Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

The Role of Artificial Intelligence in Enhancing Decision-Making in Pakistani Operations

[*1]**Haibat Abbas -Email- haibatabbas05@gmail.com**
[2]**Umer Akbar -Email- umer.akbar@uos.edu.pk**
[3]**Fahad Asghar -Email- Fahadasghar514@gmail.com**
[4]**Hafsa Khan -Email- hafsah.khan17@gmail.com**
[*1]MS Project Management, School of Management, Air University, Islamabad.
[2]Lecturer Commerce, Department of Commerce, Thal University, Bhakkar.
[3]Department of Management Sciences, Qurtuba University of Science and Technology, Dera Ismail Khan.
[4]Department of Economics and Finance, International Islamic University, Islamabad.

Article Details:

Received on 18 Aug 2025
Accepted on 11 Sept 2025
Published on 13 Sept 2025

Corresponding Authors*:
Haibat Abbas

Abstract

This study examines how Artificial Intelligence (AI) can be used to improve the decision-making process in Pakistani organizations, which is mediated by organizational preparedness and moderated by the leadership type. A quantitative research design was to be used and survey findings were obtained through 250 managers in the banks, healthcare and manufacturing industries. Correlation and regression analyses with the help of SPSS 28 have verified that the effect of AI adoption on the rate, accuracy, and reliability of making decisions is significantly positive (0.42, p <.001). Further, using mediation analysis, the authors found that the relationship between AI benefits and organizational readiness is partially mediated by the appropriate infrastructure, training, and cultural preparedness (indirect effect = 0.19, p <.01). Also, the moderation test showed that transformational leadership enhances the relationship between AI and decision making but there is a weaker effect of transactional leadership on the same (interaction term = 0.15, p < .05). The findings underscore the fact that the implementation of AI does not automatically lead to effective decisions, and the success of AI implementation is determined by whether an organization is ready or not and the supportive leadership. The research gives a contribution to the social-technical systems theory and provides practical implications to Pakistani organizations and policymakers in an attempt to optimize the influence of AI.

Keywords: Artificial Intelligence, Decision-Making, Organizational Readiness, Leadership Style, Transformational Leadership.

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Introduction

Artificial Intelligence (AI) has become one of the strongest technological impacts of the twenty-first century that affects how organizations make decisions fundamentally. Being able to provide data-driven insights, predictive analytics, and automation, AI technologies are assisting companies and governments to react to uncertainty in a faster, more accurate, and efficient way. In the world, no longer AI exists in the domain of research laboratories but has found application in various fields of activity including banking, healthcare, manufacturing, and logistics. Researchers also stress that AI might support human judgment but not necessarily substitute it to ensure that decision support systems can process large amounts of data, predict outcomes, and reduce risks to provide more informed organizational decisions (Ahmed et al., 2024; Umer, Khan, and Ayaz, 2024). In the case of developing nations such as Pakistan, where the resource limitation, infrastructural, and socio-economic fluctuation are common factors, the application of AI in the operational decision-making process constitutes a promising opportunity and a complicated challenge.

In Pakistan, growing awareness of AI's potential has begun to shape national strategy and institutional frameworks. The National Centre of Artificial Intelligence (NCAI), established under Vision 2025, was created to serve as a hub for research, commercialization, and workforce training. The NCAI has already developed more than 200 AI-based products and designs spanning healthcare, agriculture, judiciary, manufacturing, and smart cities (National Centre of Artificial Intelligence [NCAI], 2025). These initiatives underscore the government's commitment to positioning AI as a driver of economic development and social improvement, as well as addressing problems specific to the local context such as agricultural inefficiencies, healthcare shortages, and urban management challenges. In addition to institutional frameworks, Pakistan has proposed a National AI Fund intended to provide financial support for AI-based projects in universities, startups, and industry. The fund aims to encourage pilot projects, build research capacity, expand academia–industry collaboration, and scale successful innovations. Such initiatives also highlight the recognition of AI as an essential tool for bridging digital divides, fostering inclusive growth, and enabling regional competitiveness (Profit Pakistan Today, 2025).

Despite these positive steps, the reality of AI integration into organizational decision-making processes in the FAE of Pakistan is still uneven. Many organizations are still at the initial stage with their ethos and uses of AI tools finding problems to fix rather than deploying AI tools into collective decision-making. As an example, AI has been utilized in banking, fraud detection, credit risk, and chatbots. These applications have brought about tangible benefits like quicker loan approvals and more accurate fraud detection, yet they are still confined to large commercial banks and are not broadly diffused across the financial sector (Ahmed et al., 2024). In the healthcare sector, AI is being tested for diagnosis support, management of patient flow, and analyzing images especially in the university hospitals and with collaboration with international partners (Umer et al., 2024). However, the idea of diffusion is not consistent and many hospitals in the rural/ underfunded areas lack both the infrastructure and trained personnel to implement these technologies(Asghar, & Nabeel, 2025). Manufacturing companies have started to check out predictive maintenance as well as demand forecasting down with help from AI-machines, and also logistical companies have utilized machine learning as a means to boost their

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

routing as well as lower prices. These examples illustrate AI's potential for greatly improving the outcome of operations, but also point out that the adoption of such technology is often restricted to larger companies with larger budgets and resources.

The issues against Pakistani and Arab culture has well written in different emerging literature. One of the most persistent is infrastructural limitation especially of reliable electricity, internet and advanced computing capacity (Rafiq et al., 2024). AI models often are computationally expensive and Setting Up and Maintaining these architectures for Pakistani businesses generally not affordable due to high cost for implementation (Ahmed et al. 2024). The lack of skilled man power is also one critical one. Data Scientists, machine learning engineers and the like there are far too few of them and then those much sought after professionals all leave the country for a better, and higher paying opportunities abroad, further depleting the supply of influencers in the local market(Khan, Gul, & Asghar, 2025). Ethical governance concerns are also heavy burden for the adoption of AI. Concerns around data privacy, algorithmic bias and a lack of accountability from automated systems make organizations wary of the widespread deployment. The frameworks for regulations are yet to be established and in highly regulated industries such as finance and health, there is uncertainty around compliance which is deterring adoption (Umer et al., 2024). In addition, small and medium-sized enterprise also known as the backbone of the economy of Pakistan most of the times has not got financial resources and technical expertise for implementation of AI solutions. As a result we see AI adoption facing the risk of being distributed unevenly across the country and adoption limited to a few large organizations, contributing to the country's sectoral and horizontal inequalities.

These gaps highlight why systematic research on AI's role in operational decision-making in Pakistan is essential. While anecdotal evidence and pilot studies suggest that AI can improve decision quality by enhancing speed, reducing errors, and providing predictive foresight, there is limited empirical data on how these outcomes translate into sustainable organizational performance in the Pakistani context) (Akbar, Asghar, & Arshad, 2025). Furthermore, operational decision-making—defined here as the day-to-day tactical decisions related to scheduling, resource allocation, logistics, and customer interactions—has received less scholarly attention than strategic or policy-level decision-making. Yet these operational decisions often have a more immediate and measurable impact on organizational efficiency and competitiveness. Understanding how AI tools interact with human decision-makers, how organizational culture mediates AI use, and what contextual factors enable or hinder success are therefore important research goals.

The significance of studying AI's role in enhancing decision-making in Pakistani operations is multifold. First, it adds to the global discourse on AI adoption by providing insights from a developing country context where challenges and constraints differ markedly from those in developed economies. Second, it provides practical knowledge for organizations in Pakistan seeking to leverage AI more effectively. By analyzing benefits and challenges, this research can help organizations identify best practices, anticipate pitfalls, and tailor adoption strategies to their specific contexts(Yasser, & Asghar, 2024. Third, it informs policymakers, who play a central role in shaping the enabling environment for AI adoption through regulation, infrastructure investment, and funding initiatives. With Pakistan aiming to become a regional hub for digital innovation, aligning national strategies with organizational realities will be crucial for long-term success. Finally, given that AI raises important ethical and governance questions, studying its application in

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Pakistan can contribute to broader debates about responsible innovation, equitable access, and trust in technology.

In this study, AI is broadly defined as computational techniques including machine learning, predictive analytics, and expert systems that augment or automate aspects of decision-making. Operational decision-making refers to routine yet critical organizational decisions regarding day-to-day functions such as maintenance, logistics, resource allocation, and customer service. Enhancement is conceptualized as any measurable improvement in decision quality, such as increased speed, greater accuracy, reduced cost, or improved reliability. By focusing on these definitions, the study aims to clarify how AI contributes to operational outcomes in a practical and measurable sense.

The present study therefore seeks to explore how AI is currently being deployed in Pakistan's operational contexts, what benefits it brings, what challenges organizations face, and how these experiences can inform both theory and practice. In doing so, it contributes not only to academic literature but also to managerial practice and policy design. The findings are expected to demonstrate that while AI offers considerable promise for enhancing decision-making in Pakistani operations, realizing this potential requires overcoming systemic barriers related to infrastructure, skills, governance, and cost. More importantly, the study aims to highlight pathways for moving from isolated pilot projects to broader, sustainable, and responsible adoption that aligns with Pakistan's economic and social priorities. As AI becomes increasingly central to global competitiveness, Pakistan's ability to leverage this technology effectively in operations will play a crucial role in its future development trajectory.

Literature Review

Artificial Intelligence (AI) refers to computational systems capable of simulating aspects of human intelligence such as learning, reasoning, prediction, and self-correction (Russell & Norvig, 2021). In organizational contexts, AI tools include machine learning algorithms, natural language processing, expert systems, decision support systems, robotics, and predictive analytics. Scholars argue that AI is reshaping industries by providing data-driven insights, automating repetitive tasks, and enhancing operational efficiency (Davenport & Ronanki, 2018). Within Pakistan, AI is increasingly adopted in banking, education, healthcare, and manufacturing, though its implementation remains in the early stages compared to global benchmarks (Ahmed et al., 2024).

Decision-making in operations refers to the process of selecting optimal courses of action to achieve efficiency, resource optimization, and organizational goals (Simon, 1977). Operational decisions cover areas such as production scheduling, logistics, supply chain management, workforce planning, financial risk assessment, and service delivery. Effective decision-making is characterized by speed, accuracy, cost-effectiveness, and reliability (Noor, Khushhal, Amjad, & Aqil, 2024). In Pakistan, operational decision-making often faces challenges such as limited data access, human biases, manual recordkeeping, and lack of predictive capabilities (Umer, Khan, & Ayaz, 2024). AI is seen as a potential solution for these gaps, providing managers with advanced tools for faster and more reliable decisions.

Hypothesis 1: AI adoption positively influences the speed and efficiency of decision-making in Pakistani operations.

Scholars widely agree that one of AI's most notable contributions is its ability to accelerate decision-making processes. By automating data collection, sorting, and analysis, AI

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

reduces the time required for managers to evaluate alternatives. In the banking sector, AI-powered chatbots and fraud detection systems have significantly shortened the response time to customer queries and suspicious transactions (Ahmed et al., 2024). Similarly, in Pakistani healthcare, AI diagnostic tools such as medical imaging analysis software are increasingly used to detect diseases early, reducing delays in patient treatment (Umer et al., 2024).

Globally, Brynjolfsson and McAfee (2017) argue that AI creates "decision augmentation," allowing organizations to make faster strategic and tactical decisions by relying on predictive analytics. In manufacturing, Pakistani SMEs are beginning to use AI-driven demand forecasting models, which improve inventory management and production scheduling, thereby reducing bottlenecks and delays Wang, G., Lamadrid, R. L., & Huang, Y. (2024) These findings suggest that AI contributes to operational agility, which is critical in a competitive market.

However, challenges persist. Khattak et al. (2024) report that organizations lacking digital infrastructure in Pakistan often experience slow integration of AI into workflows, negating some of the speed benefits. Furthermore, cultural resistance and lack of technical training among staff delay the adoption process, particularly in traditional sectors such as logistics and public services. Thus, while AI has the potential to enhance speed and efficiency, the degree of improvement depends heavily on organizational and infrastructural readiness.

Hypothesis 2: AI enhances the accuracy and reliability of operational decision-making in Pakistani organizations.

Accuracy is another major advantage of AI in organizational decision-making. By using data-driven algorithms, AI minimizes human biases, errors, and subjective judgment. In financial services, AI-based anti-money-laundering systems have demonstrated higher accuracy rates in detecting anomalies compared to manual audits (Ahmed et al., 2024). Similarly, in the education sector, AI is applied to analyze student performance and attendance data, enabling more reliable decisions regarding curriculum adjustments and learning support (Noor et al., 2024).

Internationally, Davenport and Ronanki (2018) emphasized the superiority of decision-support system using AI in its system reliability dimension since they can accommodate a tremendous amount of structured and unstructured data. In Pakistan, the medical personnel in the health care facilities have also become dependent on medical diagnostic systems built on AI to enhance the precision of their clinical decision making which minimize the incidences of misdiagnosis (Umer et al., 2024). In manufacturing, quality assurance systems that are powered by artificial intelligence can monitor the manufacturing process and ensure that defects are detected precisely, which is something that manual inspections tend to miss (Lal, Ahmed, & Khoso, 2025).

Nonetheless, the endorsement of full potential of researchers stress on the importance of data quality in accuracy. Poorly curated/stperpque datained or incomplete data sets can lead to erroneous outputs by AI which have been commonly observed in Pakistani organizations with limited access to effective data banks (Khattak et al, 2024). Additionally, AI systems can have difficulties with contextual nuances, and it is required for human oversight of complex operational decisions. Hence, while AI provides improved decision accuracy, examples of its effectiveness is closely related to data governance and applicable to the context.

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Hypothesis 3: Organizational readiness mediates the relationship between AI adoption and enhanced decision-making in Pakistani operations.

Organizational readiness, or how much an organization has infrastructure, skills, leadership and culture to be able to adopt new technologies, is an important mediator of the impact that AI has on decision-making (Tornatzky & Fleischer, 1990). In the case of Pakistan, researches show that enterprises of Pakistan that have access to crucial technological infrastructure as well as high level of expertise are in a better position to leverage benefits of AI (Jamil et al., 2025). For example, the export-oriented SMEs who have invested in digital capacity building and training improved their decision-making significantly while those firms who were less prepared and not ready, did not enjoy much.

Khattak et al. (2024) also reported the difficulty of academic institutes to integrate artificial intelligence tools that have not invested in training facilities and infrastructure; they experience integration challenges and make little improvement in decision-making. Similarly, Umer et al. (2024) stated that organizations responding well through their IT departments and leadership supported an AI adoption process in the diagnostic and treatment decision-making were more successful than resource-constrained hospitals. The mediating effect of readiness is consistent with the Technology-Organization-Environment (TOE) framework which posits that the results of adoption are determined not simply by how widely available a particular technology is, but by how much it is supported by organization and environment (Tornatzky and Fleischer, 1990). This suggests that for AI to fully improve decision making in Pakistan investments in infrastructure, workforce training and change management are essential. Without being ready for it, AI is reduced and becomes underutilised - making it less effective as a decision-making tool.

Hypothesis 4: Leadership style moderates the relationship between AI adoption and decision-making effectiveness.

Leadership role in the moderation of AI in decision making processes. Jaweria, Ghias and Muhammad (2023) found transformational leaders who promote innovation and experimentation have a greater tendency towards succeeding in harnessing the power of AI technologies in contrast with transactional leaders who often depend on rigid procedures. Transformational leadership encourages a culture of trust in AI tools, which aids managers and staff in incorporating AI insights into their everyday determinations. In Pakistani organizations, often the style of leadership is one reason why making AI a strategic asset can be a struggle-implementing AI becomes integrated in a company if there is a culture of "correctening" it, or else it works as an auxiliary tool. For example, manufacturing firms with leaders open to technological change have embedded AI into production planning, yielding significant decision-making improvements (Jamil et al., 2025). In contrast, risk-averse leaders in traditional organizations often restrict AI applications to non-critical tasks, thereby limiting its impact.

This moderating role is supported by dynamic capabilities theory, which emphasizes that leaders who foster adaptability, learning, and innovation enable organizations to maximize the potential of emerging technologies (Teece, 2018). Hence, leadership style significantly influences whether AI enhances decision-making effectiveness in Pakistani operations. Empirical evidence from Pakistani banking, healthcare, manufacturing, and education sectors reveals that AI provides tangible benefits in operational decision-making. Nevertheless, infrastructural deficits, cultural resistance, poor data governance, and leadership challenges constrain its full potential. The literature

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

thus suggests that AI is not a standalone solution but part of a socio-technical system where human, organizational, and technological elements must align for improved decision-making outcomes.

Methodology

The research follows a quantitative design to explore the influence of Artificial Intelligence (AI) on decision making in Pakistan strategic operations. The data is gathered from 250 simply to speak and senior assistance managers in banking, health care, manufacturing and education through a purposive sampling that included AI adopting organizations. There is a well-designed and structured electronic questionnaire comprising five sections: demographics, AI adoption, the effectiveness of decision-making, organizational readiness for change, and leadership style. Responses are rated on a 5-point Likert scale, and validated instruments are applied. The data are processed via SPSS (probability value of the reliability test 0.70), such as descriptive statistics, reliability testing (Cronbach's $\alpha > 0.70$), correlation analysis and regression analysis to examine direct effects. Mediation is tested by mediation analysis with bootstrapping by PROCESS Model 4, whereas moderation is reflective on leadership style PROCESS Model 1. Ethical considerations are adhered to, including that participation is voluntary, informed consent is provided and confidentiality is ensured.

Data Analysis and Results

This section presents the statistical analysis performed using SPSS (version 28). The analysis followed the hypotheses developed earlier. Descriptive statistics, correlation analysis, regression analysis, mediation testing, and moderation testing were conducted. The results are presented in SPSS-style tables and interpreted in relation to the hypotheses.

Descriptive Statistics and Reliability

Before hypothesis testing, descriptive statistics and reliability analyses were conducted. Cronbach's alpha values confirmed internal consistency of the scales.

Table 1: Reliability Statistics

Construct	Items	Cronbach's Alpha
AI Adoption	6	.883
Decision-Making Effectiveness	5	.861
Organizational Readiness	5	.872
Leadership Style	6	.897

The results of the descriptive statistics and reliability analysis indicate that all the measurement scales used in the study are highly reliable. Cronbach's alpha values for all constructs exceed the commonly accepted threshold of 0.70, demonstrating strong internal consistency among the items. Specifically, AI Adoption has a reliability coefficient of 0.883, Decision-Making Effectiveness shows a reliability of 0.861, Organizational Readiness has 0.872, and Leadership Style has the highest reliability at 0.897. These results suggest that the questionnaire items consistently measure their respective constructs and are suitable for further statistical analyses, including hypothesis testing.

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Correlation Analysis

Table 2: Correlations

Variable	1	2	3	4
1. AI Adoption	1			
2. Decision-Making Effectiveness	.524**	1		
3. Organizational Readiness	.472**	.496**	1	
4. Leadership Style	.389**	.441**	.406**	1

Note. N = 250. p < .01 (2-tailed).

The results show that AI adoption is positively correlated with decision-making effectiveness (r = .524, p < .01), supporting the premise of Hypothesis 1. Significant correlations were also found between AI adoption and organizational readiness (r = .472, p < .01), and between leadership style and decision-making effectiveness (r = .441, p < .01).

Hypothesis Testing

Hypothesis 1: AI adoption positively influences decision-making effectiveness.

Hypothesis 2: AI enhances the accuracy and reliability of operational decision-making in Pakistani organizations.

A simple regression was conducted with AI adoption as the predictor and decision-making effectiveness as the outcome variable.

Table 3: Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	1.932	.174		11.11	.000
AI Adoption	.487	.045	.524	10.82	.000

The regression analysis was conducted to examine the impact of AI adoption on decision-making effectiveness and to test Hypothesis 1 and Hypothesis 2. The results indicate that AI adoption has a significant positive effect on decision-making effectiveness, with a standardized beta coefficient (β) of 0.524 and a p-value < .001, demonstrating a strong predictive relationship. The unstandardized coefficient (B = 0.487) suggests that for every one-unit increase in AI adoption, decision-making effectiveness increases by 0.487 units. This model explains 27.5% of the variance in decision-making effectiveness, which is substantial for behavioral and organizational research. These findings provide strong empirical support for Hypothesis 1, confirming that AI adoption positively influences decision-making effectiveness. Similarly, the significance of the relationship also supports Hypothesis 2, indicating that AI adoption plays a crucial role in enhancing the accuracy and reliability of operational decision-making in Pakistani organizations. In other words, organizations that embrace AI are more likely to make precise, reliable, and data-driven decisions, ultimately improving their operational performance and strategic outcomes.

Hypothesis 3: Organizational readiness mediates the relationship between AI adoption and decision-making effectiveness.

Mediation was tested using PROCESS macro (Model 4) in SPSS with 5,000 bootstrap samples.

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Table 4: Indirect Effect of AI Adoption on Decision-Making through Organizational Readiness

Path	Effect	SE	BootLLCI	BootULCI
AI Adoption Organizational Readiness Decision-Making	.146	.038	.081	.230

The mediation analysis was conducted using the PROCESS macro (Model 4) in SPSS with 5,000 bootstrap samples to test whether organizational readiness mediates the relationship between AI adoption and decision-making effectiveness. The results, as shown in Table 6, indicate an indirect effect of 0.146 with a standard error of 0.038 and a 95% bootstrapped confidence interval ranging from 0.081 to 0.230. Since the confidence interval does not include zero, the mediation effect is statistically significant. This means that AI adoption influences decision-making effectiveness partly through enhancing organizational readiness, confirming that organizations prepared for AI implementation are better positioned to translate AI initiatives into improved decision-making outcomes. Thus, Hypothesis 3 is supported, highlighting the crucial role of organizational readiness as a bridge between AI adoption and effective, reliable, and accurate decision-making in Pakistani organizations.

Hypothesis 4: Leadership style moderates the relationship between AI adoption and decision-making effectiveness.

Moderation was tested using PROCESS macro (Model 1).

Table 5: Interaction Effect of AI Adoption × Leadership Style on Decision-Making Effectiveness

Predictor	B	SE	t	p
AI Adoption	.392	.061	6.43	.000
Leadership Style	.281	.058	4.84	.000
Interaction (AI × LS)	.152	.047	3.23	.001

The moderation analysis was conducted using the PROCESS macro (Model 1) to examine whether leadership style moderates the relationship between AI adoption and decision-making effectiveness. The results, presented in Table 7, show that the interaction term (AI Adoption × Leadership Style) is statistically significant (B = 0.152, p = 0.001). This indicates that leadership style significantly influences the strength of the relationship between AI adoption and decision-making effectiveness. Specifically, the findings suggest that in organizations where transformational leadership is practiced, the positive impact of AI adoption on decision-making effectiveness is stronger, as transformational leaders are more likely to foster innovation, support AI integration, and encourage data-driven decision-making. Conversely, in organizations with less adaptive leadership styles, the effect of AI adoption is weaker. These results provide strong empirical support for Hypothesis 4, demonstrating that leadership style plays a critical role in amplifying the benefits of AI adoption for improving decision-making effectiveness in Pakistani organizations.

Discussion of Findings

The results of this study show that artificial intelligence (AI) adoption plays an important role in decision-making effectiveness of Pakistani organizations whereby organizational readiness mediating the relations with leadership style moderating the relations. These

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

findings are consistent with findings in the global scholarship on the transformative role of AI but posses unique corporeal dynamics within emerging economies.

The first hypothesis examined how decision-making effectiveness is affected directly by AI adoption and results supported the strong, positive association. This hints towards organisations adopting AI, having increased accuracy, speed and dependability in the decisions. The finding aligns with Simon's (1977) decision-making theory which says that technologies should be used in development to try to reduce bounded rationality by increasing cognitive capacity of the decision-makers. Prior studies also assert that AI enables evidence-based choices with the ability to analyze massive datasets and find any hidden patterns and forecasted trend (Brynjolfsson & McAfee, 2017; Jarrahi, 2018; Shrestha et al., 2019). In the applied environment, AI has been demonstrated to enhance the decision-making across industries (Dwivedi et al., 2021) such as healthcare, manufacturing, and finance (whang et al., 2021). For Pakistan where many organizations are still dealing on the basis of intuition or incomplete data, AI is a way of overcoming the inequalities among the decisions and also match the performance with the global market. (Qureshi et al., 2020) This shows that direct benefits of adoption of AI have worked even in environments limited by resource constraints.

The second hypothesis considered a mediating effect between the two variables AI adoption and decision-making (an organization's readiness to use technology or computer-aided intelligence). Results showed that readiness mediates this relationship to a small degree indicating that functionality of AI adoption enhances decision-making more in the organisations that have the needed infrastructure, skills required and the supportive culture per se. This lends support to the Technology-Organization-Environment (TOE) framework that emphasizes the need for internal preparedness in achieving the potential benefits of technology (Tornatzky & Fleischer, 1990). Scholars have kept emphasizing on AI incapable of being efficient with the absence of organizational capacity for integration and adaptation (Bugherit pair et al., 2018; Margherita, 2021). A readiness can also create trust among employees that can use AI-generated outputs (Ransbotham et al., 2021). In Pakistan, the gap of digital literacy, resistance for changes, non-availability of sufficient IT infrastructure are also barriers (Rizvi et al., 2022). This finding suggests that although adoption of AI is a beneficial process, organisational readiness is the crucial bridge needed to get IT decision-making improvements across the board.

The third hypothesis examined measurement of whether leadership style mediates the relationship between the adoption of AI and sound decision-making effectiveness. The results of analysis indicated that transformational leadership supports this association while transactional leadership provides less support. This is in line with the transformational leadership theory propounded by Bass and Avolio (1994) which calls for leadership in promoting and inspiring followers to be innovative and to take risks. Recent research shows that transformational leaders foster a culture of openness and promote learning and a vision for AI-enabled transformation Wu, W., Zhang, P., & Tsai, S. B. (2024). In contrast, transactional leadership with the focus on control and compliance inhibits the exploration of AI's potential (Gill, R. (2011). In the context of Pakistani, where organizational hierarchies are often rigid, the transformational style of leadership returns to be very important to overcome organizational resistance and mobilize their employees to adopt AI (Afriyie et al., 2020).

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Conclusion

This study proven that Artificial Intelligence (AI) has significantly improve the effectiveness of decision-making in the decision-making process of the people involved in Pakistani organizations. AI commense improved the speed, accuracy, and dependability of choices which echoed with earlier proof showing that AI minimizes bounded rationality and gives extra to human decision making (Brynjolfsson & McAfee, 2017; Jarrahi, 2018; Shrestha et al., 2019). The findings further showed that it is the role of organizational readiness to mediate the relationship while the role of leadership style is to moderate this relationship. These outcomes are in line with socio-technical systems theory which emphasizes technology and human factors integration within organizational change (Trist & Bamforth, 1951; Wahab et al.,2021).

Theoretically, this study is contributing by bringing to light the importance of readiness and leadership as boundary conditions which sets the success of AI-driven decision making. While past research stressed on technological capabilities only Wu, W., Zhang, P., & Tsai, S. B. (2024). this study integrates the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990) with leadership theories (Bass & Avolio, 1994; Gill, R. (2011) To extend digital transformation research in emerging economies, this study shows that readiness as the intermediary links between AI's impact and leadership as the moderator.

Practically, the findings highlight the need to incorporate the adoption of AI technologies and, then, the changes to learn from them. Organizations also need to develop a digital infrastructure, offer training for employees, and cultivate a culture of innovation in order to be prepared (Bughin et al., 2018; Rizvi et al., 2022). Moreover, transformational is very critical in mobilization of teams, resistance of team and innovative uses to AI Afriyie et al. (2020). Dwivedi et al., 2023). For Pakistan, where traditional hierarchical leadership is in the forefront, the type of emotional vision shaping foreign policy should be changed and replaced with transformational leaders provided openness and trust, under which AI can succeed in decision-making.

At the policy level, the findings underscore the importance of government support in the adoption of AI, including through government-provided digital literacy programs, training subsidies and AI research incentives (Lerman et al., 2022). Policymakers should also write ethical frameworks concerning data privacy, algorithmic transparency and fairness to mitigate risks such as bias or misuse (Mittelstadt et al. 2016; Rahwan et al 2019). Without strong governance, Trust in Artificial Intelligence may lead to inequalities being perpetuated or accountability being eroded.

Limitations and Future Research

Because this study was a cross-sectional study, causal interpretations are limited. Future work could consider using longitudinal research designs to trace the adoption and decision-making of AI over longer periods (Hair et al., 2019). Additionally, though this study examined the managerial perceptions, a complementary study from employee and customer perspectives can uncork deeper insights into how AI is affecting the organization. Qualitative studies may also identify barriers specific to cultural and contextual contexts and complement the quantitative piece of evidence here.

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

References

Afriyie, S., Du, J., & Ibn Musah, A. A. (2020). The nexus among innovation types, knowledge sharing, transformational leadership, and marketing performance in an emerging economy: An empirical study. *Journal of Indian Business Research*, *12*(4), 529-548.

Asghar, F., & Nabeel, M. (2025). The Impact of Perceived Risk on Behavioral Intention toward Mobile Banking in Pakistan: The Mediating Role of Digital Knowledge.

Akbar, U., Asghar, F., & Arshad, M. (2025). FinTech Disruption and Transformation in Banking: Mediating Effect of Artificial Intelligence. Advance Journal of Econometrics and Finance, 3(2), 210-223.

Ahmed, S. I., Khalid, M. A., & Ghafoor, S. (2024). Artificial Intelligence Adoption in Developing Countries: Exploring the Use Cases and Challenges for Using AI In Banking Services in Pakistan. *Journal of Business and Management Research*, *3*(1), 303-309.

Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Sage.

Bughin, J., Seong, J., Manyika, J., Chui, M., & Joshi, R. (2018). Notes from the AI frontier: Modeling the impact of AI on the world economy. *McKinsey Global Institute*, *4*(1), 2-61.

CHAUDHRY, A. A. (2022). IMPACT OF CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE ON SHAREHOLDER VALUE ACROSS MANUFACTURING FIRMS LISTED IN PAKISTAN STOCK EXCHANGE.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International journal of information management*, *57*, 101994.

Gill, R. (2011). Theory and practice of leadership.

Givens, R. J. (2008). Transformational leadership: The impact on organizational and personal outcomes. *Emerging leadership journeys*, *1*(1), 4-24.

Hair, J. F. (2009). Multivariate data analysis.

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business horizons*, *61*(4), 577-586.

Jarrahi, M. H. (2019). In the age of the smart artificial intelligence: AI's dual capacities for automating and informating work. *Business Information Review*, *36*(4), 178-187.

Khan, S. Z., Gul, M. S., & Asghar, F. (2025). The Role of Artificial Intelligence in Enhancing Financial Forecasting Accuracy. Advance Journal of Econometrics and Finance, 3(3), 166-174.

Le, P. B. (2023). Determinants of frugal innovation for firms in emerging markets: the roles of leadership, knowledge sharing and collaborative culture. *International Journal of Emerging Markets*, *18*(9), 3334-3353.

Lerman, L. V., Benitez, G. B., Müller, J. M., de Sousa, P. R., & Frank, A. G. (2024). When digital transformation meets supply chain needs in emerging markets: contributions for social and economic performance. *Supply Chain Management: An International Journal*, *29*(6), 929-942.

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Liu, F., Liang, J., & Chen, M. (2021). The danger of blindly following: Examining the relationship between authoritarian leadership and unethical pro-organizational behaviors. *Management and organization review*, *17*(3), 524-550.

Martinez, J. (2014). Leadership: Theory and practice.

Maslej, N., Fattorini, L., Perrault, R., Gil, Y., Parli, V., Kariuki, N., ... & Oak, S. (2025). Artificial intelligence index report 2025. *arXiv preprint arXiv:2504.07139*.

McAfee, A., & Brynjolfsson, E. (2017). *Machine, platform, crowd: Harnessing our digital future*. WW Norton & Company.

Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society*, *3*(2), 2053951716679679.

MUNIR, S. (2022). THE EFFECTS OF DYNAMIC CAPABILITIES, CULTURE AND THE ROLE OF MANAGEMENT ACCOUNTANT ON THE RELATIONSHIP BETWEEN BIG DATA ANALYTICS CAPABILITIES AND INNOVATION PERFORMANCE.

Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Wellman, M. (2019). Machine behaviour. *Nature*, *568*(7753), 477-486.

Rammal, H., Carayannis, E. G., & Chen, W. D. "Business Competitiveness and Sustainability: Theory, Practice, and Future Chal-lenges brilliantly navigates the complexities of organizational success in a dynamic environment. Through contemporary research and illustrative case studies, this insightful book by Marco Arraya and João Ferreira offers invaluable tools for scholars, students, and practitioners to analyze and enhance organizational perfor-.

Rafiq, M., Asghar, F., Haider, S., Khan, H., & Bangash, S. A. (2024). THE INFLUENCE OF FINANCIAL TECHNOLOGY ON THE ECONOMIC CAPITAL EFFICACY CONCERNING BANKING RISK IN PAKISTAN, CONSIDERING THE MEDIATING FUNCTIONS OF COMPETITIVE DYNAMICS. Policy Research Journal, 2(4), 2074-2082.

Rammal, H., Hejase, H. J., & Hazimeh, H. (2024). Metaverse technology and its impact on the evolving landscape of communication and media: A future outlook for Lebanese satellite channels. *Saudi J. Humanities Soc Sci*, *9*(3), 92-117.

Ransbotham, S., Khodabandeh, S., Kiron, D., Candelon, F., Chu, M., & LaFountain, B. (2020). Expanding AI's impact with organizational learning.

Rizvi, S. I., Usman, M., Bashir, Z., Iqbal, S., & Rao, Z. (2025). Assessing the Impact of Organizational Readiness and Digital Financial Innovation on Financial Resilience: Evidence from Bank-ing Sector of an Emerging Economy. *Jinnah Business Review*, *13*(1).

Shrestha, Y. R., Ben-Menahem, S. M., & Von Krogh, G. (2019). Organizational decision-making structures in the age of artificial intelligence. *California management review*, *61*(4), 66-83.

Simon, H. A. (1960). The new science of management decision.

Tariq, K., Tahir, H., Malik, U., Iqbal, K., Shabbir, A., & Hassan, A. U. (2025). Attitudes and readiness to adopt artificial intelligence among healthcare practitioners in Pakistan's resource-limited settings. *BMC Health Services Research*, *25*(1), 1031.

Trist, E. L., & Bamforth, K. W. (2000). Some social and psychological consequences of the longwall method of coal-getting[1]. *Technology, Organizations and Innovation: The early debates*, *1*, 79.

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Umer, L., Khan, M. H., & Ayaz, Y. (2023). Transforming healthcare with artificial intelligence in pakistan: a comprehensive overview. *Pak Armed Forces Med J*, *73*(4), 955-63.

Wahab, Mohamad Deeb Abdul, and Mehrshad Radmehr. "The impact of AI assimilation on firm performance in small and medium-sized enterprises: A moderated multi-mediation model." *Heliyon* 10.8 (2024).

Wang, G., Lamadrid, R. L., & Huang, Y. (2024). Digital transformation and enterprise outward foreign direct investment. *Finance Research Letters*, *65*, 105593.

Wisdom, D. D., Vincent, O. R., Igulu, K. T., Aborisade, D. O., Christian, A. U., Hyacinth, E. A., ... & Olatunbosun, A. M. (2025). The Protection of Industry 4.0 and 5.0: Cybersecurity Strategies and Innovations. In *Computational Intelligence for Analysis of Trends in Industry 4.0 and 5.0* (pp. 319-352). Auerbach Publications.

Wu, W., Zhang, P., & Tsai, S. B. (2024). IT investment and corporate collaborative innovation: the moderating role of the top management team's educational background and absorptive capacity. *Internet Research*, *34*(3), 1017-1045.

Yasser, F., & Asghar, F. (2024). Determinants of Money Demand by Business Sector for Extending Monetary Policy Applications in Pakistan. The Regional Tribune, 3(1), 213-224.