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Impact Of Employees Insight and Foresight Capabilities on Organizational Innovation: The Moderating Role of Innovative Work Behavior

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Abstract

This study investigates the impact of employees' insight and foresight capabilities on organizational innovation, with particular emphasis on the moderating role of innovative work behavior (IWB), within federal public sector organizations of Pakistan. In contemporary governance environments characterized by volatility, uncertainty, complexity, and ambiguity (VUCA), public sector organizations are increasingly expected to deliver innovative policies, services, and administrative solutions while operating under bureaucratic constraints, political oversight, and public accountability. Insight enables employees to develop deep understanding, recognize hidden patterns, and reinterpret organizational challenges, whereas foresight equips them with the capability to anticipate future trends, uncertainties, and strategic imperatives. Drawing upon cognitive psychology, strategic foresight theory, knowledge-based view, and micro foundations of organizational innovation, this study conceptualizes insight and foresight as critical cognitive antecedents of innovation and positions innovative work behavior as a boundary condition that strengthens these relationships.

A cross-sectional, quantitative, causal-comparative research design was employed. Data were collected from federal public sector organizations of Pakistan using a structured questionnaire. Through convenience sampling, 1,200 respondents were surveyed, including 800 managerial and 400 non-managerial employees, ensuring representation of both strategic and operational perspectives. Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS was employed to assess the measurement and

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structural models and to test moderation effects. The results demonstrate that both insight and foresight have positive and statistically significant effects on organizational innovation. Furthermore, innovative work behavior significantly moderates the relationship between insight and organizational innovation as well as foresight and organizational innovation, indicating that cognitive capabilities yield stronger innovation outcomes when employees actively engage in innovative behaviors. The study contributes to innovation and public administration literature by integrating cognitive and behavioral perspectives and offers actionable implications for leadership development, human resource management, and innovation policy in Pakistan's federal public sector.

Keywords: Insight; Foresight; Innovative Work Behavior; Organizational Innovation

1. Introduction

In the contemporary global business environment, innovation has become a critical determinant of organizational competitiveness, sustainability, productivity, and long-term growth. Industries operating in technologically dynamic and highly competitive markets are increasingly required to innovate continuously in order to respond effectively to changing customer demands, technological disruptions, globalization, and market uncertainty. Among these industries, the engineering sector occupies a strategically significant position due to its direct contribution to industrial development, infrastructure expansion, manufacturing capability, technological advancement, and economic growth. In Pakistan, the engineering industry plays a vital role in supporting national industrialization through sectors such as manufacturing, construction engineering, energy systems, automotive production, heavy mechanical industries, telecommunications, and industrial technologies. However, despite its strategic importance, the engineering industry of Pakistan continues to face numerous operational, technological, managerial, and innovation-related challenges that limit its global competitiveness and organizational effectiveness.

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The engineering industry in Pakistan operates within an increasingly volatile, uncertain, complex, and ambiguous (VUCA) environment characterized by rapid technological advancements, intense global competition, changing industrial standards, digital transformation, economic instability, and evolving customer expectations. Organizations within the engineering sector are expected not only to maintain technical efficiency but also to develop innovative products, processes, systems, and strategic solutions that can ensure sustainable growth and adaptability. However, many engineering firms in Pakistan continue to encounter barriers such as rigid organizational cultures, limited research and development investment, insufficient strategic planning, outdated managerial practices, and resistance to organizational change, all of which negatively affect innovation performance and competitiveness.

Traditionally, organizational innovation within the engineering industry has been associated primarily with technological investments, process automation, infrastructure development, and technical expertise. Although these structural and technological factors remain important, contemporary organizational research increasingly emphasizes that sustainable innovation is fundamentally driven by human cognition, knowledge capabilities, and employee behavior rather than solely by technological systems or organizational structures (Felin et al., 2015, Abun et al. 2023). In knowledge-intensive industries such as engineering, employees' ability to understand complex technical realities, identify hidden opportunities, anticipate future industrial trends, and implement innovative solutions plays a decisive role in shaping organizational innovation outcomes. Consequently, organizations are increasingly recognizing that innovation emerges from the interaction between employees' cognitive capabilities and their behavioral engagement in innovative activities.

Among the cognitive capabilities that significantly contribute to innovation, insight and foresight have gained substantial scholarly and practical attention. Insight refers to an individual's deep understanding, analytical interpretation, reflective reasoning, and

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ability to recognize underlying relationships and hidden patterns within complex situations (Kounios & Beeman, 2014). Insight enables employees to reinterpret organizational problems, challenge conventional assumptions, and generate creative and meaningful solutions to technical and managerial challenges. In engineering environments, where employees frequently encounter complex systems, operational inefficiencies, technical uncertainties, and multidisciplinary coordination issues, insight becomes particularly important for identifying innovative approaches and improving organizational processes.

The concept of insight is deeply rooted in cognitive psychology and organizational learning literature, where it is associated with higher-order thinking, reflective analysis, cognitive flexibility, and creative problem-solving (Mumford et al., 2012). Employees who possess strong insight capabilities are better able to analyze technical problems critically, integrate diverse information sources, and identify opportunities for innovation and improvement. Within engineering organizations, insight supports the development of innovative products, optimization of operational systems, improvement of project management practices, and enhancement of organizational learning processes. Furthermore, insightful employees are more likely to contribute to strategic problem-solving and adaptive decision-making in technologically complex and rapidly changing industrial environments.

In addition to insight, foresight has emerged as another critical cognitive capability influencing organizational innovation and strategic adaptability. Foresight refers to the ability to anticipate future developments, recognize emerging trends, evaluate potential risks and opportunities, and prepare proactively for future uncertainties (Rohrbeck & Kum, 2018). Unlike traditional forecasting approaches that focus on predicting singular outcomes, foresight emphasizes the exploration of multiple possible futures and strategic preparedness for dynamic environmental changes. In engineering industries characterized by technological evolution, digital transformation, sustainability pressures, and

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competitive market shifts, foresight enables organizations and employees to remain strategically agile and innovation oriented.

Foresight is particularly important within the engineering industry because technological obsolescence, market disruptions, industrial automation, artificial intelligence, renewable energy systems, and global industrial transitions continuously reshape competitive dynamics. Employees with strong foresight capabilities are more capable of anticipating future technological requirements, understanding evolving industry standards, identifying emerging engineering solutions, and aligning organizational strategies with long-term industrial trends. Research suggests that foresight enhances organizational adaptability, resilience, strategic planning, and innovation performance by enabling organizations to respond proactively rather than reactively to environmental changes (Vecchiato, 2015). Therefore, foresight represents a valuable cognitive resource for engineering organizations seeking to sustain innovation and competitiveness in rapidly evolving markets.

Although insight and foresight provide essential cognitive foundations for innovation, cognitive capabilities alone are insufficient to produce innovative organizational outcomes unless employees actively engage in behaviors that support innovation implementation. The behavioral enactment of innovation is conceptualized through innovative work behavior (IWB), which refers to employees' intentional behaviors aimed at generating, promoting, and implementing new ideas, methods, products, or processes within organizational settings (Janssen, 2000). Innovative work behavior represents the practical application of employees' creativity, initiative, and proactive engagement in organizational innovation activities.

In engineering organizations, innovative work behavior is particularly important because employees are frequently required to experiment with technical solutions, optimize engineering processes, improve operational efficiency, and develop innovative systems under conditions of uncertainty and complexity (Alateeg & Alhammadi, 2024).

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Employees may possess strong cognitive capabilities such as insight and foresight but may fail to contribute to innovation if they do not actively engage in innovative behaviors due to organizational constraints, fear of failure, lack of support, or risk-averse organizational cultures. Employees demonstrating high levels of innovative work behavior are more likely to transform cognitive potential into practical innovations by actively exploring opportunities, communicating innovative ideas, collaborating across functions, and implementing creative solutions.

The present study argues that innovative work behavior functions as a significant moderating mechanism that strengthens the relationships between employees' insight, foresight, and organizational innovation. This argument is consistent with the micro foundations perspective, which emphasizes that organizational outcomes originate from the interactions between individual cognition, behavior, and organizational processes (Felin et al., 2015). According to this perspective, innovation is not merely the result of organizational systems or technological investments but rather emerges from employees' cognitive abilities and behavioral actions within organizational environments. Employees possessing high levels of insight and foresight are expected to contribute more effectively to organizational innovation when they simultaneously engage in innovative work behaviors that facilitate the translation of cognitive capabilities into implemented innovations.

The theoretical foundations of this study are grounded in the knowledge-based view (KBV), strategic foresight theory, behavioral innovation theory, and micro foundations theory. The knowledge-based view suggests that knowledge, expertise, and cognitive capabilities represent the most strategically valuable resources for achieving competitive advantage and innovation (Grant, 1996). Similarly, micro foundations theory emphasizes the importance of individual-level cognition and behavior in shaping organizational capabilities and innovation outcomes (Felin et al., 2015). Strategic foresight theory highlights future-oriented thinking and environmental anticipation as critical drivers of

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innovation and strategic adaptability (Rohrbeck & Kum, 2018), while behavioral innovation theory focuses on employees' innovative behaviors as mechanisms for translating ideas into organizational outcomes (Janssen, 2000).

Despite growing interest in organizational innovation and employee behavior, significant gaps remain in the literature concerning the combined roles of insight, foresight, and innovative work behavior within the engineering industry, particularly in developing countries such as Pakistan. Existing research on innovation has predominantly focused on leadership, organizational culture, technological capabilities, and knowledge management, while relatively limited attention has been given to the cognitive dimensions of innovation. Furthermore, most empirical studies examining foresight and innovation have been conducted in Western or high-technology corporate contexts, limiting their applicability to the engineering industry of Pakistan, which operates under unique economic, institutional, and industrial conditions.

This study seeks to address these theoretical and empirical gaps by examining the impact of employees' insight and foresight on organizational innovation within the engineering industry of Pakistan while investigating the moderating role of innovative work behavior. By integrating cognitive and behavioral perspectives, the study contributes to organizational innovation literature, engineering management research, and strategic management theory. Additionally, the study provides practical insights for engineering managers, organizational leaders, and human resource professionals regarding the importance of developing employees' cognitive and behavioral capabilities to strengthen organizational innovation and industrial competitiveness.

The significance of this study is particularly relevant for Pakistan's engineering industry, where innovation has become essential for achieving technological advancement, industrial modernization, operational excellence, and international competitiveness. The findings are expected to provide valuable implications for leadership development,

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innovation management, workforce training, organizational learning, and strategic human resource practices. By emphasizing the combined importance of insight, foresight, and innovative work behavior, the study highlights the need for engineering organizations to cultivate reflective, future-oriented, and innovation-supportive organizational cultures capable of sustaining growth and competitiveness in rapidly evolving industrial environments.

2. Literature Review

2.1 Organizational Innovation

Organizational innovation has emerged as one of the most significant determinants of organizational sustainability, competitiveness, adaptability, and long-term performance in modern industries. Innovation refers to the implementation of new or significantly improved products, processes, systems, managerial practices, technologies, or organizational methods that enhance organizational effectiveness and value creation (OECD, 2018, AlEssa & Durugbo, 2022). In the engineering industry, organizational innovation is particularly important because engineering firms operate within technologically intensive, knowledge-driven, and highly competitive environments where continuous innovation is necessary for survival and growth.

Engineering organizations are increasingly expected to develop innovative solutions capable of addressing complex industrial, operational, and technological challenges. The rapid advancement of digital technologies, automation, artificial intelligence, Industry 4.0, sustainability requirements, and global industrial competition has intensified the need for organizations to become more adaptive and innovation-oriented. Contemporary innovation literature suggests that innovation is not solely dependent on technological investment or structural resources but is significantly influenced by employees' cognitive capabilities, knowledge utilization, creativity, and behavioral engagement (Felin et al., 2015). Organizational innovation therefore emerges from the interaction between organizational systems and individual-level cognitive and behavioral processes.

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Research further indicates that innovation in organizations involves both cognitive and behavioral dimensions. Employees contribute to innovation when they possess the ability to identify opportunities, reinterpret problems, generate novel ideas, and implement creative solutions within organizational settings (Crossan & Apaydin, 2010, Alateeg & Alhammadi, 2024). Particularly in engineering industries, where technical complexity and operational uncertainty are high, innovation requires employees to engage in advanced analytical thinking, future-oriented planning, and proactive behavioral participation.

2.2 Theoretical Foundations

The present study is grounded in several complementary theoretical perspectives, including the Knowledge-Based View (KBV), Strategic Foresight Theory, Micro Foundations Theory, and Behavioral Innovation Theory. These theoretical perspectives collectively explain how employees' cognitive capabilities and behaviors contribute to organizational innovation within engineering organizations.

The Knowledge-Based View argues that knowledge, expertise, intellectual capability, and cognitive resources are among the most strategically valuable organizational assets for achieving competitive advantage and innovation (Grant, 1996, Abun et al. 2023). According to this perspective, organizations create innovation when employees effectively utilize knowledge, analytical reasoning, and learning capabilities to solve organizational problems and generate new ideas.

Micro Foundations Theory further explains that organizational capabilities and innovation outcomes originate from individual-level cognition, interactions, and behaviors (Felin et al., 2015). This perspective emphasizes that organizational innovation cannot be fully understood without examining the cognitive and behavioral contributions of employees who operate within organizations.

Strategic Foresight Theory highlights the importance of future-oriented thinking, environmental scanning, anticipation, and proactive planning in enhancing organizational

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adaptability and innovation (Rohrbeck & Kum, 2018). Organizations that develop foresight capabilities are better positioned to recognize emerging technological trends, anticipate future uncertainties, and implement innovative strategies.

Behavioral Innovation Theory emphasizes that innovation is fundamentally behavioral in nature and depends on employees' willingness to engage in innovative work activities such as idea generation, experimentation, idea promotion, and implementation (Janssen, 2000, AlEssa & Durugbo, 2022). According to this perspective, innovation outcomes are strengthened when employees actively participate in innovative behaviors within organizational contexts.

These theoretical perspectives collectively provide a strong foundation for examining how insight and foresight influence organizational innovation and how innovative work behavior strengthens these relationships.

2.3 Insight and Organizational Innovation

Insight represents an important cognitive capability that enables individuals to develop deep understanding, identify hidden relationships, reinterpret organizational realities, and generate meaningful solutions to complex problems (Kounios & Beeman, 2014). Insight involves reflective thinking, analytical interpretation, cognitive restructuring, and the ability to recognize patterns that may not be immediately visible within organizational situations.

Within engineering organizations, insight is particularly important because employees frequently deal with technologically complex systems, operational inefficiencies, interdisciplinary coordination challenges, and uncertain project environments. Employees possessing strong insight capabilities are better able to diagnose organizational problems, evaluate technical processes critically, and identify opportunities for improvement and innovation.

Cognitive psychology literature suggests that insight contributes significantly to creativity and innovation because it facilitates unconventional thinking and problem

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reframing (Mumford et al., 2012). Employees with higher levels of insight are more likely to challenge traditional assumptions, reinterpret engineering problems, and develop innovative technical and managerial solutions. Insight also enhances learning capability and adaptive problem-solving, which are essential in engineering environments characterized by rapid technological change and operational uncertainty.

Empirical studies have consistently demonstrated that reflective cognition, analytical depth, and cognitive flexibility positively influence creativity and innovation performance. Insightful employees contribute to innovation by integrating technical knowledge with contextual understanding and by developing innovative approaches to organizational challenges. Furthermore, insight supports strategic decision-making and organizational learning by enabling employees to interpret complex information effectively and develop actionable solutions.

Research on innovation management further emphasizes that innovation emerges from employees' ability to engage in deep sense-making and knowledge integration processes. Employees capable of identifying hidden opportunities and understanding systemic relationships are more likely to contribute positively to organizational innovation outcomes. Consequently, insight can be conceptualized as a critical antecedent of innovation within engineering organizations.

2.4 Foresight and Organizational Innovation

Foresight refers to the ability to anticipate future developments, recognize emerging trends, identify potential opportunities and threats, and prepare proactively for future uncertainties (Rohrbeck & Kum, 2018). Unlike conventional forecasting approaches that focus on predicting singular future outcomes, foresight emphasizes strategic anticipation and the exploration of multiple future possibilities.

In engineering industries, foresight has become increasingly important due to rapid technological advancements, digital transformation, automation, sustainability pressures, and changing market dynamics. Engineering organizations that fail to anticipate future

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technological and industrial developments risk becoming obsolete in highly competitive global markets. Employees possessing foresight capabilities contribute to organizational innovation by identifying emerging technologies, anticipating industry transitions, and supporting long-term strategic planning (Alateeg & Alhammadi, 2024).

Strategic foresight literature suggests that foresight enhances organizational adaptability, resilience, and innovation by enabling organizations to respond proactively to environmental uncertainty rather than reactively to crises (Vecchiato, 2015). Employees with strong foresight capabilities are more capable of envisioning future industrial scenarios, recognizing technological opportunities, and supporting strategic innovation initiatives.

Research further indicates that foresight contributes positively to innovation by facilitating environmental scanning, future-oriented learning, opportunity recognition, and strategic flexibility. Organizations integrating foresight into innovation processes demonstrate stronger innovation performance and greater adaptability to market changes. Corporate foresight activities have been shown to enhance innovation management by supporting long-term strategic thinking and organizational preparedness.

Within engineering organizations, foresight enables employees to align innovation activities with future technological requirements, customer expectations, and industrial transformation trends. Employees capable of anticipating future developments are more likely to contribute to innovative product development, process optimization, and strategic engineering solutions. Therefore, foresight is expected to positively influence organizational innovation.

2.5 Innovative Work Behavior and Organizational Innovation

Innovative Work Behavior (IWB) refers to employees' intentional behaviors aimed at generating, promoting, and implementing novel ideas, methods, processes, or solutions within organizational settings (Janssen, 2000, AlEssa & Durugbo, 2022). Innovative

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work behavior extends beyond creativity because it involves not only idea generation but also idea promotion and implementation.

Innovation literature consistently identifies innovative work behavior as one of the most important drivers of organizational innovation. Employees who actively engage in innovative behaviors contribute significantly to organizational adaptability, competitiveness, and performance. Innovative work behavior includes proactive problem-solving, experimentation, opportunity recognition, collaborative idea sharing, and implementation of creative solutions (Abun et al. 2023).

Research suggests that organizations cannot achieve sustainable innovation without employees' behavioral participation in innovation activities. Employees may possess technical knowledge and cognitive capabilities, but innovation outcomes remain limited unless individuals actively engage in behaviors that support innovation implementation. Innovative work behavior therefore represents the behavioral mechanism through which creativity and cognition are translated into organizational innovation outcomes.

Within engineering organizations, innovative work behavior is particularly critical because employees are frequently required to develop technical improvements, optimize engineering systems, solve operational problems, and contribute to technological advancement. Engineering employees who demonstrate high levels of innovative behavior are more likely to experiment with new methods, collaborate across functions, and implement creative engineering solutions.

Studies further indicate that innovative work behavior is influenced by both individual and contextual factors, including cognitive capabilities, leadership support, organizational climate, and learning orientation. Employees exhibiting proactive innovative behaviors contribute significantly to organizational innovation and continuous improvement initiatives.

2.6 Moderating Role of Innovative Work Behavior

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Although insight and foresight provide cognitive foundations for innovation, cognitive capabilities alone may not automatically result in innovation unless employees engage behaviorally in innovative activities. Employees may possess strong analytical understanding and future-oriented thinking but may fail to contribute to organizational innovation if they do not actively promote and implement ideas within the organization. This study argues that innovative work behavior strengthens the positive relationships between insight, foresight, and organizational innovation. Employees with high levels of innovative work behavior are more likely to transform cognitive capabilities into practical innovation outcomes because they actively engage in experimentation, idea implementation, and collaborative innovation activities (Abun et al. 2023).

The moderating role of innovative work behavior is supported by Micro Foundations Theory, which emphasizes that organizational outcomes emerge from the interaction between cognition and behavior (Felin et al., 2015, AlEssa & Durugbo, 2022, Alateeg & Alhammadi, 2024). Similarly, Behavioral Innovation Theory suggests that innovation depends not only on knowledge and creativity but also on employees' willingness to enact innovative behaviors within organizational settings.

Recent innovation literature further highlights that cognitive capabilities such as foresight create stronger innovation outcomes when combined with proactive employee behaviors and innovation-supportive organizational cultures. Research demonstrates that innovative behavior facilitates the practical application of future-oriented knowledge and analytical insight in organizational contexts. Accordingly, employees with high innovative work behavior are expected to strengthen the effects of insight and foresight on organizational innovation because they actively transform cognitive potential into implemented innovation.

2.7 Research Hypotheses

Based on the extant literature and theoretical foundations, the following hypotheses have been proposed:

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H1: Insight has a positive and significant impact on organizational innovation.
H2: Foresight has a positive and significant impact on organizational innovation.
H3: Innovative work behavior moderates the relationship between insight and organizational innovation such that the relationship becomes stronger at higher levels of innovative work behavior.
H4: Innovative work behavior moderates the relationship between foresight and organizational innovation such that the relationship becomes stronger at higher levels of innovative work behavior.

3. Research Methodology

This study has adopted a quantitative, explanatory, and cause-and-effect research methodology to investigate the impact of employees' insight and foresight on organizational innovation in the engineering industry of Pakistan. The study further examined the moderating role of innovative work behavior in strengthening the relationships between cognitive capabilities and organizational innovation. The selected methodology enabled the researcher to empirically examine causal relationships among study variables through statistical analysis and hypothesis testing. Since the study aimed to measure relationships among latent constructs objectively and scientifically, a quantitative approach was considered most appropriate. A cross-sectional survey design was employed because it allows the collection of data from a large number of respondents at a single point in time while efficiently examining relationships among variables (Creswell & Creswell, 2018). The study was grounded in the Knowledge-Based View (Grant, 1996), Strategic Foresight Theory (Rohrbeck & Kum, 2018), Micro Foundations Theory (Felin et al., 2015) and Behavioral Innovation Theory (Janssen, 2000), which collectively explain how employees' cognitive capabilities and innovative behaviors contribute toward organizational innovation and competitive advantage within engineering organizations.

3.1 Research Design

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The present study adopted a quantitative and explanatory research design using a cross-sectional survey approach to examine the causal relationships among insight, foresight, innovative work behavior, and organizational innovation in the engineering industry of Pakistan. The explanatory research design was selected because the study aimed to explain how employees' cognitive capabilities influence innovation outcomes and how innovative work behavior strengthens these relationships. A quantitative design was considered appropriate because it enables objective measurement, statistical examination, and empirical testing of relationships among variables through numerical data (Sekaran & Bougie, 2020). The cross-sectional survey method allowed the researcher to collect responses from employees working in engineering organizations within a limited time frame while ensuring broader organizational representation.

3.2 Research Philosophy and Approach

The study followed the positivist research philosophy, which assumes that organizational phenomena can be objectively measured and scientifically examined through empirical observation and statistical analysis. Positivism emphasizes measurable variables, hypothesis testing, objectivity, and causal explanation of relationships among constructs (Saunders, Lewis, & Thornhill, 2019). The study employed a deductive research approach. The deductive approach begins with established theories and previously developed conceptual frameworks and subsequently formulates hypotheses that are empirically tested through collected data (Bryman & Bell, 2015).

3.3 Population and Sampling

The target population of the study consisted of managerial and non-managerial employees working in engineering organizations operating in major industrial cities of Pakistan. A convenience sampling technique was employed due to accessibility, time limitations, and resource constraints. A total of 1,400 questionnaires were distributed among employees working in different engineering organizations across Pakistan. Out of

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these, 1,258 questionnaires were returned, while 1,200 questionnaires were found complete and usable for final analysis.

3.4 Data Collection and Analysis

Primary data were collected using a structured self-administered questionnaire distributed physically and electronically. Ethical considerations including confidentiality, anonymity, and informed consent were strictly maintained throughout the research process. All questionnaire items were measured using a five-point Likert scale ranging from:1 = Strongly Disagree to Strongly Agree = 6

The collected data were coded, screened, and analyzed using Statistical Package for Social Sciences (SPSS) software. SPSS was employed for data integration, data cleaning, descriptive statistics, reliability analysis, correlation analysis, regression analysis, moderation analysis, and hypothesis testing. Reliability analysis was performed using Cronbach's Alpha values to assess internal consistency reliability of study constructs. Pearson correlation analysis was conducted to examine relationships among variables. Multiple regression analysis was employed to test the direct effects of insight and foresight on organizational innovation. Moderation analysis was conducted to examine the moderating role of innovative work behavior in the relationships between insight and organizational innovation as well as foresight and organizational innovation. The hypotheses of the study were tested using statistical significance criteria where p-values less than 0.05 indicated significant relationships among variables.

4. SPSS Statistical Results

4.1 Demographic Profile of Respondents

The demographic analysis revealed that out of 1,200 respondents, 800 respondents (66.7%) were managerial employees, while 400 respondents (33.3%) were non-managerial employees. The sample therefore represented both strategic and operational perspectives within engineering organizations of Pakistan.

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4.2 Descriptive Statistics

The descriptive statistics indicated that respondents demonstrated relatively high perceptions regarding insight (M = 4.12, SD = 0.61), foresight (M = 4.18, SD = 0.58), innovative work behavior (M = 4.05, SD = 0.66), and organizational innovation (M = 4.21, SD = 0.57). The findings suggest that employees generally perceived the presence of strong cognitive capabilities and innovation-oriented behaviors within their organizations.

4.3 Reliability Analysis

Reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the study variables. The results demonstrated acceptable reliability values for all constructs. Insight reported a Cronbach's Alpha value of 0.861, foresight showed 0.883, innovative work behavior reported 0.901, and organizational innovation demonstrated 0.892. Since all reliability values exceeded the recommended threshold of 0.70, the measurement scales were considered highly reliable and internally consistent.

4.4 Correlation Analysis

Pearson correlation analysis demonstrated significant positive relationships among all study variables. Insight showed a strong positive correlation with organizational innovation ($r = 0.654$, $p < 0.01$), while foresight also demonstrated a significant positive relationship with organizational innovation ($r = 0.682$, $p < 0.01$). Innovative work behavior exhibited the strongest correlation with organizational innovation ($r = 0.721$, $p < 0.01$). These findings suggest that higher levels of insight, foresight, and innovative work behavior are associated with stronger organizational innovation outcomes.

4.5 Regression Analysis

Multiple regression analysis was performed to examine the impact of insight, foresight, and innovative work behavior on organizational innovation. The results revealed that insight had a significant positive effect on organizational innovation ($\beta = 0.341$, $t =$

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9.214, $p < 0.001$). Similarly, foresight demonstrated a strong positive impact on organizational innovation ($\beta = 0.412$, $t = 11.028$, $p < 0.001$). Innovative work behavior also significantly influenced organizational innovation ($\beta = 0.296$, $t = 8.745$, $p < 0.001$). The overall regression model was statistically significant with an R^2 value of 0.610, indicating that approximately 61.0% of the variance in organizational innovation was explained by the independent variables

4.6 Moderation Analysis

Moderation analysis revealed that innovative work behavior significantly strengthened the relationship between insight and organizational innovation. The interaction term between insight and innovative work behavior was statistically significant ($\beta = 0.184$, $t = 6.451$, $p < 0.001$). The findings indicate that employees possessing higher levels of innovative work behavior were more capable of transforming insight into practical innovation outcomes within engineering organizations.

Similarly, moderation analysis further demonstrated that innovative work behavior significantly moderated the relationship between foresight and organizational innovation. The interaction effect was positive and statistically significant ($\beta = 0.213$, $t = 7.128$, $p < 0.001$). The results suggest that employees with strong foresight capabilities contribute more effectively toward organizational innovation when they actively engage in innovative work behaviors.

4.7 Hypotheses Testing Summary

The hypotheses testing results confirmed that all proposed hypotheses were supported. Insight significantly influenced organizational innovation, supporting H1. Foresight also demonstrated a significant positive effect on organizational innovation, supporting H2. Furthermore, innovative work behavior significantly moderated the relationship between insight and organizational innovation as well as the relationship between foresight and organizational innovation, thereby supporting H3 and H4 respectively.

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4.8 Findings

The findings of this study provide strong empirical evidence that both insight and foresight significantly influence organizational innovation, while innovative work behavior strengthens these relationships. These results not only support the proposed theoretical model but also align with and extend existing literature in cognitive psychology, strategic foresight, and innovation management, particularly within the context of public sector engineering organizations in developing economies.

The first major finding confirms that insight has a significant positive impact on organizational innovation. This result is consistent with the cognitive psychology literature, which emphasizes that insight enhances creative problem-solving through restructuring of knowledge and recognition of hidden patterns (Kounios & Beeman, 2014; Mumford et al., 2012). Similar studies argue that individuals with high cognitive insight are more capable of reframing complex problems and generating novel solutions (Dane, 2010). The present study supports these arguments but further extends them by validating the role of insight in a public sector engineering context in Pakistan, which has been relatively underexplored in prior research.

However, this finding also offers a contextual contrast to some organizational innovation studies that emphasize structural and technological drivers over cognitive factors. For instance, innovation research grounded in systems and technology perspectives often prioritizes R&D investment, digital infrastructure, and formal innovation systems as primary drivers of innovation (OECD, 2018). The current study challenges this narrow structural view by demonstrating that employee-level cognitive capabilities (insight) play a statistically stronger and more direct role in shaping innovation outcomes, particularly in environments where structural constraints are high, such as bureaucratic public sector organizations.

The second key finding indicates that foresight has a stronger positive impact on organizational innovation than insight. This result is strongly supported by strategic

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foresight literature, which argues that the ability to anticipate future trends, technological shifts, and environmental uncertainties is a critical driver of innovation and organizational adaptability (Rohrbeck & Kum, 2018; Vecchiato, 2015). Previous empirical studies also suggest that foresight enhances strategic agility, scenario planning, and innovation capacity in dynamic environments (Bishop et al., 2007).

What makes the present finding particularly significant is that it extends foresight theory into a developing country engineering context, where uncertainty and volatility are higher due to economic instability and technological gaps. While prior research in developed economies emphasizes foresight as a strategic corporate tool, this study demonstrates that foresight is equally critical at the employee cognitive level in public engineering organizations, where formal strategic foresight systems are often weak or underdeveloped. This finding therefore bridges a gap between macro-level foresight theory and micro-level employee cognition.

The third finding confirms that innovative work behavior significantly moderates the relationship between insight and organizational innovation. This result is consistent with Janssen (2000), who conceptualized innovative work behavior as the behavioral execution of creativity, involving idea generation, promotion, and implementation. Similarly, Scott and Bruce (1994) argue that innovation is not completed at the idea stage but requires behavioral commitment for implementation.

However, the current study extends this literature by empirically demonstrating that even high levels of insight cannot fully translate into innovation unless employees actively engage in innovative behavior. This finding supports the micro-foundations perspective of innovation, which argues that organizational outcomes emerge from the interaction between cognition and behavior (Felin et al., 2015). In contrast to some earlier research that treats creativity and innovation as primarily cognitive outcomes, this study provides evidence that behavior is a necessary activation mechanism for cognitive potential.

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The fourth finding reveals that innovative work behavior also moderates the relationship between foresight and organizational innovation. This finding aligns with behavioral innovation theory, which emphasizes that future-oriented thinking must be complemented by proactive action to generate organizational outcomes (Janssen, 2000). It also supports Rohrbeck and Kum (2018), who argue that foresight without implementation mechanisms leads only to "anticipatory knowledge" rather than real innovation. Importantly, this result extends prior research by demonstrating that foresight is not automatically converted into innovation even when employees can accurately anticipate future trends. Instead, innovation emerges when foresight is combined with active experimentation, idea promotion, and implementation behavior. This provides a more nuanced understanding than traditional foresight literature, which often assumes a direct link between foresight and innovation outcomes.

Overall, the findings collectively support the argument that organizational innovation is not solely driven by structural or technological factors, as emphasized in traditional innovation literature (Crossan & Apaydin, 2010), but is fundamentally a cognitive–behavioral process embedded in employee actions. The study strengthens the knowledge-based view (Grant, 1996) by empirically demonstrating that knowledge alone is insufficient unless it is activated through behavior.

Furthermore, the results provide strong support for micro-foundations theory (Felin et al., 2015), which argues that organizational capabilities emerge from individual-level cognition and behavior. The present findings extend this theory by showing that cognitive capabilities (insight and foresight) and behavioral mechanisms (IWB) interact dynamically rather than operating independently.

In summary, while prior literature has separately established the importance of cognition and behavior in innovation, this study integrates both dimensions and empirically demonstrates their interactive effect in a developing country public sector engineering context. This represents a significant theoretical advancement in understanding how

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innovation emerges under conditions of institutional constraints, technological uncertainty, and organizational rigidity.

4.9 Conclusion

The study concludes that both insight and foresight are critical determinants of organizational innovation in Pakistan's engineering industry. Employees who demonstrate higher levels of insight are more capable of understanding complex organizational problems, identifying hidden opportunities, and generating creative solutions. At the same time, employees who possess strong foresight capabilities are better able to anticipate future trends, prepare for uncertainties, and align organizational activities with long-term strategic directions. Together, these cognitive capabilities form a strong intellectual foundation for innovation within engineering organizations.

However, the study also concludes that cognitive capabilities alone are not sufficient to ensure innovation unless they are supported by actual behavioral engagement. Innovative work behavior plays a crucial role in transforming cognitive abilities into tangible innovation outcomes by encouraging employees to generate, promote, and implement new ideas within their organizations. The moderating effect of innovative work behavior confirms that innovation is a behavioral process as much as it is a cognitive one. Therefore, organizational innovation should be understood as a multidimensional phenomenon emerging from the interaction of cognition and behavior. The study provides strong evidence that organizations can enhance innovation performance by simultaneously developing employees' cognitive capabilities (insight and foresight) and encouraging innovative behaviors through supportive organizational environments. From a theoretical standpoint, the study strengthens the relevance of knowledge-based view and micro foundations theory by demonstrating that innovation is deeply rooted in individual-level cognitive and behavioral processes.

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4.10 Research Limitations and Future Dimensions

Despite its significant contributions, this study is subject to several limitations that should be acknowledged when interpreting the findings. First, the study employed a cross-sectional research design, meaning that data were collected at a single point in time. As a result, the study is unable to capture changes in employee cognition, behavior, and innovation over time. Longitudinal research would be more suitable for understanding how insight, foresight, and innovative behavior evolve and influence innovation in the long run.

Second, the study relied on self-reported data collected through structured questionnaires. While this method is widely used in behavioral research, it may introduce common method bias, social desirability bias, and perceptual subjectivity. Respondents may have overestimated or underestimated their cognitive capabilities or innovative behaviors, which could affect the accuracy of the results.

Third, the study was geographically limited to federal public sector engineering organizations in Pakistan. Although the sample size was relatively large, the findings may not be fully generalizable to private sector organizations, other industries, or international contexts where organizational structures, cultures, and innovation dynamics may differ significantly.

Fourth, the study used convenience sampling due to accessibility constraints. While this approach allowed the researcher to collect a large dataset efficiently, it may limit the representativeness of the sample and introduce selection bias. A probability-based sampling technique could provide more generalizable results in future studies.

Fifth, the study focused only on three main constructs: insight, foresight, and innovative work behavior. Other potentially important variables such as leadership style, organizational culture, psychological safety, digital transformation capability, and employee motivation were not included in the model. This limits the explanatory scope of

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the study, as organizational innovation is a complex phenomenon influenced by multiple contextual and psychological factors.

Based on the findings and limitations of this study, several directions for future research can be identified. Future studies should consider employing longitudinal research designs to examine how the relationships between insight, foresight, and innovation evolve over time. Such designs would allow researchers to better understand causal relationships and developmental patterns in employee cognition and innovation behavior.

Additionally, future research should extend the current model to different industries such as healthcare, information technology, edu, and manufacturing. Comparative studies across sectors would provide deeper insights into how industry context influences the role of cognitive capabilities and innovative work behavior in driving innovation.

Future studies should also incorporate additional mediating and moderating variables to develop a more comprehensive understanding of organizational innovation. Variables such as transformational leadership, psychological safety, organizational learning culture, employee engagement, and digital readiness could significantly enhance the explanatory power of future models.

Moreover, qualitative and mixed-method research approaches should be encouraged to explore the underlying mechanisms through which insight and foresight are developed and translated into innovation. Qualitative insights from interviews or case studies could provide richer contextual understanding that complements quantitative findings.

Future research should also consider multi-level analysis involving individual, team, and organizational levels to capture the complexity of innovation processes more effectively. Since innovation is influenced by interactions across multiple levels, multi-level modeling would provide a more holistic understanding.

Finally, replication of this study in Pakistan's private sector engineering firms would be highly valuable. Comparing public and private sector organizations would help identify

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structural and cultural differences in how cognitive capabilities and innovative behaviors influence innovation outcomes.

References

Alateeg, S., & Alhammadi, A. (2024). The role of employee engagement towards innovative work behavior mediated by leadership in small businesses. International Journal of Advanced and Applied Sciences, 11(2), 145-156.

Abun, D., Ruadap-Macaspac, L. G., Valdez, E. B., & Fredolin, J. P. (2023). The effect of innovative work environment on the innovative work behavior of employees. International Journal of Research in Business and Social Science, 12(3), 140-158.

AlEssa, H. S., & Durugbo, C. M. (2022). Systematic review of innovative work behavior concepts and contributions. Management Review Quarterly, 72(4), 1171-1208.

Bishop, P., Hines, A., & Collins, T. (2007). The current state of scenario development: An overview of techniques. *Foresight*, 9(1), 5–25. https://doi.org/10.1108/14636680710727516

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154–1191. https://doi.org/10.1111/j.1467-6486.2009.00880.x

Dane, E. (2010). Reconsidering the trade-off between expertise and flexibility: A cognitive entrenchment perspective. *Academy of Management Review*, 35(4), 579–603. https://doi.org/10.5465/amr.35.4.zok579

Felin, T., Foss, N. J., & Ployhart, R. E. (2015). The microfoundations movement in strategy and organization theory. *Academy of Management Annals*, 9(1), 575–632. https://doi.org/10.5465/19416520.2015.1007651

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122. https://doi.org/10.1002/smj.4250171110

Janssen, O. (2000). Job demands, perceptions of effort–reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73(3), 287–302. https://doi.org/10.1348/096317900167038

Kounios, J., & Beeman, M. (2014). The cognitive neuroscience of insight. *Annual Review of Psychology*, 65, 71–93. https://doi.org/10.1146/annurev-psych-010213-115154

Mumford, M. D., Medeiros, K. E., & Partlow, P. J. (2012). Creative thinking: Processes, strategies, and knowledge. *The Journal of Creative Behavior*, 46(1), 30–47. https://doi.org/10.1002/jocb.003

OECD. (2018). *Oslo manual 2018: Guidelines for collecting, reporting and using data on innovation* (4th ed.). OECD Publishing. https://doi.org/10.1787/9789264304604-en

Rohrbeck, R., & Kum, M. E. (2018). Corporate foresight and its impact on firm performance: A longitudinal analysis. *Technological Forecasting and Social Change*, 129, 105–116. https://doi.org/10.1016/j.techfore.2017.10.013

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37(3), 580–607. https://doi.org/10.2307/256701

Al-Asr International Research Journal of Islamic Studies
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ISSN E: (2790-7694)
ISSN P: (2790-7686)
Published:
June 30, 2025

Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
Vecchiato, R. (2015). Creating value through foresight: First mover advantages and strategic agility. *Technological Forecasting and Social Change*, 101, 25–36. https://doi.org/10.1016/j.techfore.2014.10.016