International Journal of Business and Management Sciences **E ISSN**: 2708 – 4337 **P ISSN:** 2708 – 4329
Available online at http://www.ijbmsarchive.com
International Journal of Business and Management Sciences
Volume 06 (02), 2025
Received, 12 February, 2025, *Accepted, 13 April, 2025,*
Online, 14 April, 2025

Analyzing Behavioral Reactions to Innovation Driven Strategies for improving Project Performance: Mediating role of Innovative Work Behavior and Emotional Exhaustion

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Keywords:
Innovation, Emotional Exhaustion, Innovative Work Behavior, Project Performance.

ABSTRACT

In an era of hyper-competition, firms increasingly rely on innovation-driven strategies to enhance sustainability and project performance. Construction firms promote innovative work behavior (IWB) among team members to improve project performance. However, while innovation is critical for meeting industry demands, its implementation often leads to emotional exhaustion among project teams, which may undermine performance. Grounded in self-determination theory (SDT), this study investigates the intermediate mechanisms through which innovation strategies influence project performance, emphasizing the role of IWB as a key driver. Furthermore, the study reveals that emotional exhaustion mediates the relationship between IWB and project performance, offering critical insights into the psychological costs of innovation in high-pressure environments. These findings provide a nuanced understanding of how construction firms can leverage innovation for competitive advantage while mitigating the adverse effects of employee emotional exhaustion and burnout, thereby contributing to both theoretical and practical implications for construction industry.

INTRODUCTION

The construction industry is increasingly prioritizing innovation-driven values as a central strategy for achieving sustainable organizational performance. This trend is particularly critical in developing countries like Pakistan, where the construction sector serves as a key driver of economic growth. However, the successful implementation of innovation strategies depends in behavioral reactions of employees, underscoring the importance of innovative work behavior (IWB) and emotional exhaustion for higher level of project performance (Shankman, 2014; Ajmal et al.,2024). The majority of the projects face cost and time overrun and only 16.2%

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project completed within allocated budget and cost (Standish Group Report,2021). Lower project performance is common in countries like Pakistan (Khan et al.,2022). Making it pertinent to prob the factors that influence the casual relationship between innovation driven strategy in construction and project performance (Wang et al., 2015; Sergeeva and Ali,2020; Moghaddam, 2025).

Innovation in project governance is imperative for the success of construction firm (Zang et al., 2018). Such strategy play important role in shaping innovative work behavior for improving project performance Innovation strategy, defined as *"the adoption of an idea or behavior—whether a system, policy, process, product, or service—that is new to the adopting organization"* (Damanpour, 1992). Unlike other industries, construction innovation is primarily project-centric, aimed at improving project success metrics such as cost efficiency, timely delivery, and quality. Yet, while most studies focus on organizational-level outcomes, project-level impacts remain underexplored (Blayse & Manley, 2004; Zang et al., 2018). The aim of this study is to investigate the mechanism through which innovation in construction influence project performance. This research seeks to prob how innovation-based values within a construction organization are translated into project success in construction firms. By focusing on the project level, this study aims to provide insights into how behavioral influence project performance, including cost efficiency, timely delivery, quality of work, and client satisfaction.

The key issue in this dynamic is emotional exhaustion among construction employees, which can undermine innovation-driven strategy and performance of construction projects. While innovation-driven strategy and IWB are recognized in contemporary literature to enhance project outcomes, however, their interplay with psychological stressors remains underexplored. Construction organizations are increasingly looking new ideas and opportunities thatto achieve individual and project outcomes for sustainable performance of construction organizations. Few studies have examined how employees react to innovativeness in project governance that significantly influence project performance. This study addresses this gap by analyzing the relationships between innovation, IWB, emotional exhaustion, and project performance, offering a holistic view regarding the behavioral reactions to innovation-driven strategy. This study departs from existing studies that explore both positive and negative aspects of innovation strategy from behavioral perspective. To address the scarcity of project governance, this study focuses on innovativeness in project governance and examines the behavioral reactions by posing a general research question to provide holistic overview about innovation based project governance strategies.

Research Question1*: How does innovativeness in construction projects influence project performance.*

Research Question2*: How behavioral reactions such innovative work behavior and emotional exhaustion influence causal relation between innovation and project performance.*

Hypothesis Development

Innovativeness in Project Management

The most recent studies (Pemsel and Söderlund, 2024; Simard and Aubry, 2024; Tuominen and Martinsuo,2024) stresses on innovation by identifying the limitation in traditional project governance strategies. The authors (Sergeeva, 2020) argued that strategic project governance model stimulate innovation in project. Construction projects may be characterized by different levels of innovation. Innovation has considerable impact on Project Management (Brockhoff, 2006; Tiwari& Suresha, 2021). Innovation in Project Management depends on the context in which organization operates (Tuominen and Martinsuo, 2024). The project-based firms in dynamic environments such as construction industry are striving to drive innovation for achieving desire level of project performance (Koppenjian & Klijn, 2013; Simard and Aubry, 2024). Traditional project strategies may limit organizational sustainable performance, especially in volatile, uncertain, complex and ambiguous (VUCA) environment. In this context, it is concluded that innovation-driven strategies for managing construction project in VUCA environment is assumed as central approach for enhancing project success that in turn influence organizational sustainability. Therefore, following hypothesis is formulated

H1: *Innovation driven strategies has a significant and positive impact on project performance*

Behavioral Reactions to Innovation Based Strategies

Employee behavior is categorized for organizational change as resistant and supportive (Adeniji et al 2016; Aldossari et al., 2023). Lines (2005) described employees' reactions as positive and negative. Innovation based strategies cannot be achieved if are not supported by the employees of the organization (Jansen et al., 2009; Simard and Aubry, 2024). Negative behavioral reactions is "any form of dissent that slows, obstructs, opposes, or stops" innovation process (Giangreco & Peccei, 2005). It is assumed that innovative work behavior as supporting mechanism to enhance project performance while employee exhaustion is the key barrier for project level outcomes.

Innovative work behavior (IWB) is described as the "intentional creation, introduction and application of new ideas within a work role, group or organization, to benefit role performance, the group, or the organization" (Javed et al.,2017). When a novel idea, product or project governing mechanism is developed, individual must improve their abilities to promote and

implement such ideas as individual role and as team, therefore, plays key role in completing innovation process at workplace (Javed et al.,2017; Yaun et al., 2010). IWB is concerned with new technology solutions, new processes, new products, and new governing methodologies to address existing challenges in a more novel way (Luksyte et al.,2018). Organizations worldwide are focusing on innovative work behavior for success and dynamic and hyper competitive environment especially after the 4th industrial revolution (Galbreath et al.,2019). Therefore following hypotheses are formulated

H2: *Innovativeness in construction firms promote innovative work behavior*

H3: *Innovative work behavior has a significant and positive impact on project performance*

Innovative Work Behavior as Mediator

IWB is a collection of generation and promotion of new ideas as well as implementation of new ideas to support organization innovation strategy (Javed et al.,2017; Luksyte et al.,2018). Project team members are regarded as key participant for implementing innovation strategies in construction organization. Innovative work behavior of such employees has central importance for enhancing performance of such projects. Therefore, this study postulates that innovative work behavior of project employees mediate the relationship between innovativeness and project success. Therefore, following hypothesis was formulated.

H4: *Innovative work behavior mediates the relationship between innovativeness and project performance*

Emotional Exhaustion and Project Performance

The effectiveness of innovation-based strategies in construction firms to improving project performance is dependent on team abilities and attitude and behaviors (Irfan et al., 2021; Wu et al., 2019). The burnout and emotional exhaustion have been acknowledged in behavior project management literature as key factor that influence project performance (Maslach, Schaufeli, & Leiter, 2001). Emotional exhaustion reduces organizational project performance by undermining the ability of individuals to perform efficiently (Shirom, 2003; Bakker, Demerouti, & Sanz-Vergel, 2014). The innovation culture is characterized by uncertainty for project team which cannot be developed through innovation driven project governance (Augner and Schermuly, 2023; Rafique et al., 2023; Tuominen and Martinsuo, 2024). Emotional exhaustion appears where construction employees are overloaded due to the implementation of innovative solution. Emotional exhaustion is a syndrome that affects individual and project performance. Innovativeness makes employees emotionally exhausted when firm's strategies and employees' behaviors are not aligned (Sockel et al., 2004) By drawing on job demand theory this study postulates that emotional exhaustion act as intermediate mechanism between

innovative work behavior and project performance. Therefore, following relationship proposed.

H5: *Emotional exhaustion mediates the relationship between innovation and IWB*

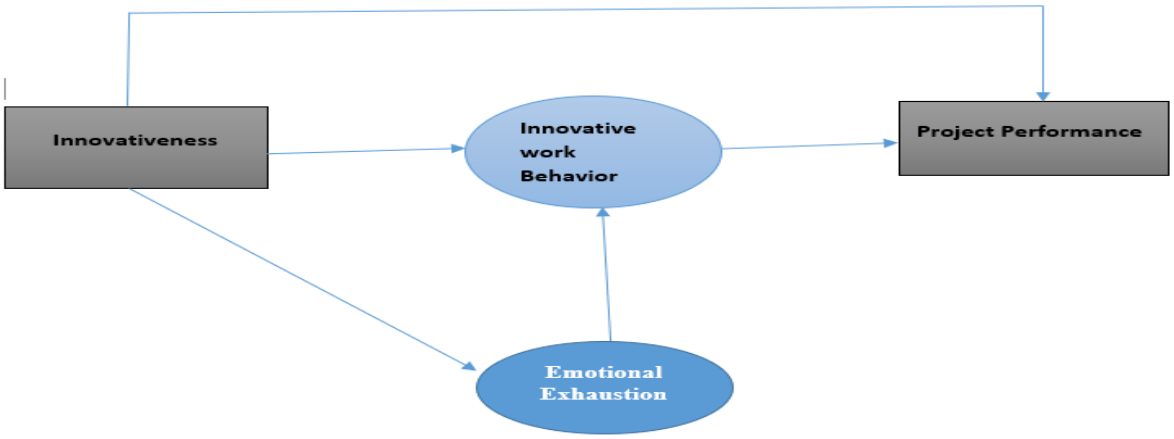

Figure 1 Conceptual Framework

Methodology

The current study adopts a cross-sectional design, with data collected from March 2024 to May 2024. The respondents comprised project managers and project team members from various construction firms in Islamabad and Rawalpindi. The study targeted a total of 2,542 registered construction firms in both cities, including 1,822 in Islamabad and 720 in Rawalpindi. Given an estimated total of 20,500 employees across these firms, the sample size was determined using the Yamane formula (1967), resulting in 392 participants.

$$n = N / (1 + Ne^2)$$

This approach ensured a representative sample for analyzing the key variables under investigation. Some of the companies include: "Habib Construction Services Pvt. Ltd., Defense Housing Authority, Bahria Town, Al-Khalil Construction Company Pvt. Ltd., and Frontier Works Organization". The study focuses on behavioral reactions of key stakeholders to innovativeness in construction sector, therefore, the 392 questionnaires was sent to project manager, project coordinator, team lead, team member and contractors. However, we received 200 responses with 51% response rate that is considered good response rate for social science research. Only 153 responses were considered as valid responses after checking missing values, incomplete responses, outliers and response biases.

Innovativeness is treated as independent variable. Tatum (1989) scale that is validated by Haider, S. A., (2023) is used to measure innovativeness comprises of 4 questions on a five-point Likert scale from Strongly Disagree to Strongly Agree. Innovative work behavior (IWB) and emotional exhaustion (EE) is considered as a mediating variable. The measurement scale

for IWB of 9 questions and EE comprises of 8 questions and is established on a five-point Likert scale, between 1 (Strongly Disagree) and 5 (Strongly Agree). Innovative work behavior scale items were taken from Janssen (2000). Maslach and Jackson (1981) Emotional exhaustion scale used to measure emotional exhaustion. Project performance (PP) is a dependent variable in current research. Joslin & Müller (2015) scale was barrowed to measure PP comprises of 5 questions on a five-point Likert scale, ranged between 1 (Strongly Disagree) and 5 (Strongly Agree).

Descriptive statistics, correlations and regression techniques were used to test the proposed relationship. To test the mediating relationship, Hayes and Preacher (2013) mediation methodology was employed. IBM SPSS and Hayes macros ware used to analyze the data.

Results & Discussion

The first stage of the analysis is concerned with data examination. The basic goal of statistical analysis is to determine whether data-pattern is appeared by chance or due to theoretical causes that we are going to tested. Therefore, data examination and screening stage is time consuming but essential component of analysis that cannot be overlooked (Hair *et al.*, 2010). Every statistical technique has some assumption that should be examined. Hence, the present study evaluated assumption of multivariate analysis through different statistical tools. In the current study we used descriptive statistics, missing data treatment, outliers, common method variance and normality tests were performed at both univariate and multivariate level. The results indicated that all the assumption of regression-based analysis has been fulfilled that indicates the fitness of the data to test the proposed hypothesized relationship.

Reliability

The reliability of the instrument was evaluated to draw valid inferences. Table 1demonstrates that the instrument is internally consistent and reliable as Cronbach alpha for all construct is greater than the suggested threshold value of 0.50.

Table1: Reliability statistics

Construct	Observed variables	Alpha
PP	5	0.662
EE	8	0.855
IN	4	0.574
IWB	9	0.685

INN=Innovation, IWB=Innovative work behavior, EE= Emotional Exhaustion,PP=Project performance.

Correlation Analysis

The association between innovation (INN) and innovative work behavior (IWB) with project performance (PP) and emotional exhaustion (EE) are evaluated and significant correlation was

observed in the construction industry of Pakistan. The results showed that there was a strong negative relationship between innovation and workers' emotional exhaustion with a correlation coefficient of (-0.524, p < 0. 01). Also, innovative work behavior has a moderate positive relationship with project performance (r = 0. 358, p < 0. 01) and a weak negative relationship with emotional exhaustion (r = -0. 223, p < 0. 01), suggesting that encouraging innovative attitudes will also lead to better project results and conversely contribute to lower levels of exhaustion. Last, the relation between overall project performance and EE confirms significant result of moderate negative relationship, meaning that high results in project performance are inversely correlated with EE (r = -0. 289, p < 0. 01). One of the key assumptions for causal research is to evaluate association between the constructsTable2 represents the association between innovativeness, Emotional exhaustion, innovative work behavior and project performance suggesting that the key assumption has been fulfilled for causal research to test the hypothesized research.

Table 2 correlation analysis

	INN	IWB	PP	EE
INN	1			
IWB	.333**	1		
PP	.405**	.358**	1	
EE	-.524**	-.223**	-.289**	1

INN=Innovation, IWB=Innovative work behavior, EE= Emotional Exhaustion, PP=Project performance.

Hypothesis Testing

Table 3 demonstrates that the direct impact of innovation on individual and project outcomes. The findings reveal that innovativeness has a direct and positive relationship with innovative work behavior which (β=0.2410; R^2= 0. 1108; P<0. 05). Therefore, H1 is accepted. Hypothesis H2 postulates that innovative work behavior influences Project Performance. It is evident from table 3 that IWB has a positive and significant impact on improving project performance (β=0. 3655; R^2= 2198; P<0. 05). The LLCI and ULCI also confirm the significant and positive relationship between IWB and PP. This study reveals that innovative work behavior accounts for 21% of the projects' performance. Therefore, H2 is accepted. Hypothesis H4 is formulated to evaluate the direct relationship between Innovation and has positive effects on project performance. The value β=.3390; t= 3.9; P<0. 05;LLCI=.1714 ULLCI= .5066 indicates that Innovation based strategy has a positive impact on project performance. Therefore, H3 is accepted. Table 3exhibitthat innovation base organization intervention overburden and emotionally exhausted that reduces project performance (β=.3390; t= 3.9; P<0. 05; LLCI=.1714 ULLCI= .5066)

Table 3: Direct Relationship

H#	Relationship	β	t	P value	CI 95%		R^2	Status
					LLCI	ULCI		
H1	INN--- IWB	.2410	4.1311	0.0001	**.1257**	**.3564**	.1108	**Accepted**
H2	IWB--- PP	.3655	3.1231	0.0022	**.1341**	**.5970**	.2198	**Accepted**
H3	INN--- PP	.3390	3.9995	0.0001	**.1714**	**.5066**	.2198	**Accepted**

Mediating Relationship

Hypothesize 4 postulates that IWB mediates the relationship between Innovation based strategies and project performance. The Hypothesis 5theorizes that emotional exhaustion mediates the relationship between Innovation and IWB. The mediation analysis was performed based on Hayes and preacher methodology for indirect impact of innovation-based strategy via IWB on improving project performance. Result of mediation are shown in table5 that show indirect relation of INN—IWB—PP (β=0.029, p<0.01). 95% CI boot [LLCI= 0.0224, ULCI=0.1926] does not turn into zero that showing mediation effect is statistically significant hence supporting H4. Emotional exhaustion mediates the relationship between innovation and IWB as an indirect effect of 0.078. value for 95% CI bootstrapping[CLLI= .0044, ULCI=.1619] also exhibit that mediation thus supporting H5.

Table4: Mediation Analysis

Hypotheses	Indirect Relation	Indirect Effect	95% CI		Status
			LLCI	ULCI	
H5	INN-IWB-PP	0.029	0.0224	0.1926	Partial mediation
H6	INN-EE-PP	0.0718	0.0044	0.1619	Partial mediation

Discussion

Innovation driven project governance is a viable strategy to improve project performance for sustainable growth of the construction sector of Pakistan. The focus of this study is to examine reactions to innovation driven strategy from behavioral perspective. This study demonstrates that an innovation-driven strategy goes beyond technological adoption. Such approaches foster workplace innovative work behaviors, proactive problem solutions and foster collaboration. These behavioral shifts, in turn, drive significant improvements in project performance. In contrast to functional organization, projectized organization pays special attention to innovation in project governance for project success for sustainability of the construction firms. The findings of the study suggested that innovation driven strategy improves project performance. The contingency theory postulated that different contextual factors need to be

examined for transformative effect of innovation strategy on project outcomes. By drawing on contingency theory the findings of the study identified the indirect effect of innovation strategy for project performance. Innovativeness in project governance is a source of intrinsic motivation to deliver projects for innovation outcomes. Innovativeness in construction firms promote innovative work behavior leading to project performance. The finding of the study suggests IWB is one the intermediate mechanism between innovation driven strategy and project performance. Few scholars recognize emotionally exhausted employees negatively reacts to innovation driven strategy. This study suggests that emotional exhaustion reduces innovative work behavior. Organization should focus on behavioral therapy along with structural changes in project governance for success of innovative projects. This study improves our understanding of the positive and negative behavioral reactions affecting performance of construction firm in Pakistan.

Conclusion

This study underscores the importance of integrating both innovative work behaviors and emotional well-being into innovation-based strategies for improving project performance. IWB and Emotional Exhaustion was used as intermediate mechanisms to link innovative based strategies with project performance. This study contributes to the theoretical understanding of how innovative based strategies promote innovative work behavior that is key to improve project performance. It identified that emotional exhaustion as a barrier for innovative work behavior and reduce project performance. By examining the interplay between innovativeness, innovative work behavior, and emotional exhaustion, the study adds depth to theories related to employee well-being and performance, showcasing the complex interdependencies. This study stresses the importance of developing a culture that encourages and supports innovativeness. Innovative work behavior is a key phenomenon for improving project performance. The study identified project establishment should develop interventions for emotional exhaustion to promote innovative work behavior among construction professionals. Construction managers need to implement strategies to monitor and mitigate emotional exhaustion and burnout. This includes promoting work-life balance, providing support systems such as counseling services, and ensuring manageable workloads. This study examining the impact of innovativeness, innovative work behavior, and emotional exhaustion on project performance, while providing valuable insights, has several limitations that must be acknowledged. One of the primary limitations of this study is its cross-sectional design, which captures data at a single point in time. This design constraint makes it challenging to infer causal relationships between the variables of interest. Addressing these limitations in future

research can enhance the robustness of the theoretical framework for innovative based project governance.

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