

# Relationship between sustainable management practices and project success: A mediated moderator model

## A study on developing economies

### Abstract

**Purpose** – The purpose of this paper is to answer the research questions: “To what extent does sustainable management practices influence project success?” and “Is there any supporting role of effective risk assessment and team building in strengthening the proposed relationship?” The authors carried out survey-based research in context of developing economies and primarily focused on high rise real estate developmental projects of Pakistan, to answer these questions.

**Design/methodology/approach** – The authors carried out a quantitative survey-based research approach for empirical validation of hypotheses using Structural Equation Modeling (SEM). Initially data is screened for missing values followed by validity and reliability tests. Then regression, mediation and moderation tests were performed to validate the proposed framework. Adopted questionnaires were disseminated among different project managers working in construction sector of Rwp/Isb

**Findings** – Based on the analysis, it's been discovered that incorporating sustainable management practices significantly increases project success and effective risk management mediates the relationship between SMP and PS. Also, there is a no significant moderating impact of high performing project teams between SMP and ERM.

**Research limitations/implications** – This study only focused on High Rise real estate building projects of Pakistan, in the vicinity of Rawalpindi and Islamabad, with a limited sample size so findings cannot be generalized all over Pakistan to all sectors and research institutional setting is unique to Pakistan, which might restrict how broadly the results can be applied to other developing world nations.

**Originality/value** – The study aims to contribute to literature by analyzing the impact of sustainable management practices for project success in high rise real estate buildings of Pakistan, thereby providing empirical evidence relevant to developing world context. The results are in accordance with the RBV theory, that emphasized the need of using sustainable management practices as a distinct resource to increase project success. Moreover, It will help project managers to accelerate innovation and effectively manage any negative coiled effects a project may have on the environment, society, and economy. By recognizing that all internal and external factors are crucial for project success, the study provides an insightful framework for developers and builders to investigate aspects like culture, social and legal environment, heritage and norms, as well as the financial benefits that support the survival and sustainability of projects.

**Keywords** Sustainable management practices, Project management, Sustainability, Project success, Risk assessment, Project teams

**Paper type** Research paper

### 1. Introduction

#### 1.1 Background of Study

Although being an urgent problem, project success is still unclear in the field of project management (Azmat & Siddiqui, 2023). The success of projects, which is a core topic of project management (PM), has received a lot of attention recently from practitioners and academics (Khan et al., 2022; Malik et al., 2021). The first documented criterion for assessing a project's success is conventional golden triangle that covers cost, quality and time (Atkinson, 1999). However emerging literature in project management highlights sustainability - the convergence of societal, environmental, and economic issues - as one of the key components for project success. (Shah et al., 2020). Ismayilova & Silvius (2021) emphasized that an organization's PS is mostly influenced by how well it handles and incorporates important sustainability concerns at different project life cycle phases. Project success is one of the crucial problems that need to address properly. Among a variety of variables contributing in project success, sustainable management practices, effective risk management and the role of high performing project teams cannot be overlooked.

The scarcity of natural resources drives the demand for sustainable development in the building industry, bringing about fresh perspectives and innovative "green" solutions (Azevedo et al., 2019). Silvius et al. (2019) proposed through their extensive research that the application of sustainability measures do create more problems for project managers, but it may also provide them a chance to succeed more. Thus, sustainable practices are now opening up a whole new avenue to be explored and its inculcation within project during its developmental phases makes project retain their success in a longer run. Integration of sustainable management practices into risk management has been drawing attention since the past few years. Effective risk management has to identify substantial and predictable dangers in order to be effective in lowering the risks and thereby maximizing project success as explained by Wlegelmann (2014). Landi et al. (2022) established that financiers are more inclined to invest in organizations that embed CSR related practices in their projects making it a portfolio investment's analytical instrument that creates a great risk-reduction effect. Therefore, an effective risk management system for project success should incorporate all possible aspects relevant to sustainability. The role of project team is central to project success and strong team dynamics significantly affects project outcomes as discussed by Shaukat et al. (2021). According to Sabir et al. (2020), most of the projects fail on account of mismanagement, lack of necessary expertise and resilience required by project team members in Pakistan.

### **1.2 Real Estate Sector**

Real estate is worldwide recognized as the backbone of country's economy. It is one of the top 3 contributors of global carbon emissions and consumes highest number of physical resources (World economic forum, 2016). Pakistan, a developing country where living in detached and independent houses was once seen as sign of prestige but over the past few years, high rise and midrise buildings are dominating the skyline of real estate investment here. In basic terms, a high-rise building is any structure that is taller than 75 feet and has more than seven stories. They are generally located in central districts, where land is scarce and fetches a high price. Despite the increasing demand, a huge number of construction projects both commercial and residential are failing in Pakistan because developers usually overlook the possible negative consequences a project might have on society, economy and environment once it is delivered which hinders its longevity as discussed by Ullah et al. (2020). A study by Khan (2021) uncovers the fact that Pakistan has had difficulty maintaining the stability of its economic situation over the past few years. Rabbani (2021) explained that the main causes of construction projects failures in Pakistan are antiquated technology, calamities, unanticipated environmental circumstances, change orders, sociological changes, and abrupt changes in the policing and regulatory infrastructure. This makes researchers to think creatively and predict project success through the use of sustainable techniques for country's economic growth and creates a need of holistic view of a project in terms of its external environment and internal circumstances. According to Huang et al. (2022), real estate ventures in developing nations must invest in and use front-line technology and sustainable methods if they are to succeed over the long run. Latest studies emphasize on the dare need of project management to advance along a sustainable route, particularly in construction industry (Saad et al., 2017). Shen et al., (2019) suggests that within the construction sector, sustainability refers to achieving a win-win scenario that benefits the environment and society at large, while simultaneously giving construction companies a competitive edge and financial benefits. The study's findings of Ahmed et al. (2020) showed that while the social aspect of sustainability is mostly disregarded by construction enterprises, the environmental factor is regarded as a crucial problem and is given due attention and the building industry in Pakistan is dealing with a number of functional and legislative-related problems that hinders integration of sustainable practices in projects. The degree to which businesses are adopting sustainable management methods for project success are not well understood for Pakistan. A study by Mahmood et al., (2019) revealed that Pakistani construction companies are only beginning to implement sustainability practices. Therefore, analysing the level of sustainable management practices currently being implemented in Pakistan and how they increase PS will add new perspectives to the body of knowledge about SMP.

The building sector in Pakistan has become more dynamic due to the increase in technological risk, as noted by Saqib et al. (2018). Shabeer (2019) found that government laws, natural disasters, fires, strikes, and other events raise the likelihood of real estate project failure and must be appropriately evaluated and handled for Pakistan. Jha and Iyer (2019) conducted extensive research on Pakistan construction sector and discovered that political unrest and governmental changes should be closely watched when it comes to building projects. This is because these developments can result in higher interest rates, labor strikes, export bans on raw materials, and other unforeseen issues for developers and builders. According to Khahro et al. (2023) Pakistan's construction and development industry is growing at an exponential rate as a result of rising urbanization but these initiatives frequently have subpar execution and lack of proper risk identification and mitigation which leads to project failure. Burki (2008) argues that although Pakistan's economy is growing quickly, it is also experiencing resource depletion, corruption, bad governance, and lack of technical advancement that ultimately increases risks of construction project failures. Recently, a study by Schulte and Knuts (2022) declares that a better and efficient risk management method for PS incorporates the possible consequences of sustainability related decisions proactively during

all phases of project life cycle. To this end, the present study will incorporate not only the sustainable management practices as IV but also effective risk management as mediator between the relation of SMP and PS as risks can be more efficiently identified, assessed and mitigated once organizations take into consideration the internal and external environment consequences a project might have on society and economy pre hand before project delivery. According to Zafar (2014), one of the factors contributing to project failure in the Pakistani construction business is lack of support from senior management. The notion gained additional support from the research of Qazi & Farooq (2017), who showed that inept project managers and design teams are responsible for delays in building projects. Hence, in order to maintain sustained expansion of construction enterprise, Masanja and Chambi (2020) proposed that "it is crucial to evaluate their project team actions and dedication towards goal and how well they mitigate risks throughout developmental lifecycle of projects." Soni (2020) added further that committed workers and a competent team are essential components for a company's long-term success. Lately Akbar and Shahid (2023) established that HRM moderates the association between project success and risk handling/control for building firms. This discussion helps us to identify the moderator for our present research and that is high performing project teams.

**Therefore, the present study will investigate the relationship between sustainable management practices and project success with the mediating impact of effective risk management and moderating effect of high performing project teams in context of high-rise real estate development projects of Pakistan.**

### **1.3 Project Success**

A project is considered successful if it is delivered on time with no schedule lags. Shenhar et al. (2001) explained that project success is a multifaceted and complex idea. Atkinson (1999), introduced that the outmoded golden triangle of time, money, and quality is the first established standard for determining a project's success. Since it doesn't take into account a broad range of social and environmental concerns, which creates difficulties for a project to sustain in a longer run, this strategy over the period of time has lost its significance. A new project management methodology described by Tarp (2012) takes into account another triple constraint i-e triple bottom line- TBL (social, economic and environmental factors) for project success. The organization's strategic framework should be how this new "double triple constraint" operates. Savitz (2014) claims that "The TBL philosophy embodies sustainability, in its purest form". According to Bosch-Rekvelde (2011), it is important to assess a project's progress from both internal and external perspectives and end users' access to project deliverables should be taken into consideration while measuring success of a project.

### **1.4 Sustainable Management Practices**

Jain (2005) in his book, *The Limit of the Growth*, explained that the planet's natural resources would soon run out if the human population and finances kept on going at present pace, thus sparking a worldwide discussion that leads to formulation of the UN "World Commission on Development and Environment," also known as the "Brundtland Commission". In 1987, GRO Harlem Brundtland developed the widely accepted definition of sustainability, emphasizing that it is "development that caters to the requirements of today's generation without jeopardizing the potential for subsequent generations." From a sustainability standpoint, the project distribution phase and the final output result in repercussions that, although potentially beneficial now, may have unfavorable consequences for multiple parties in the future. The PMBOK 6th Edition states that firms must alter their processes, policies, resources, business models, goods, and services in order to make the shift to environmentally friendly business practices. Silvius and Schipper (2014) explained that SMP stands for project delivery and supports process planning, monitoring, and evaluation which summarizes the whole life cycle of the project's materials, processes, outputs, and outcomes from an overall social, economic, and environmental standpoint. The objective entails proactive stakeholder involvement in order to optimize stakeholder benefits in a transparent, egalitarian, and moral way. SPM is a new hot topic dominating every context of businesses and project-based organizations predominately real estate construction sector. According to Carvalho (2016, 2017), sustainability improves project performance, according to an advisory board of experts. As per Caffaro et al. (2019), businesses are being compelled to adopt environmentally friendly business procedures due to factors such as tighter government restrictions on social and environmental norms, fast technical breakthroughs, and growing pressures from rivals. Gore (2015) proposed that the idea of sustainable management has evolved into a framework for development and is now used as a reference in environmental science. It was noted in the 2010 Geneva International Organization for Standardization that businesses are becoming increasingly interested in integrating sustainability into their operations. The efficiency of this process can be enhanced by implementing project management techniques, but there isn't much information available regarding the best ways to incorporate sustainability to specific construction projects. To incorporate sustainable management practices in organization's operations and practices, following aspects needs to be paid attention.

**Social aspect:** "Social sustainability" as defined by Ruttan (1991) indicates a social structure that reduces poverty and, more specifically, reveals the connection between environmental degradation and social situations like poverty. According to Pierson (2002), the idea of social responsibility is closely linked to the societal discussion of sustainability that emerged in a setting of companies. Organizations cannot foresee the aspect of giving back to society when developing and delivering projects.

**Environmental aspect:** Environmental sustainability was defined by the World Bank in 1986, and it was discussed that it required sustaining natural capital as both a source of economic inputs (sources) and a sink (sink) for economic outputs (wastes). Due to the increased laws governing environmental safety in the 1980s, firms frequently restricted their focus on following the law. Businesses started to take a more "proactive" stance in the 1990s, attempting to foresee how their activities would affect the environment consequently gaining a competitive edge via managerial oversight of their environmental footprint.

**Economic aspect:** Hicks in 1946, for the first time coined the term economic sustainability and explained it as the sustainability that is linked with the sustainable economic system of a country. Currently, the exponential economic growth of countries is depleting the natural resources which makes researchers to rethink about the controlled consumption of natural resource line. According to Goodland (1995), sustainable economic system restricts the use of natural resources to make sure that natural capital is preserved and retained for future generations High rise buildings are designed in a urban fashion that encompasses facilities of amusement, healthcare, education and conveyance nearby, thus supporting the economic aspect of sustainability. Martens (2016) emphasized that the triple bottom line's economics' main concerns are cost containment, progress, and profit—all of which reinforce the necessity of producing differently rather than less.

### **1.5 Effective Risk Management**

The mediator of the study is effective risk assessment whose significance had been stressed upon through literature for a successful project. The "effect of uncertainty of future events" is how risk is defined in ISO 31000 (ISO, 2018). In construction projects, risk management plays a critical role in achieving project success (Kamal et al., 2019). Through their research, Dao et al. (2016) demonstrates that project risks, problems and unforeseen circumstances are the main obstacles that hinders project success. Real estate investment in Pakistan comes with a set of risks that must be evaluated and managed. Political instability, economic uncertainty, lack of transparency, legal and regulatory issues, infrastructure and development, market volatility, financing risks, and operational risks are all factors that can affect the performance of real estate investments in Pakistan. From a financier's standpoint, sustainable policies might be viewed as an indicator for understanding firms' future actions and plans to reduce anticipated ambiguity, according to Ramchandra et al. (2012). By reducing the impact of a poor business evaluation, moral capital shields businesses from loss (Godfrey, 2005), thereby serving as a protective barrier against reputational danger. (Minor and Morgan, 2011).

### **1.6 High Performing Project Teams**

High performing Project teams are the moderator for the current study and their characteristics and roles had been thoroughly explained through extant literature. Team-building has been identified as a fundamental component of human resource management (HRM) when investigating on HRM practices in project-based enterprises (Huemann et al., 2007; Turner et al., 2008). Samson (2007) identified 13 project team characteristics theoretically divided into four categories for project success: project leadership, project team procedures, project team design, and organizational context. 4 characteristics of high performing project teams were defined by Young and Samson (2008) that includes clear goals, management support, problem solving and team potency. Kissi et al. (2013) proposed that team players inspiration, enthusiasm, and abilities throughout project execution are contingent upon how encouraging their work space is.

### **1.7 Research Questions**

**RQ1:** Do sustainable management practices have an impact on project success in context of high-rise real estate construction projects of Pakistan?

**RQ2:** Do effective risk management mediates the relationship between SMP and PS?

**RQ3:** Do high performing project teams strengthen the relationship between ERM and PS?

## 2.Theoretical Framework

### 2.1 Research Framework

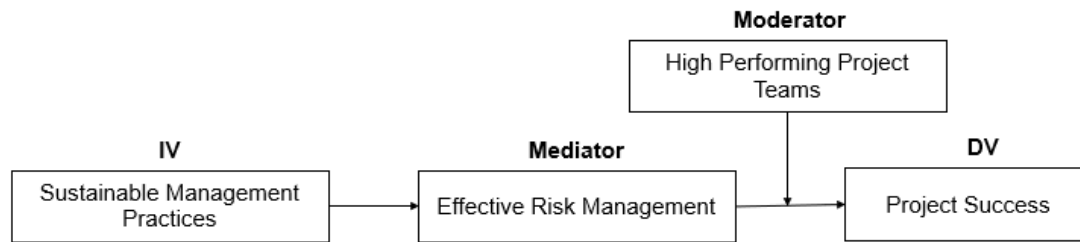


Figure 1: Research Model

### 2.2 Research Hypothesis

- H1:** Sustainable management practices are positively related to project success
- H2:** Sustainable management practices are positively related to effective risk assessment
- H3:** Effective risk assessment is positively related to project success
- H4:** Effective risk assessment mediates the relationship between sustainable project management practices and project success
- H5:** High Performing teams moderates the relationship between effective risk assessment and project success

## 3.Methodology

A descriptive study with deductive approach has been used for this quantitative research to discover the impact of variables and validate generalized hypothesis from previous studies for Pakistan with a key focus on examining the impact of proposed mediating and moderating variables between the relationship of SMP and PS. The suggested hypotheses were tested and the research model was validated using the structural equation modeling (SEM) approach. Data has been processed in SPSS 26 and AMOS.

Data is collected from construction sector of Pakistan. The data is obtained in context of projects completed recently or are under construction in vicinity of Rawalpindi and Islamabad. The focus of research is High rise real estate projects of residential, commercial and hybrid nature. Unit of analysis are the individual projects. The research is cross sectional and evaluates the information gathered all at once rather than over time. Since the population was unknown, one of the types of non-probability sampling called purposive/judgmental sampling was employed to acquire data for the research. A sample of 267 people (males and females) is selected using the Cochran's formula.

Questionnaires measuring variables on Likert scale were personally disseminated among project team members. Questionnaires were divided into two sections. Basic information was covered in first section regarding demographic profile of respondents and type/size of organizations they are working in. Second section consisted of questions directly related to variables under study. The components used to gauge the variables were from peer-reviewed publications in the discipline of project management. The questionnaire for DV - Project success has been taken from Aga et al., (2016). The scale for IV - sustainable management practices is sourced through Silvius & Shipper (2014). For Moderator of research study - High performing teams, questionnaire developed by Aga et al., (2016) is used. A questionnaire of Khaleel & Flayeh (2020) is used for mediator - effective risk assessment. To gather information and validate the research hypotheses, this study employed a survey approach since it offers a convenient method for collecting data from multiple individuals simultaneously. To compute data from participants, self-administered questionnaires using Google Forms will be subsequently shared with project team members who were assured that data will be strictly used for academic research purposes and their confidentiality will be preserved. The entire data collected through questionnaires will be processed in SPSS - statistical package for social sciences. Firstly, data is screened for missing values. Then reliability and validity of each construct in measurement model is determined. For reliability, the composite reliability (CR) of each variable has to be greater than 0.8 according to Field (2005) to confirm good scale reliability. Discriminant validity is established if an average variance extracted (AVE) of 0.5 or greater is achieved for the constructs. Regression Analysis (to test the relationship between SPM and PS), moderation (Model 1) and mediation (Model 4) has been performed using PROCESS macro version 4.0 by Andrew F Hayes as it allows extensive tests to be carried out efficiently.

## 4. Findings

### *Instrument Validation*

Prior to validation, the reliability test was used to assess the instrument's internal consistency. The findings for every factor showed that all of the variables' Cronbach's alphas fall between the ranges established by different researchers, which is 0.70 and 0.90 as demonstrated in Table 1. Furthermore, to check discriminant validity, Average Variance Extracted (AVE) values were considered and for each variable, the value was greater than 0.5, thus fulfilling the desired criterion as illustrated in Table 2. To further verify the instrument, confirmatory and exploratory factor analyses were conducted. The factor loading results are shown in Table 1. At the 0.01 level, factor loading is significant for each item. Table 2 also demonstrated additional model fit metrics, including RMSEA 0.054, PClose 0.274, and CFI 0.966, all of which fall within Hair et al. (2009)'s estimate.

### *Hypothesis Testing*

The results demonstrated in table 3 are in accordance with proposed hypothesis and supports all of them except for moderator. Sustainable management practices have been positively associated with effective risk assessment with a beta value of 0.76 (where  $p < 0.001$ ), Effective risk assessment has significant relation with project success with beta value of 0.629 (where  $p < 0.0001$ ), however the direct effect of sustainable management practices on project success is not significant where  $p > 0.001$  therefore, we can say that role of mediator that is risk is significant and full mediation holds between PS and SMP thereby supporting the hypothesis. While Interaction term of moderator is not having a significant impact on project success where  $p > 0.001$ .

## 5. Discussion and Conclusion

The results of data analysis supported H1 and confirmed that SMP have a positive impact on PS. The research reinforced the perspective of Carvalho and Rabechini (2017) who conducted research for IT and energy sector (Peru and Brazil) and established that SMP has substantial influence on project success with a beta value of 0.204. Although one may contend that Pakistan and other developing and developed nations have different contexts/settings, the goal of SMP has been unchanged for improvements in problems related to the economy, society, and the environment. Lately few researches have been conducted for construction and IT sector of Pakistan to establish the relationship between SMP and PS. Malik et al. (2019) discovered the significant role of sustainability in achieving project success (Construction Sector) and computes a beta value of 0.67 for the proposed relationship. Furthermore, Shaukat et al. (2021) who revisited the relationship between Sustainable management practices and project success (IT Sector) concluded that SMP significantly impact project success with beta value of 0.397. Lately, similar research was conducted for Telecom Sector of Pakistan by Mukhtar and Iqbal (2023) and affirmed the positive relationship between SMP and PS with a beta value of 0.337.

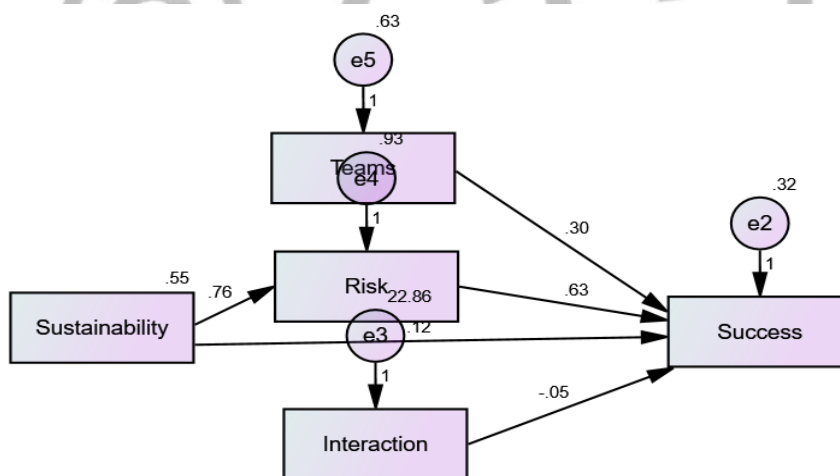
The results of data analysis supported H2 and confirmed that Sustainable Management Practices are positively related to effective risk management which resonates with the findings of Bernat et al. (2023) who underscored that incorporating sustainable practices into project management is viewed as a continuous process for minimizing possible adverse effects/risks on the environment and society while optimizing favourable results. The correlation between the two is statistically significant, with a beta value of 0.27. Adding on, In a 2020 research for the Finland Energy and Food Sector, Hallikas et al. found that, with a beta value of 0.346 that sustainable buying strategies positively affect operational risk management. In order to address some of the most pressing issues and provide important context for a successful risk management system, Schulte et al. (2017) identified a number of obstacles that hinders integration of sustainability into risk management based on interviews and a comprehensive analysis of the literature.

The results of data analysis supported H3 and confirmed that Effective risk management is positively related to project success thereby supporting the research work of Mhirat and Irtemeh (2017)

Items		Loadings	CR			AVE
Relationship	SMP1	Path Coefficients	S.E.	C.R.	P	Results
ERA ← SMP2	0.841	0.105	7.208	***	Supported	
PS ← SMP3	0.902	0.072	1.641	0.101	Supported	
PS ← SMP4	0.118	0.048	0.955	***	Supported	
PS ← SMP5	0.804	0.048	13.166	***	Supported	
PS ← SMP6	0.941	0.01	-4.69	0.462	Supported	
PS ← SMP7	-0.058	0.058	5.125	0.105	Rejected	
PS ← SMP8	0.804					
PS ← SMP9	0.298					
PS ← SMP10	0.893					
PS ← ERA1	0.718					
PS ← ERA2	0.781					
PS ← ERA3	0.882					
PS ← ERA4	0.835					
PS ← ERA5	0.914					
PS ← ERA6	0.706					
Measure	Estimate	Threshold	Interpretation			
HPPT1	0.898					
HPPT2	4.0565	--	--			
HPPT3	3.14	--	--			
HPPT4	0.697	Between 1 and 3	Excellent			
HPPT5	1.442	>0.958	Excellent	0.53		
HPPT6	0.730	<0.08	Excellent	0.53		
PS1	0.966	<0.08	Excellent	0.53		
PS2	0.823	<0.06	Excellent	0.53		
PS3	0.724	>0.951	Excellent	0.53		
PS4	0.274	>0.951	Excellent	0.53		

**Table 1.** EFA/CFA, composite reliability and average variance extracted outcomes

**Table 2.** Model Fit Measures



**Figure 2.** Sequential Path Model

**Table 3.** Hypothesis Results for Direct Effects

Note: ERA: Effective risk assessment, PS: Project success, HPPT: High performing project teams, SMP: sustainable management practices, \*\*\* p < 0.001

who conducted research for Jordan ministry of Environment and proposed that risk management has positive impact on project success with a beta value of 0.477. The results are also consistent with previous literature, as Pimchangthonga and Boonjing (2016) found that risk management techniques had a beneficial impact on the success of IT projects in Thailand, with a beta value of 0.562. Using fuzzy logic,

Rivero et al. 2020 discovered relationships between risk management and project performance for international development projects in Colombia and discovered that these relationships were substantial, with a beta value of 0.512. Furthermore, Sabir et al.'s 2020 study for Pakistan's IT industry found that risk management positively affects the success of projects, with a beta value of 0.267. Furthermore, data gathered from Pakistani project-based enterprises by Ghafoor et al. in 2019 indicated that risk management practices have a positive impact on project success, with a statistically significant beta value of 0.7775. The results of data analysis supported H4 and confirmed that Effective risk management completely mediates the relationship between Sustainable management practices and project success. There is no supporting evidence from previous literature for this relationship as it's been proposed for the first time in present research.

The results of data analysis rejected H5 and showed that high performing project teams does not moderates the relationship between effective risk management and project success. The minimal impact of project teams on project performance metrics is consistent with a number of previous studies (Salas et al., 1999; Tannenbaum et al., 1992). Additional factors that could contribute to the minimal impact of project teams on project success in Pakistani context was explained by Taverira in 2008 as: lack of guidance from higher-ups, vague role of project manager's in putting together an effective team and a reduced degree of team being able to handle risks. Moreover, High Performing Project Teams are frequently under tremendous strain to keep up their outstanding standards of performance. Consequently, the dreaded feeling of losing or not succeeding leads to elevated level of stress and anxiety in individuals working on same project and posing a serious threat to their mental health. This is also consistent with the stress performance theory of Yerkes and Dodson (1908), which postulates that team performance rises with mental engagement (stress), but only to a certain extent. Too little or too much stress negatively affects an individual's performance, which can result in project failure or decreased project success. Bubshait and Farooq (1999) also threw light on insignificant role of project teams by explaining that people management is vital for project success, but creating a cohesive team of competent individuals is not a simple endeavor in a diverse environment.

### **5.1 Delimitations of the Study**

The results of the research study are not free from limitations despite its practical and theoretical significance. Firstly, the study only focused on High Rise real estate building projects in vicinity of Rawalpindi and Islamabad with a limited sample size so findings cannot be generalized all over Pakistan to all sectors. Secondly, a primary limitation is an institutional setting unique to Pakistan, which might restrict how broadly the results can be applied to other developing world nations. Thirdly, data was collected from construction projects at one point in time and did not involve any longitudinal analysis.

### **5.2 Significance of the Study**

**Theoretical Implications:** The results add to the body of knowledge by proving that sustainable management practices have a favourable and considerable impact on the high-rise construction projects success with substantial mediating effect of effective risk management. Moehler et al. (2020) stated that this line of study has not been backed up by real-world concrete information for developing economies therefore, this quantitative research provides empirical evidence for Pakistan's real estate sector that sustainable plan of action leads to prolonged project success. The results of this study are in accordance with the RBV theory, that emphasized the need of using sustainable management practices as a distinct resource to increase project success. The study emphasized that societal, social, and environmental aspects of sustainability must be embraced comprehensively across every phase of a project lifecycle and it must be viewed as a major business aim rather than merely the topic of project implementation. Moreover, Ika et al. (2019) claimed that incomplete planning, inadequate risk management, lack of coordination, weak institutional framework, and ongoing scope modifications are the main reasons why construction projects in Pakistan typically fail. Implementing sustainable practices can successfully fix these deficiencies and aid in assessing and mitigating potential risks over the course of a project, eventually resulting in prolonged success.

**Practical Implications:** Pakistan has had difficulty maintaining the stability of its economic situation over the past few years and Rabbani in 2022 uncovered the main causes of its construction projects failures as antiquated technology, calamities, unanticipated environmental circumstances, change orders, sociological changes, and abrupt changes in the policing and regulatory infrastructure. The present



research based on institutional theory explored how these external factors affects businesses operations thus paving a way for researchers and practitioners to take decisions for green sustainable project success. The current study will help project managers to accelerate innovation and effectively manage any negative coiled effects a project may have on the environment, society, and economy. By recognizing that all internal and external factors are crucial for project success, the study provides an insightful framework for developers and builders to investigate aspects like culture, social and legal environment, heritage and norms, as well as the financial benefits that support the survival and sustainability of projects.

### **5.3 Recommendations for the Future Study**

This study's potential next direction would be to compare the findings from various institutional contexts and draw conclusions accordingly. Moreover, the impact of factors apart from those discussed in research study like leadership agility and stakeholder engagement (Ahmed, 2021) can also be explored for developing economies to boost projects longevity and success. The study did not support the moderating influence of high-performing project teams, despite the presented assumptions therefore, further investigation is necessary to ascertain the role of project teams in the relationship between project success and risk management practices. Also, future researchers can focus on cross sectional analysis of data or better results.

### **5.4 Conclusion**

The present research investigates the relationship between sustainable management practices and project success with the mediating role of effective risk management and moderating impact of high performing project teams in context of high-rise real estate developmental projects of Pakistan. A quantitative technique involving questionnaires was followed, and purposive sampling was deployed to discover the impact of each variable. Data was collected from project managers working in different construction projects of Rawalpindi and Islamabad. Entire data was processed in SPSS and AMOS using Structural equation modelling technique (SEM). Out of 4 proposed hypotheses, 3 were validated through data analysis and one was rejected that was about the moderating role of high performing project teams. The research provides substantial real-world evidence for developing economy - Pakistan and are in accordance with the RBV theory, that emphasized the need of using sustainable management practices as a distinct resource to increase project success. The current study will also help project managers and developers to accelerate innovation and effectively manage any negative coiled effects a project may have on the environment, society, and economy but despite this significance, it still has some limitations including the unique contextual setting, limited sample size, lack of generalizability and omission of longitudinal analysis of data. Therefore, the potential next direction for future research would be to compare the findings from various institutional contexts and also to explore the impact of other intervening variables between the relationship of sustainable management practices and project success.

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### Competing Interests

The author declares no competing interests

### Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request

### Ethical Statements

All procedures performed in study involving human participants were in accordance with the ethical standards of the university and done after approval of IERB- Institutional Ethical Review Board

### **Author Contributions**

The research was supervised and reviewed by Professor Dr. Shazia Akhtar, Head of department Management sciences, SZABIST, Islamabad

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