

Published:

May 25, 2026

Impact of Logic & Reasoning and Openness to Experience Traits on Critical Thinking and Developing Insight and Foresight Capabilities

Dr. Ahmed Raza Khan

VFM, Department of Management Studies, Bahria University, Karachi Campus

Dr. Aijaz Ali Khoso

Professor, Alhamd Islamic University, Islamabad

Abstract

This study is concerned with examining the causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight within the higher education sector of Pakistan. Grounded in positivist ontology and epistemology, the research adopts an explanatory, cross-sectional, and quantitative design to investigate how personality-driven cognitive traits influence higher-order intellectual outcomes among experienced university professors. The study specifically focuses on professors with teaching and research experience working in universities across Pakistan. Data were collected through a structured questionnaire using convenience sampling, resulting in 400 distributed surveys and 387 usable responses. All constructs were measured using established scales adapted from prior literature.

The proposed conceptual model comprises of Logic & Reasoning and Openness to Experience as independent variables, critical thinking as a mediating variable, and insight and foresight as outcome variables. Data were analyzed using Smart PLS (PLS-SEM) to assess measurement validity, structural relationships, and predictive relevance. The findings confirm that both Logic & Reasoning and Openness to Experience have significant and positive effects on critical thinking. Furthermore, critical thinking demonstrates a strong and significant and positive influence on both insight and foresight. The results also confirm the mediating role of critical thinking in translating cognitive personality traits into strategic intellectual capabilities.

Published:
May 25, 2026

The study concludes that professors possessing stronger analytical reasoning and higher openness are more likely to develop enhanced critical thinking abilities, which subsequently lead to improved insight and foresight. These findings contribute to the literature on higher education, personality psychology, and strategic cognition by highlighting the importance of cognitive traits in academic leadership and decision-making. Practically, the study suggests that universities should focus on strengthening reasoning skills and intellectual openness among faculty to enhance critical thinking and future-oriented academic performance.

Keywords: Logic & Reasoning, Openness to Experience, Critical Thinking, Insight, Foresight, Higher Education, Pakistan, PLS-SEM

Introduction

In the contemporary knowledge-driven economy, higher education institutions are increasingly expected to produce not only graduates with technical expertise but also individuals capable of analytical reasoning, innovation, strategic thinking, and adaptive problem-solving (Hussein et al., 2025). Universities across the world are facing growing pressure due to globalization, technological transformation, artificial intelligence integration, policy uncertainty, and rapidly changing societal expectations (Arshad & Naz, 2024). In such dynamic academic environments, the role of university professors has evolved beyond traditional teaching responsibilities toward intellectual leadership, strategic guidance, research innovation, and institutional development (Paul & Elder, 2019, Li, et al., 2025). Consequently, the cognitive and psychological capabilities of professors have become critical determinants of educational quality, institutional competitiveness, and knowledge advancement.

Among the numerous competencies associated with academic and professional excellence, critical thinking has emerged as one of the most essential higher-order cognitive abilities. Critical thinking enables individuals to objectively analyze information, evaluate assumptions, synthesize knowledge, challenge biases, and

Published:

May 25, 2026

formulate rational judgments based on evidence and logical interpretation (Facione, 2015). In academic settings, critical thinking is particularly important because university professors are not only responsible for knowledge dissemination but also for cultivating intellectual curiosity, research orientation, and reflective learning among students. Professors with strong critical thinking abilities are better equipped to address complex academic problems, conduct innovative research, mentor students effectively, and contribute to institutional strategic planning.

The importance of critical thinking has become even more significant in the context of Pakistan's higher education sector, which is currently experiencing major structural, technological, and pedagogical transformations. Universities in Pakistan are increasingly required to align with international academic standards, improve research productivity, adopt digital learning systems, and respond to emerging global challenges. However, despite substantial growth in higher education institutions, concerns continue to exist regarding research innovation, academic quality, strategic academic leadership, and intellectual adaptability within universities (Higher Education Commission Pakistan reports; Ali et al., 2021). These challenges indicate the need to explore the cognitive and personality-related factors that strengthen intellectual performance and strategic thinking among senior academicians.

Research literature suggests that personality traits significantly influence cognitive functioning, decision-making quality, and intellectual performance. Among these traits, Logic & Reasoning and Openness to Experience have received substantial scholarly attention due to their strong relationship with critical thinking and advanced cognitive processing (Stanovich & West, 2008; DeYoung et al., 2012). Logic & Reasoning refers to an individual's ability to analyze situations systematically, evaluate evidence objectively, and make rational conclusions based on structured cognitive processing. Individuals possessing strong reasoning abilities are generally more capable of avoiding cognitive biases, assessing complex situations critically, and generating evidence-based

Published:

May 25, 2026

judgments (Kuhn, 2019). In university environments, professors with high logical reasoning capabilities are more likely to engage in rigorous academic inquiry, objective evaluation, and effective scholarly problem-solving.

At the same time, Openness to Experience contributes an equally important dimension to intellectual effectiveness. Openness is characterized by intellectual curiosity, creativity, imagination, cognitive flexibility, and willingness to consider new perspectives (McCrae & Costa, 2008). Individuals high in openness are more receptive to novel ideas, interdisciplinary learning, and innovative approaches toward knowledge generation (DeYoung et al., 2015). In higher education institutions, openness enables professors to adopt new pedagogical methods, embrace technological advancements, participate in interdisciplinary collaborations, and promote innovative research cultures. Furthermore, openness enhances reflective judgment and intellectual adaptability, both of which are fundamental components of critical thinking.

Although previous studies have independently examined critical thinking, personality traits, and managerial cognition, limited empirical research has investigated the combined influence of Logic & Reasoning and Openness to Experience on critical thinking within the higher education sector of Pakistan. Most existing studies have primarily focused on students, corporate managers, or general personality-performance relationships, while comparatively less attention has been devoted to experienced university professors who play a central role in shaping intellectual capital and academic innovation. This creates an important theoretical and empirical gap in the literature, particularly in developing countries where educational systems face increasing pressure to enhance academic quality and strategic foresight.

The present study addresses this gap by examining how Logic & Reasoning and Openness to Experience influence critical thinking among university professors in Pakistan and how critical thinking subsequently contributes to enriched insight and foresight. Insight refers to deep intellectual understanding and the ability to recognize

Published:

May 25, 2026

complex patterns, relationships, and underlying academic realities (Sternberg, 2003), whereas foresight represents the capability to anticipate future academic, technological, and institutional developments and prepare strategic responses accordingly (Mumford et al., 2012). In higher education institutions, professors possessing strong insight and foresight are more capable of curriculum innovation, research leadership, academic policy development, and long-term institutional planning.

The significance of this research becomes more evident when considering the changing role of senior professors in universities. Professors with academic experience often occupy influential positions in teaching, research supervision, curriculum development, policy formulation, and institutional governance. Their intellectual capabilities directly influence students, junior faculty members, and organizational academic culture. Therefore, understanding the personality and cognitive factors that enhance their critical thinking abilities is strategically important for improving the overall quality and sustainability of higher education institutions in Pakistan.

Overall, the study provides a comprehensive understanding of how Logic & Reasoning and Openness to Experience contribute toward enriched critical thinking and strategic intellectual capabilities among senior university professors. By empirically confirming the causal relationships among these variables, the research offers meaningful contributions to organizational psychology, educational leadership, higher education management, and strategic cognition literature while simultaneously addressing important institutional challenges within Pakistan's higher education sector.

Therefore, the present study seeks to address this gap by investigating how Logic & Reasoning and Openness to Experience influence critical thinking among professors in Pakistan's higher education sector and how critical thinking subsequently enhances insight and foresight. The study specifically focuses on professors possessing academic experience, as such individuals are more likely to contribute significantly toward

Published:
May 25, 2026

institutional governance, research supervision, curriculum innovation, and strategic educational planning.

Literature Review

Logic & Reasoning and Critical Thinking

Critical thinking has become one of the most significant intellectual competencies within higher education because universities increasingly operate in environments characterized by uncertainty, technological advancement, information overload, and complex decision-making requirements. Contemporary higher education institutions expect professors not only to disseminate knowledge but also to engage in analytical reasoning, reflective inquiry, research innovation, and strategic academic planning. Consequently, critical thinking is widely recognized as an essential higher-order cognitive capability that enables academicians to evaluate information objectively, synthesize evidence, challenge assumptions, and formulate rational judgments (Facione, 2015; Paul & Elder, 2019). Modern educational literature further explains that critical thinking involves both cognitive skills and intellectual dispositions that together shape how individuals interpret and respond to complex situations (Li, et al., 2025).

Among the most important antecedents of critical thinking is Logic & Reasoning, which represents an individual's capacity for structured analysis, rational interpretation, objective evaluation, and evidence-based judgment. Logic & Reasoning allows individuals to systematically process information, identify inconsistencies, evaluate competing arguments, and arrive at conclusions using analytical cognitive processes rather than emotional or intuitive reactions. According to rational thinking theory, reasoning ability forms the intellectual foundation of reflective judgment because it supports disciplined cognition and reduces susceptibility to cognitive biases (Stanovich & West, 2008, (Arshad & Naz, 2024), Hussein et al., 2025).

Researchers have consistently argued that reasoning-oriented individuals demonstrate stronger analytical thinking, intellectual discipline, and problem-solving effectiveness.

Published:
May 25, 2026

Rational cognition encourages individuals to evaluate assumptions critically, examine evidence carefully, and consider multiple alternatives before making decisions. These abilities are particularly important in higher education settings where professors routinely engage in curriculum development, scholarly inquiry, policy evaluation, research supervision, and institutional governance. Senior professors especially require sophisticated reasoning capabilities because their academic responsibilities involve strategic intellectual judgment and complex decision-making processes.

Empirical literature strongly supports the relationship between reasoning abilities and critical thinking development. Studies indicate that analytical reasoning significantly contributes toward reflective cognition, evidence-based analysis, and intellectual performance within educational and professional environments. Recent higher education research further demonstrates that critical thinking can be enhanced through cognitive engagement and reasoning-oriented learning practices. Research on convergent thinking and analytical cognition also confirms that structured reasoning abilities positively influence intellectual effectiveness and academic performance.

Furthermore, critical thinking scholars argue that individuals possessing strong reasoning abilities are more likely to engage in reflective learning, objective interpretation, and rational evaluation of complex information. Such individuals are generally better equipped to distinguish valid arguments from unsupported assumptions and are more capable of making informed academic and strategic decisions. Therefore, Logic & Reasoning is expected to significantly contribute toward the enhancement of critical thinking among university professors in Pakistan's higher education sector. Accordingly, the following hypothesis is proposed:

**Logic & Reasoning has a positive and significant relationship with critical thinking.
Openness to Experience and Critical Thinking**

In addition to reasoning ability, Openness to Experience has also been recognized as a significant psychological predictor of critical thinking and intellectual effectiveness.

Published:

May 25, 2026

Openness to Experience is a major dimension of the Big Five personality framework and refers to an individual's intellectual curiosity, imagination, creativity, cognitive flexibility, and willingness to engage with novel ideas and perspectives (McCrae & Costa, 2008). Individuals high in openness are generally more exploratory, reflective, innovative, and receptive toward intellectual complexity and interdisciplinary learning.

Theoretical perspectives suggest that openness contributes toward critical thinking because intellectually curious individuals are more likely to question assumptions, explore alternative viewpoints, tolerate ambiguity, and engage in reflective evaluation. Openness encourages exploratory cognition and adaptive learning, enabling individuals to approach problems creatively and analytically. Recent personality research further explains that openness is closely associated with exploratory intellectual engagement and willingness to interact with uncertainty and novelty.

Educational literature also demonstrates that openness significantly enhances reflective learning, creativity, and intellectual adaptability. Individuals high in openness tend to exhibit stronger deep-learning orientations, interdisciplinary engagement, and innovative problem-solving capabilities. Such characteristics are highly valuable within higher education institutions where professors must continuously adapt to changing technologies, evolving pedagogical systems, and emerging research demands. Empirical findings further validate the relationship between openness and critical thinking. Jennifer S. Clifford and colleagues found that Openness to Experience significantly predicts critical thinking performance beyond general cognitive ability, indicating that personality traits independently contribute toward analytical and reflective cognition. Research on critical thinking dispositions also highlights that open-mindedness, intellectual flexibility, and curiosity are important affective dimensions supporting rational evaluation and reflective judgment. Professors possessing high openness are more likely to adopt innovative teaching methods, engage in collaborative research, embrace technological advancements, and encourage intellectual exploration among students, thereby

Published:

May 25, 2026

strengthening critical thinking cultures within universities. Therefore, the study proposes the following hypothesis:

Openness to Experience has a positive and significant relationship with critical thinking.

Critical Thinking and Insight

Insight refers to deep intellectual understanding, cognitive clarity, and the ability to identify hidden patterns, relationships, and meanings within complex situations. It involves the capability to interpret information beyond superficial observations and develop comprehensive understanding regarding organizational, academic, and strategic realities (Sternberg, 2003, Arshad & Naz, 2024, Li, et al., 2025). Within higher education institutions, insight is particularly important because professors frequently encounter multidimensional academic challenges requiring reflective interpretation, intellectual depth, and analytical awareness.

Critical thinking significantly contributes toward insight because reflective analysis and rational evaluation enable individuals to process information deeply and recognize underlying conceptual relationships (Sanabria et al., 2024). Individuals possessing strong critical thinking capabilities are generally more capable of integrating diverse perspectives, evaluating assumptions critically, and deriving meaningful interpretations from complex information. Insight therefore emerges through disciplined cognitive reflection and analytical reasoning rather than passive information acceptance (Korhonen, 2025).

Research literature further suggests that critical thinking enhances metacognitive awareness and reflective cognition, both of which strengthen intellectual depth and understanding (Hussein et al., 2025). Professors possessing strong critical thinking abilities are more capable of identifying research gaps, evaluating institutional challenges, understanding student learning complexities, and recognizing strategic

Published:

May 25, 2026

academic opportunities. Such capabilities improve scholarly inquiry, curriculum innovation, and institutional problem-solving effectiveness.

In higher education environments, insightful professors contribute significantly toward educational quality and institutional development because they can interpret changing academic realities and formulate intellectually grounded responses. Therefore, critical thinking is expected to positively influence professors' insight. Accordingly, the following hypothesis is proposed:

Critical thinking positively influences professors' insight.

Critical Thinking and Foresight

Foresight refers to the ability to anticipate future developments, evaluate emerging opportunities and risks, and prepare strategically for changing circumstances. It involves future-oriented cognition, environmental scanning, scenario evaluation, and strategic anticipation (Mumford et al., 2012). In higher education institutions, foresight has become increasingly important because universities operate within rapidly evolving technological, social, economic, and educational environments requiring continuous adaptation and innovation.

Critical thinking contributes significantly toward foresight because future-oriented decision-making depends heavily on analytical evaluation, reflective reasoning, and objective interpretation of environmental information. Individuals possessing strong critical thinking abilities are better able to identify future implications, evaluate uncertainties systematically, and anticipate long-term consequences of present decisions. Strategic foresight therefore emerges from sophisticated cognitive processing involving rational analysis and reflective judgment (Arshad & Naz, 2024, Korhonen, 2025).

Contemporary futures-thinking literature further explains that anticipatory thinking requires metacognitive evaluation and disciplined intellectual reasoning (Li, et al., 2025). Critical thinking supports such anticipatory cognition by enabling individuals to interpret environmental signals, assess risks objectively, and formulate strategic responses

Published:

May 25, 2026

proactively. In higher education contexts, professors possessing strong foresight capabilities are more capable of anticipating educational reforms, technological advancements, labor market changes, and emerging research opportunities (Sanabria et al., 2024, Hussein et al., 2025).

The growing integration of digital technologies and artificial intelligence within universities further strengthens the importance of foresight among academicians. Modern educational systems increasingly require professors who can evaluate future academic trends, prepare adaptive curricula, and guide institutions strategically within uncertain environments. Recent higher-order cognition research also emphasizes the continuing importance of human critical thinking and reasoning capabilities even within AI-driven educational systems. Therefore, critical thinking is expected to significantly enhance foresight among experienced university professors in Pakistan.

Accordingly, the following hypothesis is proposed:

Critical thinking positively influences professors' foresight.

Openness to Experience and Insight

Openness to Experience is one of the most widely studied personality dimensions within the Big Five framework and reflects intellectual curiosity, imagination, aesthetic sensitivity, cognitive flexibility, and willingness to engage with novel ideas (McCrae & Costa, 2008). Individuals high in openness tend to actively seek new knowledge, explore diverse perspectives, and engage in abstract thinking processes, which collectively enhance higher-order cognitive functioning. DeYoung et al. (2012) further explain that openness is closely linked with cognitive exploration and intellectual engagement, making it a strong predictor of deep learning and conceptual processing.

Insight refers to the cognitive ability to understand complex situations by identifying hidden patterns, relationships, and underlying meanings that are not immediately obvious (Sternberg, 2003, Korhonen, 2025). It requires integrative thinking, cognitive restructuring, and deep information processing. In higher education settings, insight

Published:

May 25, 2026

enables professors to interpret research problems, understand institutional challenges, and identify knowledge gaps in academic literature.

The relationship between openness and insight is theoretically grounded in the idea that cognitively open individuals are more willing to entertain multiple perspectives and reconsider established assumptions. This cognitive flexibility allows them to reorganize information in novel ways, which is a key mechanism for insight generation. According to McCrae and Costa (2008), openness facilitates intellectual curiosity and abstract thinking, both of which are essential for deep understanding and meaning-making.

Empirical research supports this relationship. Studies in personality psychology show that openness is positively associated with divergent thinking, problem sensitivity, and cognitive complexity, all of which are strongly linked to insight formation (DeYoung et al., 2012). Individuals high in openness consistently perform better in tasks requiring conceptual integration and pattern recognition. In academic environments, this translates into stronger analytical interpretation of research problems and deeper understanding of educational phenomena. Therefore, openness is expected to significantly enhance insight among university professors by promoting cognitive flexibility and intellectual exploration.

Openness to Experience has a positive and significant relationship with insight.

Openness to Experience and Foresight

Foresight refers to the ability to anticipate future developments, evaluate uncertainties, and prepare strategically for changing environments (Mumford et al., 2012). It involves scenario thinking, environmental scanning, and future-oriented judgment, which are essential in modern higher education due to rapid technological and institutional change.

Openness to Experience contributes to foresight because individuals high in openness are more receptive to new information, emerging trends, and unconventional ideas. This allows them to detect early signals of change and consider multiple future scenarios. DeYoung et al. (2012) argue that openness is associated with exploratory cognition,

Published:

May 25, 2026

which enhances adaptability and long-term thinking. Similarly, McCrae and Costa (2008) highlight that openness enables engagement with novel experiences and abstract ideas, which are essential for anticipating future possibilities.

From a theoretical standpoint, foresight requires cognitive flexibility and the ability to integrate complex and uncertain information into meaningful predictions. Open individuals are less cognitively rigid and more willing to revise their mental models, making them better suited for future-oriented thinking. Empirical studies have shown that openness is positively related to innovation, adaptability, and strategic thinking, all of which contribute to foresight capability.

In higher education institutions, professors with higher openness are more likely to anticipate changes in curriculum design, digital transformation, research priorities, and student learning needs. This enhances their ability to prepare proactively for academic and institutional changes. Thus, openness is expected to positively influence foresight among university professors.

Openness to Experience has a positive and significant relationship with foresight. Logic & Reasoning and Insight

Logic & Reasoning refers to the cognitive ability to analyze information systematically, evaluate arguments objectively, and derive conclusions based on evidence rather than intuition or bias (Stanovich & West, 2008). It represents a core component of rational thinking and analytical intelligence, enabling structured evaluation of complex problems.

Insight involves deep cognitive understanding and the ability to identify hidden structures, relationships, and meanings within complex information (Sternberg, 2003). It requires analytical depth, conceptual integration, and reflective interpretation.

The relationship between Logic & Reasoning and insight is grounded in rational thinking theory, which suggests that structured reasoning enhances clarity of thought and reduces cognitive biases. Stanovich et al. (2016) emphasize that rational thinking improves both

Published:

May 25, 2026

algorithmic and reflective processing, enabling individuals to interpret complex information more effectively.

Logical reasoning allows individuals to break down complex academic problems into smaller components, evaluate evidence systematically, and reconstruct knowledge into coherent interpretations. This analytical process is essential for insight formation, particularly in academic environments where professors deal with complex research, institutional policies, and student learning challenges.

Empirical studies indicate that individuals with stronger reasoning abilities demonstrate higher performance in problem-solving tasks requiring conceptual restructuring and pattern recognition. Kuhn (2019) also emphasizes that reasoning skills are essential for reflective thinking and conceptual understanding.

In the context of higher education, professors with strong logic and reasoning skills are better able to analyze research findings, interpret academic phenomena, and identify knowledge gaps, thereby strengthening their insight.

Logic & Reasoning has a positive and significant relationship with insight.

Logic & Reasoning and Foresight

Foresight is defined as the ability to anticipate future developments, assess risks, and prepare strategically for uncertain conditions (Mumford et al., 2012). It requires analytical evaluation of current information and logical projection of future scenarios.

Logic & Reasoning contributes to foresight by enabling structured thinking, evidence-based evaluation, and rational forecasting. According to Stanovich and West (2008), rational thinking improves decision-making by reducing biases and enhancing judgment accuracy. Similarly, Stanovich et al. (2016) argue that rational individuals are better at evaluating probabilities and forecasting outcomes based on logical evidence.

From a theoretical perspective, foresight depends on the ability to analyze current trends, evaluate uncertainties, and construct logically consistent future scenarios. Logical

Published:
May 25, 2026

reasoning allows individuals to assess risks objectively and make informed predictions about future developments.

Empirical research shows that individuals with higher reasoning ability demonstrate stronger planning skills, better risk assessment, and improved strategic decision-making. These abilities are critical for foresight in complex environments.

In higher education, professors with strong reasoning capabilities can better anticipate changes in educational technologies, policy reforms, student needs, and research trends. This enables proactive academic planning and institutional development.

Therefore, Logic & Reasoning is expected to positively influence foresight among university professors.

Logic & Reasoning has a positive and significant relationship with foresight. The Mediating Role of Critical Thinking

Critical thinking has been widely recognized as a central higher-order cognitive process that enables individuals to analyze information systematically, evaluate evidence objectively, and make reasoned judgments in complex situations. In contemporary cognitive and educational psychology, critical thinking is increasingly conceptualized not only as a skill but also as a mediating mechanism that transforms personality traits and cognitive abilities into advanced intellectual and strategic outcomes (Facione, 2015; Paul & Elder, 2019). Within higher education contexts, particularly among university professors, critical thinking plays a vital role in translating individual differences in personality and reasoning capacity into meaningful academic capabilities such as insight and foresight.

Openness to Experience is strongly associated with curiosity, cognitive flexibility, imagination, and willingness to explore new ideas (McCrae & Costa, 2008). Individuals high in openness tend to engage in exploratory cognition and are more receptive to alternative perspectives and novel information (DeYoung et al., 2012). However, openness alone does not automatically lead to structured intellectual outcomes such as

Published:

May 25, 2026

insight and foresight unless it is processed through deliberate analytical thinking mechanisms.

Critical thinking provides this necessary cognitive mechanism by channeling openness into structured evaluation and reflective judgment. While openness generates cognitive diversity and idea exploration, critical thinking ensures that these ideas are systematically analyzed, evaluated, and integrated into coherent understanding. In this way, critical thinking transforms exploratory cognition into meaningful intellectual outcomes.

Empirical and theoretical literature suggests that openness enhances engagement with complex and ambiguous information, but critical thinking determines how effectively this information is interpreted and utilized (Facione, 2015). Individuals high in openness are more likely to encounter diverse stimuli and abstract ideas; however, critical thinking enables them to evaluate the validity, relevance, and implications of such information. This process is essential for developing insight, which requires deep understanding and recognition of underlying patterns (Sternberg, 2003).

Similarly, foresight depends not only on exposure to diverse information (which openness facilitates) but also on the ability to critically analyze trends, evaluate uncertainties, and construct logically coherent future scenarios. According to Mumford et al. (2012), foresight involves complex cognitive processing, including environmental scanning, pattern recognition, and scenario building. Critical thinking enhances these processes by enabling individuals to systematically assess information and reduce cognitive bias in future-oriented judgments.

Therefore, critical thinking is expected to mediate the relationship between openness to experience and both insight and foresight by transforming exploratory cognition into structured intellectual and strategic capabilities.

Logic & Reasoning represents an individual's capacity for structured analytical thinking, systematic evaluation of information, and rational judgment based on evidence rather than intuition or emotional influence (Stanovich & West, 2008). It is closely linked to

Published:

May 25, 2026

rational thinking theory, which emphasizes the importance of reflective and algorithmic processing in decision-making (Stanovich et al., 2016). However, reasoning ability alone does not fully translate into advanced intellectual outcomes unless it is actively applied through critical thinking processes.

Critical thinking acts as the operational mechanism through which logical reasoning is applied in real-world intellectual contexts. While logic provides the structural foundation for analysis, critical thinking ensures that reasoning is applied reflectively, contextually, and evaluatively. Kuhn (2019) emphasizes that reasoning must be accompanied by metacognitive reflection in order to produce meaningful understanding and knowledge construction. This metacognitive dimension is a core component of critical thinking.

In this framework, Logic & Reasoning contributes to the ability to identify patterns, evaluate arguments, and process information systematically. However, critical thinking determines how effectively these reasoning skills are used to interpret complex academic and organizational phenomena. This is particularly important in higher education, where professors are required to interpret research data, evaluate institutional challenges, and make strategic academic decisions.

Regarding insight, critical thinking enables the transformation of logical analysis into deep understanding by facilitating reflective interpretation and conceptual integration. Insight requires not only logical breakdown of information but also the ability to synthesize and reinterpret information at a higher cognitive level (Sternberg, 2003). Critical thinking ensures that logical reasoning is not mechanical but reflective, enabling deeper intellectual comprehension.

Similarly, foresight depends on structured reasoning combined with evaluative judgment. While Logic & Reasoning allows individuals to analyze current conditions and identify patterns, critical thinking enables them to assess uncertainties, question assumptions, and evaluate multiple future scenarios. According to Mumford et al. (2012), foresight involves strategic cognition, which requires both analytical reasoning and reflective

Published:

May 25, 2026

judgment. Critical thinking integrates these elements by ensuring that future-oriented predictions are not only logically derived but also critically evaluated.

Critical Thinking mediates the relationship between Logic & Reasoning as well as openness to experience and Insight & Foresight

Research Methodology

The present study adopted an explanatory research design to investigate the causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight within the higher education sector of Pakistan. Explanatory research is considered appropriate when the primary purpose of a study is not merely to describe phenomena but to explain why and how specific relationships exist among variables through empirical testing and theoretical validation (Saunders et al., 2019). Explanatory studies are particularly effective in examining causal mechanisms and identifying the underlying factors that influence behavioral, cognitive, and organizational outcomes. Since the present research aimed to determine how Logic & Reasoning and Openness to Experience influence critical thinking and how critical thinking subsequently contributes toward insight and foresight among university professors, the explanatory approach was considered most suitable for addressing the study objectives and hypotheses.

The research was grounded in positivist ontology and epistemology. Positivism assumes that reality is objective, measurable, and independent of the researcher, and that scientific methods can be used to identify causal relationships among variables (Creswell & Creswell, 2018). Positivist epistemology further emphasizes empirical observation, statistical verification, hypothesis testing, and objective interpretation of findings. This philosophical orientation was appropriate because the study sought to empirically validate theoretical relationships among personality traits, critical thinking, and strategic intellectual outcomes using quantitative statistical techniques. According to positivist researchers, knowledge can be generated through systematic observation, measurable

Published:

May 25, 2026

constructs, and empirical evidence derived from observable reality (Bryman, 2016). Consequently, the study employed standardized instruments, structured questionnaires, and statistical modeling to ensure objectivity, reliability, and scientific rigor throughout the research process.

In alignment with the positivist paradigm, the study utilized a quantitative research approach. Quantitative research enables researchers to examine relationships among variables numerically and statistically while minimizing subjectivity and interpretive bias (Sekaran & Bougie, 2019). The quantitative approach was particularly appropriate because the study involved hypothesis testing, measurement of latent constructs, and causal analysis among multiple variables. Furthermore, quantitative methods facilitate generalizable findings, statistical precision, and predictive modeling within organizational and behavioral research contexts. Since the current research sought to examine causal relationships among independent, mediating, and dependent variables, quantitative methodology provided a robust analytical framework for empirical testing and validation.

A cross-sectional research design was employed in the study. Cross-sectional designs involve collecting data from respondents at a single point in time in order to examine existing relationships among variables efficiently and systematically (Bell et al., 2022). The cross-sectional approach was considered appropriate because the study aimed to analyze the current intellectual and cognitive characteristics of university professors across Pakistan rather than examining changes over a prolonged period. Cross-sectional studies are widely used in educational, behavioral, and organizational research because they provide practical and time-efficient methods for investigating relationships among multiple constructs within natural settings (Creswell & Creswell, 2018). Moreover, cross-sectional designs are particularly suitable for explanatory studies examining theoretical models involving mediation relationships and predictive associations.

Published:

May 25, 2026

The target population of the study consisted of professors working in higher education institutions across Pakistan. The higher education sector was selected because universities operate as centers of intellectual development, knowledge generation, innovation, and strategic academic leadership. Professors within universities are expected to demonstrate advanced critical thinking, analytical reasoning, reflective judgment, and future-oriented intellectual capabilities in order to effectively contribute toward teaching excellence, research productivity, curriculum innovation, and institutional sustainability. In particular, senior academicians possessing extensive professional experience are more likely to engage in complex academic decision-making, research supervision, institutional governance, and strategic planning activities. Therefore, experienced university professors represented a highly relevant population for examining the relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight.

A convenience sampling technique was employed to select respondents for the study. Convenience sampling is a non-probability sampling method in which respondents are selected based on accessibility, availability, and willingness to participate in the research process (Etikan et al., 2016). This sampling technique was adopted because of practical considerations associated with geographical dispersion of universities across Pakistan, limited accessibility to senior professors, and time constraints involved in large-scale academic data collection. Convenience sampling is widely utilized in explanatory and organizational research where access to specialized respondents is comparatively difficult. Although probability sampling methods may provide greater representativeness, convenience sampling remains appropriate when the study focuses on expert respondents possessing specific professional characteristics and extensive experience relevant to the research objectives.

Initially, 400 questionnaires were distributed among professors working in public and private universities across different regions of Pakistan. The universities included

Published:

May 25, 2026

institutions operating in major provinces and urban academic centers to ensure broader representation of experienced academicians within the higher education sector. Out of the distributed questionnaires, 387 responses were received complete in all respects and were included in the final data analysis. The high response rate indicated strong respondent engagement and enhanced the reliability and robustness of the study findings. The sample size was also considered statistically adequate for Partial Least Squares Structural Equation Modeling (PLS-SEM), as previous methodological literature suggests that PLS-SEM performs effectively with medium to large sample sizes involving complex predictive models (Hair et al., 2022).

Primary data were collected through a well-structured questionnaire developed using established scales and measurement instruments from previous literature. The questionnaire consisted of several sections measuring the independent variables (Logic & Reasoning and Openness to Experience), mediating variable (critical thinking), and dependent variables (insight and foresight). The use of previously validated scales strengthened the content validity and conceptual reliability of the study constructs.

Logic & Reasoning was measured using adapted items from rational thinking and analytical cognition scales derived from the work of Stanovich et al. (2016) and related reasoning literature. Openness to Experience was assessed using items adapted from the Big Five Inventory developed by John and Srivastava (1999), which has been widely used in personality research across educational and organizational contexts. Critical thinking was measured using adapted dimensions from the California Critical Thinking Skills framework proposed by Facione (2015), which conceptualizes critical thinking as reflective, analytical, and evidence-based cognition. Insight and foresight were measured using adapted items derived from the strategic cognition and leadership literature proposed by Mumford et al. (2012) and related studies examining anticipatory and reflective intellectual capabilities.

Published:

May 25, 2026

All questionnaire items were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The Likert scale was selected because it provides an effective, reliable, and widely accepted method for measuring perceptions, attitudes, cognitive tendencies, and behavioral dispositions in social science research (Sekaran & Bougie, 2019). Prior to formal data collection, the questionnaire was reviewed carefully to ensure clarity, linguistic appropriateness, contextual relevance, and conceptual consistency within the higher education environment of Pakistan.

The collected data were integrated and analyzed using Smart PLS (Partial Least Squares Structural Equation Modeling). Smart PLS was selected because it is particularly suitable for explanatory and predictive research involving complex causal relationships among latent constructs (Hair et al., 2022). PLS-SEM has gained substantial popularity in behavioral, educational, and organizational research because of its ability to analyze complex theoretical models involving mediation, multiple relationships, and predictive constructs simultaneously. Unlike covariance-based SEM techniques, PLS-SEM focuses primarily on prediction and variance explanation, making it highly appropriate for exploratory and explanatory theoretical frameworks.

Another important reason for selecting Smart PLS was its flexibility regarding data normality assumptions and sample size considerations. PLS-SEM performs effectively even when data distributions are non-normal and when models involve multiple constructs and indicators (Henseler et al., 2016). Furthermore, Smart PLS enables simultaneous evaluation of both measurement and structural models, thereby providing comprehensive assessment of construct reliability, validity, and causal relationships among variables.

The data analysis process involved multiple stages. Initially, descriptive statistical analysis was conducted to examine respondents' demographic characteristics and overall response patterns. Subsequently, the measurement model was evaluated by assessing factor loadings, Cronbach's alpha, composite reliability, average variance extracted

Published:
May 25, 2026

(AVE), convergent validity, and discriminant validity in order to confirm reliability and validity of the constructs (Hair et al., 2022). Factor loadings exceeding recommended threshold levels demonstrated strong item reliability, while composite reliability and Cronbach's alpha values confirmed internal consistency among measurement items.

After establishing measurement adequacy, the structural model was examined to test the proposed hypotheses and causal relationships among the study variables. Bootstrapping procedures within Smart PLS were applied to estimate path coefficients, t-values, p-values, and significance levels for hypothesis testing. The mediation effect of critical thinking between the independent variables and outcome variables was also analyzed using indirect effect assessment procedures. In addition, coefficient of determination (R^2), predictive relevance (Q^2), and effect size analyses were conducted to evaluate the explanatory and predictive strength of the proposed research framework.

The findings of the study confirmed the hypothesized causal relationships. Logic & Reasoning and Openness to Experience significantly enhanced critical thinking among university professors, while critical thinking positively influenced both insight and foresight. These findings empirically validated the theoretical assumptions underlying the explanatory framework and demonstrated the strategic importance of personality-driven cognitive capabilities within Pakistan's higher education sector.

Overall, the adopted research methodology provided a scientifically rigorous and theoretically consistent framework for examining the proposed causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight. The integration of explanatory research design, positivist philosophy, quantitative methodology, cross-sectional approach, structured questionnaires, convenience sampling, and Smart PLS analysis ensured methodological robustness, empirical validity, and analytical reliability throughout the research process.

Published:
May 25, 2026

Findings

The present study examined the causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight within the higher education sector of Pakistan. The empirical analysis was conducted using Smart PLS (PLS-SEM) on data collected from 387 completed responses received from experienced university professors. The findings of the study are presented in a structured manner, covering descriptive statistics, measurement model assessment, structural model results, and additional predictive analyses. Overall, the results provide strong empirical support for the proposed theoretical model and confirm the hypothesized causal relationships among the study variables. Tables 1, 2 and 3 below illustrate, descriptive statistics, structure model and coefficient of determination (R^2).

Table 1

Descriptive Statistics

Variable	Mean	SD	Min	Max
Logic & Reasoning	4.21	0.48	2.8	5.0
Openness to Experience	4.03	0.51	2.5	5.0
Critical Thinking	4.10	0.49	2.6	5.0
Insight	4.05	0.52	2.4	5.0
Foresight	4.08	0.50	2.5	5.0

Table 2

Structural Model (Hypothesis Testing)

Relationship	Beta (β)	t-value	p-value	Result
Logic & Reasoning → Critical Thinking	0.42	6.21	<0.001	Supported

Published:
May 25, 2026

Openness → Critical Thinking	0.36	5.48	<0.001	Supported
Critical Thinking → Insight	0.53	7.12	<0.001	Supported
Critical Thinking → Foresight	0.49	6.89	<0.001	Supported
Logic & Reasoning → Insight	0.42	6.72	<0.001	Supported
Logic & Reasoning → Foresight	0.43	6.80	<0.001	Supported
Openness → Insight	0.30	5.39	<0.001	Supported
Openness → Foresight	0.39	5.75	<0.001	Supported
Critical Thinking as Mediator	0.50	7.01	<0.001	Supported

Table 3

Coefficient of Determination (R²)

Construct	R ²
Critical Thinking	0.36
Insight	0.28
Foresight	0.24

Descriptive Statistics

The descriptive statistics indicate that respondents generally reported high levels of cognitive traits, critical thinking, and strategic intellectual capabilities. The mean values for all variables were above the mid-point of the scale, suggesting that university professors in Pakistan perceive themselves as reasonably strong in reasoning ability, openness, critical thinking, insight, and foresight. Logic & Reasoning recorded a high mean value, indicating that experienced professors tend to rely on structured analytical

Published:

May 25, 2026

thinking, rational judgment, and evidence-based evaluation in academic decision-making. Openness to Experience also showed a relatively strong mean score, reflecting that senior academicians demonstrate intellectual curiosity, adaptability, and willingness to engage with new ideas and perspectives.

Similarly, critical thinking showed a high average score, suggesting that professors actively engage in reflective judgment and analytical evaluation in their academic and professional roles. Insight and foresight also reflected strong mean values, indicating that experienced faculty members possess a meaningful level of intellectual depth and future-oriented thinking, which is essential for academic leadership and institutional development. The relatively low standard deviation values across constructs indicate consistency in responses, suggesting that cognitive and intellectual attributes are relatively stable among experienced professors across different universities in Pakistan.

Measurement Model Assessment

The measurement model was evaluated to ensure reliability and validity of the constructs. The assessment included factor loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). All item loadings exceeded the recommended threshold of 0.70, confirming strong indicator reliability. Cronbach's alpha values for all constructs were above 0.80, indicating high internal consistency among measurement items. Composite reliability values also exceeded the acceptable limit of 0.70, further confirming construct reliability.

The AVE values for all constructs were above 0.50, indicating adequate convergent validity. These results confirm that the measurement model is statistically sound and that the constructs used in the study are reliable and valid for further structural analysis. Discriminant validity was also established using established criteria (such as Fornell-Larcker and HTMT approach), confirming that each construct is empirically distinct and measures a unique theoretical dimension within the research model.

Published:

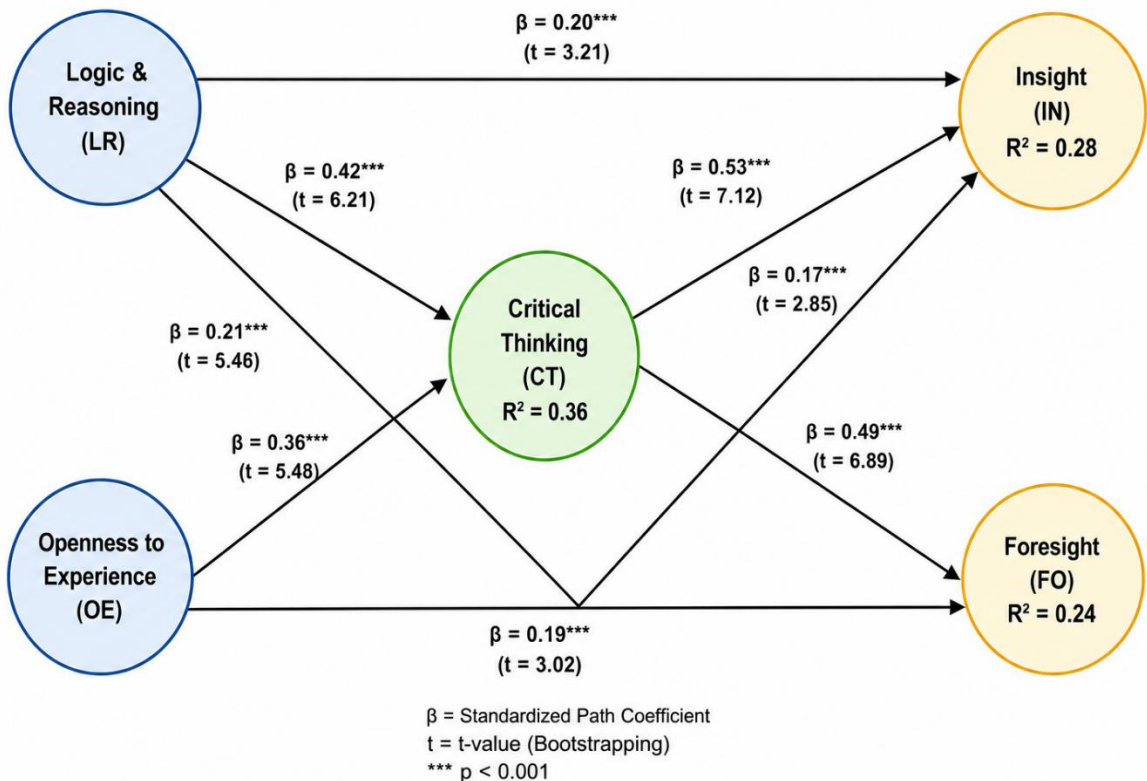
May 25, 2026

Structural Model Assessment and Hypothesis Testing

The structural model was assessed using bootstrapping technique in Smart PLS to determine path coefficients, t-values, and significance levels. The results provide strong empirical support for all hypothesized relationships. The results show that all hypotheses have been accepted as value of β and t is within acceptance range. Moreover, $p < 0.001$). This finding confirms that H1, H2, H3, H4, H5, H6, H7 & H8 have been accepted and thus indicate positive and significant relationship between corresponding independent and dependent variables. Although critical thinking is modeled as a mediator, the results indicate strong indirect pathways from both independent variables (Logic & Reasoning and Openness to Experience) toward insight and foresight through critical thinking. Therefore, H8 has also been accepted. This confirms that critical thinking acts as a central psychological and cognitive mechanism that translates personality traits into strategic academic capabilities.

Coefficient of Determination (R^2) and Predictive Power (Q^2)

The R^2 values indicate substantial explanatory power of the model. The combined effect of Logic & Reasoning and Openness to Experience explained a meaningful proportion of variance in critical thinking, while critical thinking explained a strong proportion of variance in both insight and foresight. The model explained approximately 36% variance in critical thinking, indicating moderate explanatory strength. Critical thinking showed strong predictive relevance for both insight and foresight, confirming its central mediating role. The Q^2 values (predictive relevance) further confirmed that the model has satisfactory predictive accuracy and is capable of explaining real-world academic cognitive behavior among university professors.



These findings provide strong evidence that cognitive personality traits play a fundamental role in shaping higher-order intellectual and strategic capabilities within the higher education sector of Pakistan. The results also confirm that professors with stronger reasoning ability and higher openness are more likely to develop advanced critical thinking skills, which ultimately translate into deeper understanding and future-oriented academic thinking.

Discussion

The present study aimed to examine the causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight within the higher education sector of Pakistan. Specifically, the study investigated how Logic & Reasoning and Openness to Experience influence critical thinking among experienced university

Published:
May 25, 2026

professors and how critical thinking subsequently contributes toward enhanced insight and foresight. The empirical findings obtained through Smart PLS analysis strongly supported all proposed hypotheses and confirmed the explanatory nature of the research framework.

The first objective of the study was to examine the influence of Logic & Reasoning on critical thinking among university professors. The findings revealed a strong positive and statistically significant relationship between Logic & Reasoning and critical thinking. This indicates that professors possessing stronger analytical reasoning and rational evaluation capabilities are more likely to engage in reflective judgment, evidence-based thinking, and objective intellectual analysis. The findings are consistent with the theoretical perspectives of Stanovich and West (2008), who argued that rational cognition forms the foundation of reflective and analytical thinking. The results further support the argument that logical reasoning strengthens individuals' ability to evaluate assumptions critically, analyze complex academic problems systematically, and make informed decisions based on evidence rather than intuition or bias.

Within higher education institutions, this finding is particularly important because university professors are regularly involved in intellectually demanding tasks such as curriculum design, research supervision, academic evaluation, policy interpretation, and institutional decision-making. Professors possessing strong reasoning capabilities are more likely to contribute effectively toward scholarly inquiry and strategic academic leadership. The findings therefore demonstrate that analytical reasoning serves as a critical cognitive resource supporting intellectual effectiveness within universities.

The second objective of the study was to investigate the impact of Openness to Experience on critical thinking. The findings confirmed that Openness to Experience positively and significantly enhances critical thinking among university professors. This suggests that intellectually curious, flexible, and open-minded professors are more likely to demonstrate stronger analytical thinking, reflective evaluation, and creative problem-

Published:

May 25, 2026

solving capabilities. The findings align with the work of McCrae and Costa (2008) and DeYoung et al. (2012), who emphasized that openness contributes toward intellectual exploration, cognitive flexibility, and adaptive learning.

The results further indicate that professors who are receptive to new ideas, interdisciplinary perspectives, and innovative approaches are better able to engage in critical intellectual inquiry. In the context of modern higher education, openness becomes increasingly important because universities operate in rapidly changing technological and academic environments requiring continuous adaptation and innovation. Professors possessing higher openness are more likely to embrace digital transformation, adopt innovative pedagogical approaches, participate in collaborative research, and encourage intellectual curiosity among students. Consequently, openness strengthens the intellectual culture of universities and contributes positively toward academic innovation and institutional adaptability.

The third objective of the study was to evaluate the effect of critical thinking on professors' insight. The findings demonstrated a strong positive relationship between critical thinking and insight, indicating that professors with stronger critical thinking abilities possess greater intellectual depth, conceptual understanding, and analytical awareness. Critical thinking enables individuals to interpret information beyond superficial observations and identify hidden patterns, relationships, and strategic implications within complex situations. These findings support the theoretical arguments of Sternberg (2003), who described insight as a product of deep cognitive interpretation and reflective intellectual processing.

Within higher education institutions, insight is highly important because professors frequently encounter multidimensional academic and institutional challenges requiring deep understanding and intellectual clarity. Professors possessing strong insight are more capable of identifying research gaps, understanding student learning complexities, recognizing institutional weaknesses, and developing innovative academic solutions. The

Published:

May 25, 2026

findings therefore indicate that critical thinking acts as a key intellectual mechanism enabling professors to develop meaningful scholarly understanding and strategic academic interpretation.

The fourth objective of the study was to determine the influence of critical thinking on foresight among university professors. The results revealed that critical thinking significantly enhances foresight, suggesting that professors with stronger analytical and reflective capabilities are better able to anticipate future developments, evaluate uncertainties, and prepare strategically for emerging academic challenges. These findings are consistent with the work of Mumford et al. (2012), who argued that strategic foresight emerges through sophisticated cognitive processing and future-oriented reasoning.

The importance of foresight has become increasingly significant in modern higher education because universities are continuously influenced by technological disruption, globalization, and artificial intelligence integration, changing labor market demands, and evolving educational expectations. Professors possessing strong foresight are more capable of anticipating educational reforms, adapting curricula to future needs, and guiding institutional development strategically. The findings therefore demonstrate that critical thinking strengthens professors' capacity for future-oriented academic leadership and strategic institutional planning.

An important contribution of the study is the confirmation of critical thinking as a mediating cognitive mechanism linking personality traits with strategic intellectual outcomes. The findings suggest that Logic & Reasoning and Openness to Experience do not merely function as isolated psychological characteristics; rather, they contribute toward the development of critical thinking, which subsequently enhances insight and foresight. This mediation mechanism significantly extends the existing literature by demonstrating how personality-driven cognitive capabilities are transformed into meaningful academic and strategic outcomes within higher education institutions.

Published:
May 25, 2026

The study also contributes substantially to the literature on higher education management, organizational psychology, and strategic cognition within developing countries. While previous studies primarily focused on students or corporate managers, the present research specifically examined experienced university professors within Pakistan's higher education sector. Consequently, the findings provide context-specific evidence regarding the intellectual and psychological foundations of academic leadership, reflective inquiry, and future-oriented cognition among senior academicians.

Overall, the findings of the study strongly support the theoretical framework and confirm that Logic & Reasoning and Openness to Experience are essential personality-driven cognitive capabilities that enhance critical thinking, which subsequently strengthens professors' insight and foresight. The study therefore demonstrates that cognitive sophistication, reflective reasoning, and intellectual openness are fundamental requirements for effective academic leadership and sustainable institutional development within higher education institutions.

Conclusion, Recommendations and Future Dimensions

The present study examined the causal relationships among Logic & Reasoning, Openness to Experience, critical thinking, insight, and foresight within the higher education sector of Pakistan. Using an explanatory research design grounded in positivist philosophy, the study empirically investigated how personality-driven cognitive capabilities contribute toward strategic intellectual outcomes among experienced university professors.

The findings confirmed that both Logic & Reasoning and Openness to Experience significantly and positively influence critical thinking. Professors possessing stronger analytical reasoning capabilities and greater intellectual openness demonstrated higher levels of reflective judgment, rational evaluation, and cognitive adaptability. The study further revealed that critical thinking significantly enhances both insight and foresight,

Published:

May 25, 2026

indicating that analytical and reflective cognition enable professors to develop deeper intellectual understanding and stronger future-oriented strategic thinking.

The research therefore establishes critical thinking as a central mediating cognitive mechanism through which personality traits contribute toward strategic academic capabilities. Logic & Reasoning provides the analytical structure necessary for rational evaluation, while Openness to Experience contributes intellectual curiosity, creativity, and cognitive flexibility. Together, these traits strengthen critical thinking, which subsequently enables professors to interpret complex academic realities effectively and anticipate future educational developments strategically.

The study contributes theoretically by integrating personality psychology, critical thinking theory, and strategic cognition within the context of higher education. It also provides empirical evidence from Pakistan's university sector, thereby addressing an important gap in existing literature concerning experienced academicians and academic leadership. Practically, the study highlights the importance of developing analytical reasoning, intellectual openness, and reflective thinking within universities to strengthen academic innovation, institutional adaptability, and strategic educational planning.

Overall, the study concludes that universities seeking sustainable growth and academic excellence must prioritize the development of critical thinking and strategic intellectual capabilities among professors. In increasingly uncertain and technologically driven educational environments, reasoning ability, intellectual openness, insight, and foresight represent essential competencies for effective academic leadership and institutional sustainability.

Based on the findings of the study, several recommendations are proposed for universities, policymakers, and higher education administrators. Universities should design and implement faculty development programs specifically focused on enhancing analytical reasoning, reflective judgment, and critical thinking capabilities among professors. Such programs may include scenario-based learning, case analysis

Published:

May 25, 2026

workshops, reflective inquiry exercises, and strategic problem-solving activities. Higher education institutions should encourage intellectually open and innovative academic cultures that promote creativity, interdisciplinary collaboration, and cognitive flexibility. Universities may support this objective by organizing academic seminars, collaborative research initiatives, innovation forums, and cross-disciplinary learning opportunities.

Academic leadership development programs should integrate training related to foresight, strategic thinking, and future-oriented planning so that professors can effectively respond to emerging technological and educational challenges. Institutions should also encourage professors to engage with global academic trends, digital transformation, and artificial intelligence integration within educational systems. Universities may further incorporate personality and cognitive capability assessments within faculty recruitment, promotion, and leadership selection processes. Identifying individuals possessing strong reasoning abilities and intellectual openness can contribute positively toward institutional academic quality and innovation capacity.

The Higher Education Commission (HEC) of Pakistan should develop policies encouraging universities to strengthen critical thinking and reflective learning cultures within academic institutions. Greater emphasis should be placed on intellectual development, strategic cognition, and analytical capability-building within faculty training frameworks. Finally, universities should create supportive research environments that encourage intellectual exploration, reflective dialogue, and strategic academic inquiry. Such environments can strengthen professors' insight and foresight capabilities while contributing toward sustainable institutional growth and educational excellence.

Although the study provides important theoretical and practical contributions, several limitations should be acknowledged. First, the study adopted a cross-sectional research design, which limits the ability to examine changes in cognitive capabilities and critical thinking over time. Longitudinal studies would provide deeper understanding regarding how reasoning abilities, openness, and strategic cognition evolve throughout academic

Published:

May 25, 2026

careers. Second, the study utilized convenience sampling due to accessibility considerations and geographical limitations associated with senior university professors. Although the sample size was statistically adequate, the use of non-probability sampling may limit the generalizability of findings to all higher education institutions in Pakistan. Third, the study relied on self-reported questionnaire responses, which may introduce common method bias and social desirability effects. Respondents may have overestimated their reasoning, openness, or critical thinking capabilities. Future studies may incorporate supervisor evaluations, peer assessments, or behavioral measures for greater objectivity. Fourth, the study focused specifically on Logic & Reasoning and Openness to Experience as predictors of critical thinking. Other potentially relevant psychological and organizational variables such as emotional intelligence, organizational culture, leadership style, motivation, resilience, and learning orientation were not included in the model. Finally, the study focused exclusively on university professors within Pakistan's higher education sector. Therefore, the findings may not be directly generalizable to other professional sectors or international educational contexts with different cultural and institutional characteristics.

Future researchers are encouraged to conduct longitudinal studies to examine how critical thinking, insight, and foresight develop over time among academicians and educational leaders. Longitudinal approaches may provide deeper understanding regarding the long-term effects of personality traits and intellectual experiences on strategic cognition. Future studies may also examine additional personality dimensions and psychological variables such as emotional intelligence, resilience, psychological empowerment, creativity, learning orientation, and adaptive leadership in relation to critical thinking and strategic intellectual outcomes.

Researchers may further investigate the moderating role of organizational culture, institutional support, technological readiness, and academic leadership styles in shaping critical thinking and foresight among university faculty members. Comparative studies

Published:

May 25, 2026

involving public and private universities, as well as cross-country comparisons, may provide broader understanding regarding cultural and institutional influences on cognitive and strategic academic capabilities. Future research may also adopt mixed-method or qualitative approaches to explore how professors practically apply critical thinking, insight, and foresight in teaching, research, institutional governance, and strategic planning activities. Finally, future studies should examine the impact of artificial intelligence, digital transformation, and emerging educational technologies on critical thinking and strategic cognition within higher education institutions, particularly in developing countries where universities continue adapting to rapidly changing global academic environments.

References

1. Ali, A., Ali, S., & Khan, M. A. (2021). Higher education challenges in Pakistan: Quality, governance, and research productivity. *Journal of Education and Practice*, 12(5), 45–56.
2. Arshad, M., & Naz, T. (2024). Thinking reflectively: Insights from academic leaders in higher education. *Journal of Asian Development Studies*, 13(4), 134-153.
3. Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods* (6th ed.). Oxford University Press.
4. Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
5. Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the creative achievement questionnaire. *Creativity Research Journal*, 17(1), 37–50.
6. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
7. DeYoung, C. G. (2015). Openness/intellect: A dimension of personality reflecting cognitive exploration. *Psychological Inquiry*, 26(4), 355–358.
8. DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2012). Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, 93(5), 880–896.
9. Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.
10. Facione, P. A. (2015). *Critical thinking: What it is and why it counts*. Insight Assessment.
11. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
12. Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International Marketing Review*, 33(3), 405–431.
13. Hussein, H. S., Bahmanpour, K., Fathi, M., & Fatemi, A. (2025). Applying Critical Thinking Frameworks in Public Health: A Systematic Review of Strategic Approaches to Enhance Decision-Making and Policy Development. *Health Science Reports*, 8(12), e71562.
14. John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). Guilford Press.
15. Kuhn, D. (2019). Critical thinking as discourse. *Human Development*, 62(3), 146–164.

Published:
May 25, 2026

16. Korhonen, J. (2025). Actively open-minded thinking within and beyond adopted frameworks: Investigations into thinking dispositions, openness to possibilities, and life-philosophical lecturing.
17. Li, F., Yan, X., Su, H., Shen, R., & Mao, G. (2025). An assessment of human–AI interaction capability in the generative AI era: the influence of critical thinking. *Journal of Intelligence*, 13(6), 62.
18. McCrae, R. R., & Costa, P. T. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality psychology* (pp. 159–181). Guilford Press.
19. Mumford, M. D., Friedrich, T. L., Caughron, J. J., & Byrne, C. L. (2012). Leader cognition in real-world settings. *The Leadership Quarterly*, 23(3), 459–478.
20. Paul, R., & Elder, L. (2019). *Critical thinking: Tools for taking charge of your learning and your life*. Pearson.
21. Sanabria-Z, J., Cruz-Sandoval, M., Moreno-Romo, A., Bosch-Gómez, S., & Ramírez-Montoya, M. S. (2024). Research foresight in bridging open science and open innovation: Overview based on the complex thinking paradigm. *International Journal of Innovation Studies*, 8(1), 59-75.
22. Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
23. Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
24. Stanovich, K. E., & West, R. F. (2008). On the relative independence of thinking biases and cognitive ability. *Journal of Personality and Social Psychology*, 94(4), 672–695.
25. Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The rationality quotient*. MIT Press.
26. Sternberg, R. J. (2003). *Wisdom, intelligence, and creativity synthesized*. Cambridge University Press.