounce back after setbacks (Masten & Reed, 2012), are all likely to increase their performance at work. Psychological capital fulfills professional deficiencies (Hobfoll, 2002; Avey et al., 2010), and helps individuals to improvise in difficult times to improve their performance. Therefore, based on previous literature (Abbas et al., 2013) taking into account the moderating role of psychological capital and critical success theory which defines an individual's belief to succeed in a specific situation as a critical factor to improve performance. Therefore, this study proposes that the higher the level of psychological capital the higher the level of performance. Hence, we form the last hypothesis:

H5: *Psychological capital moderates the relationship between professionalism and project performance such that when psychological capital is higher the relationship is stronger.*

3. Methodology

3.1 Data Collection

For this research target population are the project management professionals in the region of Islamabad and Rawalpindi. A sample size of 373 project management professionals was taken to conduct this study. Purposive sampling method was used in this study as this sampling method is based on characteristics of a population and the objective of the study which includes only individuals who have Project Management Certification and therefore, the unit of the analysis for this study is individual. The present study collected data from project management professionals at one point in time, therefore, the study is cross-sectional. Data was collected through a self-reported questionnaire and all measures that were being used in this study have been applied in previous researches. The instrument used was adapted from the previous studies. It was ensured that the instrument showed good to excellent reliability (Cronbach's alpha between 0.75 – 0.95). After formatting the questionnaire and before distributing it to the respondents it was shown to two academic and two industry experts for the face and content validity. Minor suggestions were received and incorporated accordingly. Furthermore, the pilot testing of the instrument was conducted using a sample of 44 respondents. The respondents were located and contacted during the 8th national project management conference held in Islamabad, monthly project management seminars, and training workshops conducted by PMI Islamabad Pakistan Chapter and Pakistan Agile Development Society. The questionnaire was distributed by hand during the networking sessions.

3.2 Profile of Respondents

Table 1
Demographics

	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Male	275	73.7	73.7	73.7
Female	98	26.3	26.3	100.0
Age				
Less than 30 Years	32	8.6	8.6	8.6
30-39 Years	189	50.7	50.7	59.2
40-49 Years	75	20.1	20.1	79.4
50-59 Years	45	12.1	12.1	91.4
Above 60 Years	32	8.6	8.6	100.0
Experience				
Less than 1 Years	13	3.5	3.5	3.5
1-5 Years	132	35.4	35.4	38.9
6-10 Years	185	49.6	49.6	88.5
11-15 Years	10	2.7	2.7	91.2
16-20 Years	33	8.8	8.8	100.0
Total			373	

Table 1 shows the number of respondents were predominantly males, aging between 30 to 50 years, having project management work experience between 5-10 years. Only one-fourth of the respondents were found to be female, which is considered a norm in any professional setting. There were very few respondents aged below 30 years and more than 50 years reflecting that project management certifications are not very popular at a young or old age.

3.3 Measurement of Variables

The certification was measured by 3 number of items, Project performance was measured by the help of 7 number of items having two aspects (Mir & Pinnington, 2014; Keegan et al., 2015), strategic performance (Meredith and Mantel Jr, 2011), and operational performance (Walton and Dawson, 2001). A Likert-type scale was used to capture the level of strategic and operational performance, including “less than 20%”, “21–40%”, “41–60%”, “61–80%” and “N80” and “100%”. Professionalism was measured with the help of a 5-dimension scale and 15 number of items of professionalism developed by Snizek (1972) and followed up by Dinger *et al.*, (2015), terminologies were adjusted to refer to the project management profession. Avey *et al.* (2011) 12 item psychological capital scale was used for the analysis. The scale comprises 12 numbers of items divided into four components of psychological capital, hope, resilience, optimism, and self-efficacy. The Likert ranges from 1 to 5. In which 1 indicates the strongly disagree and 5 means strongly agrees. Before the final data analysis, cross-sectional data is important to determine that there is no common method bias reflected in the data. For this purpose, Harman’s test is one of the accepted methods (Aguirre-Urreta & Hu, 2019; Kuncel et al., 2004). Therefore, before moving to hypothesis testing, Harman’s test was applied to calculate Extraction Sums of Squared Loadings for one factor. The results indicate that the percentage of variance for a single factor is 23.200 % (< 50%) and it was found that there is no common method bias in the data.

Table 2
Factor Analysis

Items	Standardized loading of items			
	PMC	PROF	PsyCap	LOP
1	0.81	0.78	0.83	0.65
2	0.79	0.86	0.66	0.77
3	0.88	0.67	0.94	0.89
4		0.82	0.89	0.86
5		0.75	0.87	0.9
6		0.91	0.71	0.81
7		0.74	0.84	0.78
8		0.77	0.79	0.88
9		0.87	0.76	
10		0.89	0.78	
11		0.81	0.88	
12		0.66	0.71	
13		0.83		
14		0.69		
15		0.93		
AVE	0.685	0.678	0.704	0.771
CR	0.867	0.964	0.957	0.943

3.4 Validation of Measure

Before testing the hypotheses, it was critical to check the internal consistency and validity of scales used for measurement. Initially, the alpha coefficients and composite reliability were assessed. Table II shows that the alpha coefficients ranged from .810 to .945, and their corresponding composite reliability indices were between .867 and .964. As the reliability measures exceeded the threshold, therefore the scale reliability was ascertained. Then, the average variance extracted (AVE) was calculated for the four scales so the convergent validity could be established. The AVE statistics were in the range of .678 and .771, therefore confirming the convergent validity as well.

Table 3

The results of some basic statistics

Variable	Mean	SD	Skewness	Kurtosis	1	2	3	4
Certification	2.79	.760	.066	-.118	0.81			
Performance	2.86	.659	-.059	-.409	.580**	0.81		
Professionalism	2.91	.638	-.264	-.134	.619**	.502**	0.91	
PsyCap	2.76	.751	.300	.112	.010	.052	.072	0.94

Table 3 shows the descriptive statistics. The value for certification (M= 2.79, SD= 0.760), for level of performance (M= 2.86, SD= 0.659), for professionalism (M= 2.91, SD= 0.638), and for psychological capital (M = 2.76, SD= 0.751). The correlation test was applied to measure the strength and direction of the relationship between the variables of the study. The correlation matrix indicates the relationship between the different variables of the study. The certification and professionalism have moderate positive correlation ($r = 0.580$, $p < 0.05$), showing that certification can enhance professionalism among individuals. Professionalism and project performance has a strong positive correlation ($r=0.502$, $p<0.05$). Project performance was the main dependent variable of the study and the results show that the independent variable certification and performance are highly positively correlated ($r=0.619$, $p<0.05$). This indicates that having a certification enhances performance. The relationship of psychological capital is insignificant with all the three variables (i.e., project management certification, professionalism, and project performance).

4. Results of Hypotheses Tests

The results (see Table 4) of the hypothesis 1 indicate that there is a 38.3% variation ($R^2 = 0.383$, $F = 230.3$, $p = 0.00$) in project performance because of certification. The results support the hypothesis ($\beta = 0.537$, $t = 15.1$, $p<0.05$) that certification has a positive impact on project performance amongst individuals. The results of hypothesis 2 indicate that there is a 33.6% variation ($R^2 = 0.336$, $F = 187.6$, $p = 0.00$) in professionalism because of certification. The results support the hypothesis ($\beta = 0.486$, $t = 13.6$, $p<0.05$) show that individuals having a certification have a positive impact on professionalism. The results of hypothesis 3 indicate that there is a 25.2% variation ($R^2 = 0.252$, $F = 124.8$, $p = 0.00$) in project performance is because of professionalism. The results support the hypothesis ($\beta = 0.518$, $t = 11.1$, $p<0.05$) that professionalism has a positive impact on project performance.

Table 4

The summary of testing the hypotheses of the survey

H	IV	DV	R ²	F	β	T	Sig	Status
H ₁	Certification	Performance	0.383	230.3	0.537	15.1	0.00	Accepted
H ₂	Certification	Professionalism	0.336	187.6	0.486	13.6	0.00	Accepted
H ₃	Professionalism	Performance	0.252	124.8	0.518	11.1	0.00	Accepted

The fourth hypothesis was tested using the mediation method recommended by Hayes (2015). The number of bootstrap samples for bias-corrected bootstrap confidence intervals was kept at 1000, while the level of confidence for all confidence intervals was kept at 95% (see Table 5). This test for the mediation analysis provides the total, direct, and indirect effects of the variables in the mediation model. The total effect of having a certification on level of performance is ($\beta = 0.536$, $t = 15.176$, $p < .05$). This shows that having the certification will enhance project performance. The results also indicate that there is a direct effect of having a certification on project performance ($\beta = 0.428$, $t = 10.11$, $p < .05$). Finally, the indirect effect indicated that professionalism partially mediates the relationship between having a certification and project performance. The indirect effect $\beta = 0.108$, [0.059, 0.1775], shows that certification positively influences professionalism which enhances project performance. The indirect effect is also validated by the normal theory test (Sobal test), which provides ample support ($Z = 4.189$, $p < .05$) for the significance of the mediation results.

Table 5

Mediation Analysis

	Effects	SE	T	P	LLCI	ULCI	Z
Total effect of X on Y	0.536	0.035	15.176	0.000	0.467	0.6061	
Direct effect of X on Y	0.428	0.042	10.11	0.000	0.345	0.511	
Indirect effect of X on Y	0.108	0.03			0.059	0.1775	
Normal Theory Test	0.108	0.0258					4.189

To test the hypothesis 5 (Moderation analysis) the process macro suggested by Hayes (2015) was applied using model 1. Table 5 indicates the overall model is fit for regression, but the interaction term— independent variable multiplied by moderating variable— is insignificant ($t=0.845$, $p>0.05$). It is necessary to see the results of the interaction term before analyzing the interaction graph or the moderating value at different levels and if the interaction term is significant the moderation is evident. However, the results of the present study (moderation) do not support this assumption, hence the H5 is rejected. The graph and the change in moderation effects show very little variation in the relationship of professionalism and project performance providing further support for the rejection of the hypothesis.

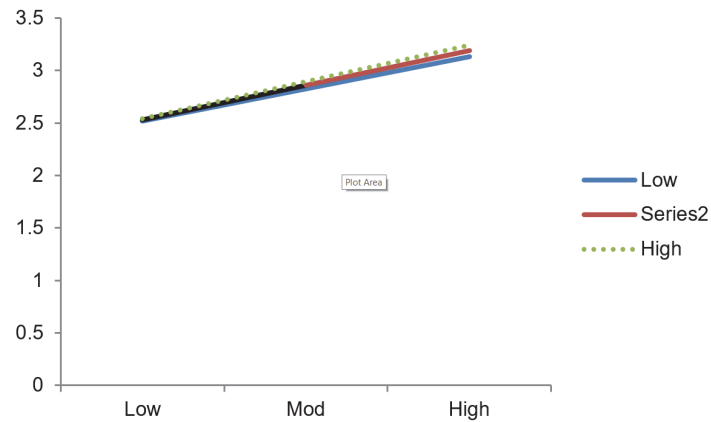


Fig. 2. Moderation Graph

The value of $\beta=0.481$, $p<0.001$, 95% CI [0.358, 0.603] in the least effects relationship shows that one-unit change in professionalism will lead to 0.481 units change in project performance. The value of $t=7.745$ confirms the significance of this relationship. The value of $\beta=0.515$, $p<0.001$, 95% CI [0.424, 0.607] in average effects shows that one unit change in product attributes will lead to 0.515 units change in professionalism in the presence of psychological capital as a moderator. Although there is a change of relationship between professionalism and project performance at different levels of the moderator, the variation is not significant enough to support the hypothesis.

Table 6
Moderation Analysis

	R	R ²	MSE	F	df1	df2
	0.505	0.255	0.326	42.174	3.000	369.000
	β	SE	T	p	LLCI	ULCI
Constant	1.608	0.459	3.502	0.001	0.705	2.511
PM certification	-0.091	0.160	-0.566	0.572	-0.405	0.224
Professionalism	0.388	0.159	2.447	0.015	0.076	0.700
Interaction term	0.047	0.055	0.845	0.399	-0.062	0.155
Least Effect	0.481	0.062	7.745	0.00	0.358	0.603
Average Effect	0.515	0.046	11.103	0.00	0.424	0.607
Maximum Effect	0.55	0.062	8.841	0.00	0.428	0.673

5. Findings and Discussion

This investigation hypothesized that having a project management professional certification does have a direct impact on project performance of the certified individual whether be it operational or strategic performance, which was consequently reflected in the results well. The same conclusion is supported by previous similar studies but in different occupations as well (Catania *et al.*, 2013; Walsh, 2001; Ferris *et al.*, 2005). However, specialists in the field state that professional certifications are not just the sole factor in determining the ability of an individual for hiring, promoting or setting a remuneration (Lester *et al.* 2011). The same claim was made by Thomas and Mengel (2008) who stated that an increased project performance demanded more abilities than just a professional certification. Alternatively, experiential learning through practical scenarios while earning a professional certification can prove to be more valuable to develop project management competencies (Carbone and Gholston, 2004). Therefore, this is a clear indication that the selection of project management professionals alone on the base of certification is not the best way.

Although professional certifications do reflect a direct impact on project performance on projects, by further including an individual's professionalism and analyzing the role of psychological capital, professional certifications can be more beneficial in an individual's career in project management. This notion confirms the hypotheses made in this study that professionalism

mediates the relationship between project management certification and project performance is not moderated by psychological capital as proven by the results of the investigation. Providing an individual a platform for networking with fellow professionals, sharing ideas and professional values, discussing practical problems and brainstorming on possible solutions, are few of the benefits an individual might benefit from while attaining his certification to develop a more professional attitude. Moreover, the certification process does not only affect the professional attaining the certification. The effect of one individual going through this process enhances professionalism in the association and the community as well as the public at large (Scott, 2016).

5.1 Practical and theoretical implications

This research made a theoretical contribution in the form of testing psychological capital as a moderating variable between the relationship project management certification, professionalism and project performance so that it moderates the relationship between the mediator and dependent variable, however, the rejection of this hypothesis leads to a questionable status of psychological capital between the variables. Although prior research in different organizational and contextual settings emphasize the importance of psychological capital as an important variable, this research poses a future research question for its validity. The critical success factor theory was strengthened by using the variables in a new context and which conformed with the hypotheses, reflected by the results of the study, hence adding to the body of knowledge. This research also contributes practically by helping the organizations to understand that professional certification can be perceived as a critical success factor which reflects the required skills and knowledge of the prospective candidate to predict an increased future performance on the project. This is better understood by the fact that professional associations do not only provide a certification to professional individuals but make them go through a thorough process ensuring an increased professionalism through continued professional development and providing a platform for networking and knowledge sharing. The study also guides the professional associations issuing certifications to focus on training and development by strengthening continuous professional development programs rather than just focusing on providing certification after conducting an exam.

6. Limitations, Future direction and Conclusion

This investigation must be perceived with four limitations in mind. Firstly, some may argue using self-reported criteria of performance to be biased due to susceptibility and social desire. Secondly, researchers may argue on the generalization of the study as it focuses just on certified project managers associated with professional institutes. Thirdly, the study uses a cross-sectional design which means that the research might not be able to reflect the same results or behavior over a period. Lastly, and seemingly quite substantive, we had no non-certified respondents. This limited the scope of study and carried out some interesting analysis.

Future studies could try to include feedback from the non-certified project managers as well. Further, the impact of formal project management education like master's in project management on project performance of project managers may be analyzed. Interestingly, this investigation reported that a majority of project management professionals had just one project management certification. It may be quite intriguing to inquire from the participants that do they presume other relevant professional certifications as a replica of the certification that they have already attained? Future studies could also include variables like project size and complexity as mediating or moderating variables. It will be interesting to know the effect of certified professionals on their performance in large and complex projects.

The study invokes the interest of professionals interested in the field of project management, the organization that selects project managers as well as the professional associations related to the field of project management to assess the abilities and skills required to increase the level of performance on projects. Although, professional certifications reflect an increase in an individual's professionalism which further results in an increased performance but this study suggests that measuring professionalism would be a better addition while assessing performance of project managers on projects. To conclude the study, professional certifications are critical but not a definitive factor that reflects the ability and skills of an individual, it paves a way for associations for introducing continuous professional development starting with certification and providing a platform to train for and develop professionalism among professionals in their relevant fields.

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