

Implications of Project Managers' Competencies on Project Success Moderating effect of Project Risk Management: A case of IT Sector in Lahore

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ABSTRACT

This research explores the association among the project managers' competences of and the project success, with a particular emphasis on the moderating function that project risk management plays within the information technology sector in Lahore. The aim of this research is to get a considerate of the ways in which several characteristics shared by project managers, such as cognitive flexibility and systemic thinking, contribute to the success of projects. Furthermore, it investigates the ways in which good project risk management strategies might change the relationship between these two factors. We employ quantitative survey methodologies in this research article with IT professionals in Lahore, including Project Managers, Team Managers, and Portfolio Managers. The aim of investigate is to deliver understandings into the association among managerial abilities and risk management. Through the use of a Google form, the data was obtained from the sample that was targeted. Two hundred and fifty replies were received in total. To conduct the analysis, we made advantage of SmartPLS. Despite the fact that the competencies of project managers make a substantial contribution to the success of a project, the data indicate that the incorporation of effective risk management procedures strengthens the association between all of these factors. The conclusions of this research have important repercussions for the management practices and training programs designed for information technology projects. They stress the significance of managerial abilities as well as risk reduction measures in the process of reaching successful project outcomes.

Keywords: Project Management, Project Success, Project Risk Management

Introduction:

A project is characterized as a temporary undertaking aimed at producing a unique product or service (Rowe, 2020). The of Information Technology (IT) is an expanding sector. An increasing number of companies that are providing their IT skills to external world. IT activities are generally structured as distinct projects, which may include the development of a new software application or the maintenance of a current one. The selection of an appropriate individual to oversee a project is crucial from both the vendors' and clients' viewpoints. For the client, appointing the appropriate individual in charge facilitates improved project outcomes including enhanced software quality (Langer, Slaughter, & Mukhopadhyay, 2008).

The Standish Group disclosed substantial time and financial overruns in software project execution. Large organizations saw an average cost overrun of 178%, medium companies 182%, and small companies 214% (Kumar, 2022). The average time overruns are 230%, 202%, and 239%. In 2012, McKinsey & Company corroborated analogous findings from 18 years prior. McKinsey reported that 66% of IT projects encounter cost overruns, 33% face timeline overruns, and 17% suffer from benefits deficits.

Despite the significant standing of risk management (RM) for the success of IT projects, the implementation of these RM strategies in reality remains variable. Furthermore, numerous project managers opt against using RM for cost considerations. This research seeks to investigate RM in relative to project success. The conclusions of this research can offer direction for the effective application of RM issues in achieving IT project success (Talet, Houari, & Mat-Zin, 2014)

In project manager's skill we will consider Cognitive Flexibility and Systemic thinking as an in depended variable, In Project Risk Management we are considering Identification, Analysis, Response Planning and Monitoring & Control as a Moderator and for the Project Success we are considering the Time, Cost and Scope as a depended variable which are already defined by the PMBoK (PMBoK Guide)

By combining knowledge, skills, and fundamental personality qualities Crawford (2000) refers to project manager competency as the capacity to provide better results. The ability of project managers to successfully manage projects is directly correlated with their competence, and project success is determined by their

competency. The success of the project and the company can both be significantly and favourably impacted by project manager qualities. Researchers have indicated the idea that the important aspect in a project's success is the project leader's competency. Consequently, it is rational to declare that the leadership style, behavioral attributes, and competencies of project managers significantly influence project success (Gray & Ulbrich, 2017).

In the last two decades, studies have long been interested in the success or failure of IT projects. The execution of IT projects that exceed budget, are delayed, and fail to meet specifications has led to elevated failure rates. Risk management was a vital factor that led to the project's success (Pimchangthong & Boonjing, 2017). Numerous projects fail due to businesses erroneously presuming universal success and neglecting to identify, assess, and mitigate potential risks. With the quick change and growing competition, this is particularly true (Kishk & Ukaga, 2008)

Project risk management is an ongoing process of identifying, assessing, organizing, and mitigating risks that diminish the likelihood of success regarding cost, schedule, quality, safety, and technical execution (Shahzad, Khanzada, Talha , & Sohail, 2018). The paramount management instrument a project manager may utilize to increase the probability of project success is RM. Risk management mitigates the likelihood of adverse outcomes affecting the completion of a project on time. However, the project manager's specific skills will probably vital role in risk management.

Risk management strategies frequently encompass identified hazards, their probability of occurrence, potential impacts, and recommended mitigations. Low-risk events often have minimal effect on the project's cost, schedule, or performance; consequently, moderate-risk and high-risk events will result in increases in these variables. At the upper end of the spectrum, high-risk events that are not managed and prepared for are likely to lead to projects that go over budget, take longer than expected, and fall short of strategic objectives (Cabral, 2017)

The organization must identify potential risks to evaluate them, foresee their causes and consequences, and thereafter choose suitable mitigation techniques to enhance the probability of a project's systematic and quantitative success (Mobey & Parker, 2002). The risk management process must be properly followed to guarantee that any possible hazards are controlled efficiently incorporated into the process of decision-making (Urbański, Haque, & Oino, 2019)

The project management naturally involves a susceptibility to the creation of conflicts, making the study of emotional intelligence and interpersonal skills pertinent in the background of project management. This considers the financial and scheduling constraints that come with projects, as well as the complexity of interactions that include political and organizational elements (Pinto & Pinto, 1991) Therefore, having a risk management strategy in place is crucial to allowing the project team to reduce potential risks while optimizing potential opportunities.

The focus of this study is to explore the association between Project Managers Competencies towards the project success moderated by the project risk management. The result will help the education sector as well as the IT sector to apply best practices to achieve the project success.

Literature review:

Project Managers Competencies:

The project success is traditionally evaluated based on how successfully the objectives are achieved within the timeframe that was planned and the resources that were allotted respectively. This continues to be the criterion that is utilized the most frequently for determining the success of projects in a variety of disciplines. The modern methods to project management, on the other hand, place an emphasis on the necessity of continuous evaluation and the removal of obstacles, while simultaneously capitalizing on possibilities for growth in order to accomplish the outcomes that are sought (Balcerzyk & Zelanzny, 2022)

The success of a project is directly correlated to the leadership that is provided. According to the research that has been conducted, the leadership qualities that project managers possess have a major impact on their capacity to facilitate the effective completion of projects (Mohamed, et al., 2022). In particular, project managers who are prepared with the appropriate combination of hard skills (such as data analysis, negotiating, time management, and automation abilities) and soft skills (such as trust-building, communication, transparency, and empathy) are more equipped to traverse the intricacies of projects. Their managerial skills are improved as a result of this combination, which also raises the likelihood that the project will be successful (Ponsford-Gullacci, 2023; Bhatti & Durrani, 2024).

It has been demonstrated that there is a favorable association between the integration of transformational leadership styles and emotional intelligence and

effective project management, particularly in the context of stakeholder management. Empathy, self-awareness, and cognitive flexibility are examples of emotional abilities that enable project managers to better recognize the needs and expectations of stakeholders, which ultimately results in improved project outcomes. (Potter, Phipps, Egbelakin, & Balaei, 2018)

When it comes to attaining success, the competencies of project managers are absolutely necessary, particularly as the complexity of project management continues to increase. Six major characteristics of competencies have been identified by researchers. These include generic and area-specific assistances, managerial skills, personal traits, experience in technique, capabilities, and risk management. There is a deficiency in empirical research, which underscores the necessity of conducting more in-depth study into the significance of technical competencies (TCs), which play an essential part in optimizing project designs and assuring success (Chipulu, Neoh, Ojiako, & Williams, 2012; Abdulla, McCauley-Smith, & Moradi, 2023)

Not only is emotional intelligence necessary for project managers, but cognitive flexibility and the ability to think in a holistic manner are also considered crucial abilities. It is possible for project managers to modify their ways of thinking and techniques in order to fulfill the ever-changing requirements of both internal and external stakeholders when they have cognitive flexibility (Rybinska, Sarnovska, Antonivska, Ponochozna-Rysak, & Nikolaieva, 2021; Elias, 2017; Lima, Koehler, & Spiro, 2004)

Project managers have the ability to create collaboration and successfully traverse complicated stakeholder dynamics if they take into consideration a variety of perspectives and alternative solutions. Systematic thinking, on the other hand, is a method that assists managers in comprehending the interrelationships that exist between the many stakeholders and the larger organizational ecosystem. Through the adoption of a holistic perspective and the contribution of stakeholders in the decision-making process, project managers have the opportunity to improve their ability to navigate complexity and increase the percentage of successful projects (Lima, Koehler, & Spiro, 2004; Cavana & Maani, 2000)

Project Risk Management:

For a project to be successful, the abilities are essential for the project manager, and one of the utmost vital skills is risk management. Several elements of

competence have been established through research. These dimensions include industry-specific and generic abilities, knowledge in project management, managerial skills, personal characteristics, experience in methodology, and risk management. (Chipulu, Neoh, Ojiako, & Williams, 2012; Soroka-Potrzebna, 2019)

Both leadership and technical skills are essential for successful project management. These skills include the ability to think holistically about systems, as well as intellectual, emotional, and managerial attributes. The association among maturity, complexity, and competence in project risk management has been investigated, with particular emphasis placed on the significance of employee views, knowledge, decision-making, and communication. (Ribeiro, Amaral, & Barros, 2021; Naidoo, 2021)

When it comes to conceptualizing, coordinating, and supervising the many aspects of a project, project managers play an extraordinarily important role. To improve the efficiency of project management, it is necessary to identify both positive and negative risks in order to promote better risk management. Due to the fact that a one billion dollar investment resulted in a ninety-seven million dollar loss, which represented a twenty percent decline in value from the previous year, the financial losses that occurred in 2017 brought to light the significance of proper risk management. In fifty percent of the cases, the failure of the project was linked to the incorrect application of procedures and techniques (PMBok Guide)

The PMBOK Guide delineates six stages integral to the process of project risk management. The following processes are enumerated: risk planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control. One definition of a risk is an unpredictable event that is materializes, has the potential to either positively or negatively affect the project's outcomes. It is essential to maintain continuous monitoring and adaptation in order to guarantee resilience against newly emerging hazards (Carbone & Tippett, 2004).

Another line of cognitive flexibility is adjusting problem-solving approaches based on new information and such improves project managers' capacity to handle complex and dynamic situations. One's capability to treat shared understanding in such a way is very important for the management of emergent risks since it reduces the amount of inefficiencies. Facilitating cognitive flexibility in the members of the

teams helps not only communication processes but also project outcomes (Roy, 2001).

Systemic thinking enables project managers to assess potential risk sources, anticipate the consequences of the risks, and create measures in advance. This strategy brings better result to matter and even collaboration of the stakeholders, therefore, the project is likely to be more successful and better able to withstand adversity. Furthermore, owing to the systems thinking approach they adopted, risk managers in such situations are able to envision internal and future threats as well as new threats that arise, which is critical to complex and dynamic situations (Langdalen, Abrahamsen, & Selvik, 2020)

People working in the information technologies should have the capacity to employ schemes for project risk management, cognitive flexibility as well as systemic thinking in order to achieve successful complex projects. IT project managers have to possess inter alia competencies in these areas in order to manage risks appropriately and maximise success of projects. It is via the combination of these competencies that initiatives are able to be resilient and adaptive to changing situations (Elia, Margherita, & Secundo, 2021)

Project Success:

Leadership and project managers skills plays a vital role to effectively engage stakeholders and manage their relationships with them. It is necessary to have effective communication, which is a fundamental leadership ability, in order to comprehend and handle the expectations, concerns, and feedback of stakeholders throughout the entirety of the project lifetime. Effective leadership helps to strike a balance between the benefits of stakeholders, which can considerably increase both the success of the project and the outcomes for stakeholders (Abdulla, McCauley-Smith, & Moradi, 2023; Geoghegan & Dulewicz, 2008; Bhatti & Durrani, 2024)

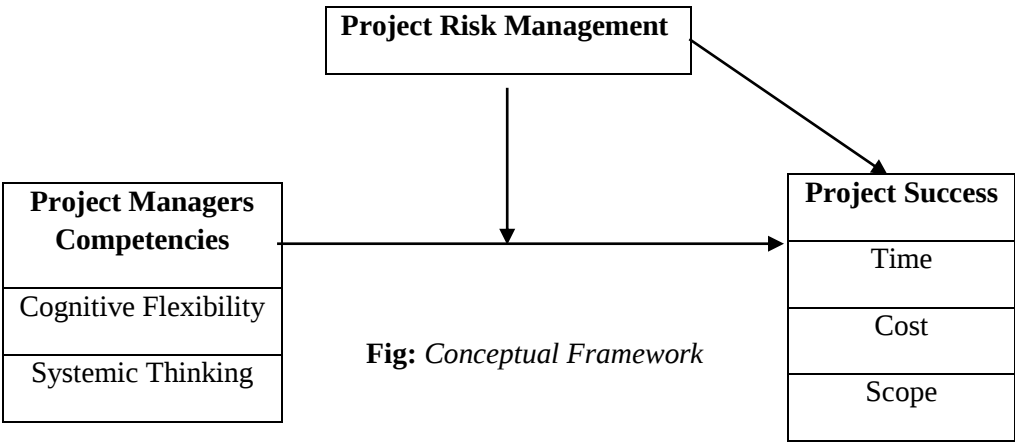
Knowledge, competence, and attitude are all examples of competencies that have a substantial result on the success of a project. According to the findings of the research, these collective elements are responsible for 87.6% of the variation in the success of the project. It is therefore anticipated that higher levels of competency in project managers will result in more effective outcomes for the projects they oversee (Husen, 2022)

Having cognitive flexibility enables project managers to modify their ways of thinking and approaches to problem-solving in order to adapt to circumstances that are always shifting. Because of this adaptability, unanticipated obstacles can be managed and risks can be mitigated, which ultimately results in more effective project execution and increased team performance. They are better suited to deal with unique or emerging circumstances, which contributes to higher project success rates. Project managers that are flexible in their approach are better equipped to handle these situations (Souid & Koszalka, 2018).

Project managers’ comprehension of relationships and inter-related interactions within complex projects is enhanced through the application of systemic thinking. If managers apply systems thinking, it is easy to understand the entire picture of the project, foresee problems, and make the right decisions that are in line with the higher objectives of the project. This approach not only adds value to the decision making process but outcomes in high project success rates (Frank, Sadeh, & Ashkenasi, 2011)

In the scope of information technology, cognitive flexibility and systemic thinking are some of the competences of project managers which are critically important in achieving project goals. Where these competences are graduated to their maximal levels, managers are able to successfully negotiate technologies in IT related projects. This enhances the decision making profile, improves risk management and leads to a positive overall project improvement (Li, 2023; Rezvani, et al., 2016; Bhatti & Durrani, 2024)

Conceptual Framework:



Research Design:

One of the key objectives of the study is to learn how to properly evaluate information technology projects and to uncover what competences are associated to successful project completion. Following the completion of the literature review, a research model was developed in order to incorporate the many characteristics of each competency and the correlation between those characteristics of project success, which include time, cost, and scope. The study utilized a quantitative approach, and descriptive statistics were utilized to summarize the data. Additionally, inferential statistics were utilized to test the hypotheses. The inferred hypotheses were evaluated using the quantitative method. Due to the fact that the data was collected at a single point in time.

Among the information technology industries, a questionnaire survey was drafted and sent out via email. For the purpose of the analysis, 280 questionnaires were confirmed to be accurate. Due to the fact that nearly twenty-five questionnaires were determined to be lacking in information, they were excluded from the study. It was required of the respondents that they fill out the questionnaires based on the Project Manager Competencies, Project Risk Management, and Project Success of the projects that they have completed up to this point. Team Lead, Project Managers, Portfolio Manager are our targeted population from Lahore.

The survey was composed of three main sections including (1) Project Manager Competencies (2) Project Risk Management (3) Project Success. The respondents were requested to assess the impacts of these factors on the project success using a five-point Likert Scale ranging from 1: Strongly Disagree to 5: Strongly Agree. Smart PLS was used to analysis the data.

Data Analysis:

Table 1: Profile of Respondents

Demographic Characteristics		Number of Respondents	%
Gender	Male	246	87.85
	Female	34	12.15
Job Position	Team Leader	194	69.28

	Project Manager	52	18.57
	Portfolio Manager	34	12.15
Job Experience	<5	186	66.42
	5 to 9	58	20.71
	>10	36	12.87
Age	18 – 25	86	30.71
	26 – 30	96	34.28
	31 – 35	94	33.57
	36 & above	04	1.44

Measurement Model:

This study employed Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyze measurement and structural models. The measuring model was assessed through convergent and discriminant validity. Convergent validity (CR) was assessed by analyzing factor loadings, Average Variance Extracted (AVE), and Composite Reliability. Pervious research advised loadings beyond 0.6, however suggested retaining those above 0.708. If the AVE value exceeds 0.5, it is permissible to retain items with loadings below 0.708. Additionally, $AVE > 0.5$ and $CR > 0.8$ serve as two further criteria for evaluating convergent validity (Chin, Peterson, & Brown, 2008; Hair, et al., 2019).

According to discriminant validity, these constructs were independent and did not correlate with one another. Discriminant validity was evaluated using the Fornell-Larcker Criterion, as illustrated in Table 3, which indicates that the R^2 of the AVE on the diagonal exceeds the values of the associated correlations. The Heterotrait-Monotrait (HTMT) ratio of correlations was employed to ascertain discriminant validity, serving as a recommended alternative method (Henseler, Ringle, & Sarstedt, 2016). The value of HTMT should be less than 0.85 (Ringle, Sarstedt, & Gudergan, 2018)

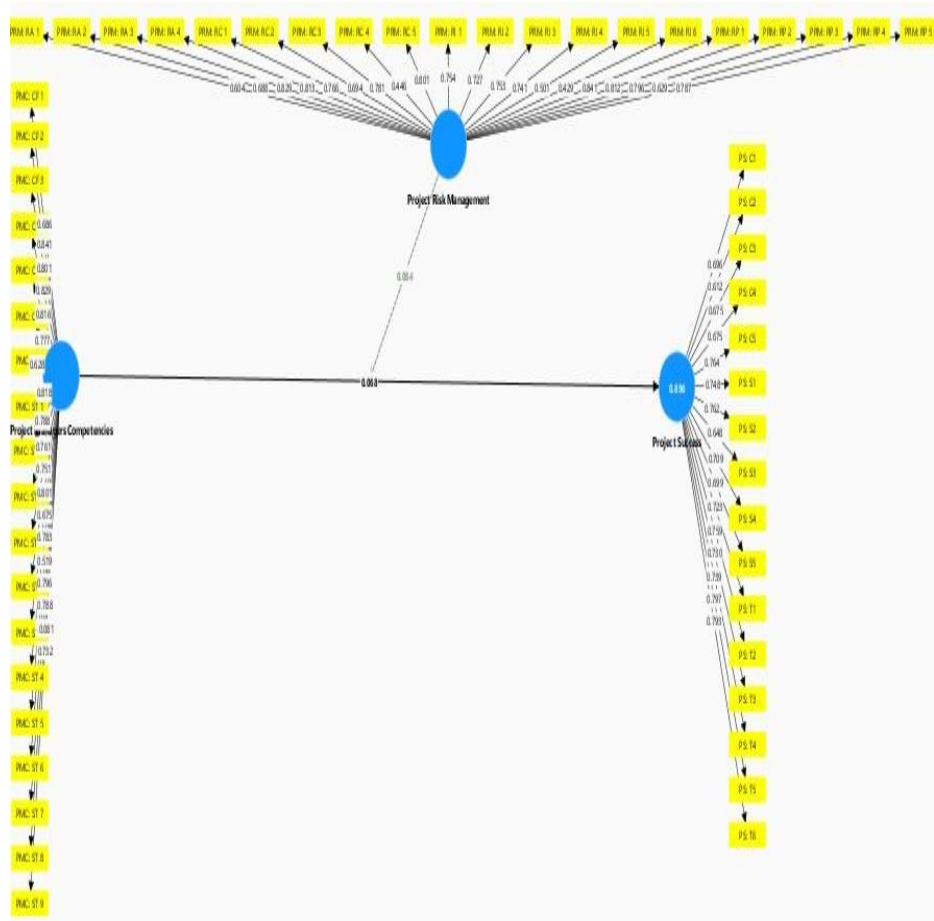


Table 2: Discriminant Validity

Constructs	Items	Loading	AVE	CR	Cronbach's alpha
Project Managers Competencies (PMC)	CF1	0.640	0.546	0.955	0.946
	CF2	0.551			
	CF3	0.818			
	CF4	0.706			

	CF5	0.725			
	CF6	0.605			
	CF7	0.809			
	ST1	0.764			
	ST2	0.792			
	ST3	0.802			
	ST4	0.666			
	ST5	0.865			
	ST6	0.819			
	ST7	0.792			
	ST8	0.719			
	ST9	0.611			
	ST10	0.865			
	ST11	0.551			
	ST12	0.792			
Project Risk Management (PRM)	RI1	0.674	0.518	0.954	0.948
	RI2	0.801			
	RI3	0.815			
	RI4	0.572			
	RI5	0.813			
	RI6	0.856			
	RA1	0.828			
	RA2	0.842			
	RA3	0.925			

	RA4	0.609			
	RP1	0.958			
	RP2	0.909			
	RP3	0.945			
	RP4	0.957			
	RP5	0.968			
	RC1	0.572			
	RC2	0.813			
	RC3	0.856			
	RC4	0.828			
	RC5	0.842			
Project Success (PS)	T1	0.925	0.522	0.946	0.938
	T2	0.609			
	T3	0.958			
	T4	0.764			
	T5	0.792			
	T6	0.802			
	S1	0.666			
	S2	0.865			
	S3	0.792			
	S4	0.802			
	S5	0.666			
	C1	0.719			
	C2	0.611			

	C3	0.865			
	C4	0.551			
	C5	0.792			

Table 3: Fornell Larcker Critertion

	PMC	PRM	PS
PMC	0.739		
PRM	0.674	0.720	
PS	0.623	0.543	0.722

Table 4: Heterotrait-Monotrait

	PMC	PRM	PS	PRM x PMC
PMC				
PRM	0.411			
PS	0.198	0.379		
PRM x PMC	0.421	0.432	0.105	

Table 5: R Square

	R²	R² Adjusted
PS	0.896	0.892

In the above Table 5, An R-square of 0.896 means that 89.6% of the variability in Project Success can be explained by the Project Managers Competencies and Project Risk Management as Moderator used in the model. This proposes a very strong association among the variables. In this case, the adjusted R-square value is 0.892, which means that 89.2% of the variance in Project Success is explained by the model, after adjusting for the number of predictors. The slight reduction from the R-square (from 0.896 to 0.892) suggests that the model is still strong, but some predictors may not contribute significantly to the explanation of variance (Wooldridge, Wadud, & Lye, 2016; Kutner, Nachtsheim, Neter, & Li, 2005)

Table 6: Hypotheses

	Original sample	Sample mean	Standard deviation	T-Value	P values	Decision
PMC-> PS	0.068	0.070	0.152	0.445	0.004	Supported
PRM-> PS	0.887	0.887	0.150	5.923	0.000	Supported
PRM x PMC -> PS	0.064	0.057	0.037	1.731	0.003	Supported

In the Table 6, structural equation model is used to examines the relationships between several predictors PMC (Independent Variable) and PRM (Moderating Variable) and PS (dependent variable). For PMC towards the Project Success, the P-value is 0.004, which is well below the 0.05 threshold, meaning that despite the low T-statistic, the association is statistically substantial.

For PRM towards the PS, the P-value is 0.000, meaning that this relationship is highly significant. For the interaction term (PRM x PMC towards the PS), the P-value is 0.003, indicating statistical significance for the interaction effect, although it's relatively weak.

Prior research has often shown that project risk management is a critical factor for project success, especially in complex projects. For example, studies like that of Zwikael & Ahn (2011) suggest that robust risk management practices can significantly enhance project outcomes. Similarly, project managers' competencies,

including leadership and decision-making abilities, are seen as important but may not always have a direct and substantial impact on success unless aligned with other factors like risk management (Turner & Müller, 2005)

Finding:

The study aimed to evaluate how project managers' competencies impact project success and to assess the moderating role of project risk management in the IT industry of Lahore. The findings proved that the reported competencies of project managers had a statistically and significantly positive influence on project success. Many other studies also support this finding, that the competencies and capabilities of managers are one of the success factors in project implementation (Zwikael & Ahn, 2011; Balcerzyk & Zelanzny, 2022)

The study also concluded that project risk management is a mediating variable between project managers' competencies and project success. This suggests that a project manager's competencies significantly improve project outcomes when thorough and appropriate risk management is present. This means that appropriate risk management is an important tool for actualizing the competencies of project managers in delivering a successful project.

Overall, the results of this research explained that project managers' competencies are most important for project success, especially in the field of IT sector and active project risk management plays vital role in the project success (Balcerzyk & Zelanzny, 2022; Bhatti & Durrani, 2024).

Conclusion:

This study provides essential insights into the complex association among project managers' competencies, risk management methods, and project success in Lahore's IT sector. The study highlights the crucial impact of project managers' competencies on the overall performance of projects. The findings substantiate the assertion that proficient project managers are more adept at achieving project objectives, adhering to deadlines, and efficiently managing resources, all of which are critical markers of project success.

The study further emphasizes the critical function of project risk management as an active mechanism to moderate the relationship between project managers' competencies and project success. The strategic implementation of active and

ongoing risk management, rather than merely the existence of managerial competencies, guarantees favorable results. Effective risk management entails the systematic identification, evaluation, and mitigation of potential risks across the project lifetime, enabling project managers to foresee challenges, reduce interruptions, and respond promptly to evolving conditions.

The analysis indicates that managerial competence and risk management are even more interconnected in high-risk environments such as the IT sector, where projects encounter technological volatility, market disruptions, and operational challenges. The results indicate that elevated managerial competencies and proactive risk management measures significantly enhance project success.

This research offers significant empirical evidence underscoring the critical role of competences and risk management in attaining exceptional project results. It enhances the existing knowledge base by demonstrating the interaction between these two criteria that propel project success, especially in Lahore's rapidly evolving and highly competitive IT sector.

However, this study has limitation. First, the research was limited to Lahore's IT sector, raising issues about its applicability to other businesses or regions. The relevance of these findings beyond the study group is unknown. Second, the study used self-reported data, which is vulnerable to response bias such over- or under-reporting and personal evaluations. These methodological limits may undermine the reported connections between project managers' competencies, risk management strategies, and project success.

To improve external validity, future research should include larger, more diverse samples from multiple sectors and regions. Using objective project success and risk management measurements instead of self-reported statistics may provide more accurate insights and reduce bias. This would improve research's empirical foundation and yield more conclusive results.

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