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ARTIFICIAL INTELLIGENCE AND BUSINESS PERFORMANCE: THE MEDIATING ROLE OF DIGITAL INNOVATION

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Abstract
AI is seen as a strategic asset of business value; however, the impact of AI in improving the performance of the organization hinges on how it is translated into innovation. This study explores the relationship between the capability of Artificial Intelligence and Business Performance, while Digital Innovation is suggested as an important mediator. A three waves time-lagged survey of 400 managerial employees from Jazz, Daraz Pakistan and Habib Bank Limited (HBL) was conducted in a quantitative and explanatory approach. Partial Least Squares Structural Equation Modeling with 10,000 bootstrappes was used to analyse the data in SPSS 29 and SmartPLS 4. The results show how Artificial Intelligence capability enhances organizations' capability to develop digitally enabled products, services, processes and customer solutions. The overall model accounted for 46.1% of the variance in organizational performance, with Digital Innovation identified as a key pathway through which AI has an impact on Business Performance. The mediation analysis also revealed a large share of AI's impact is through innovation, not just operational efficiencies. This research contributes to the literature by bringing clarity to the process of converting AI capability to organizational value, in the context of an emerging economy. It highlights that the implementation of AI is most effective when complemented by innovation-driven processes, competent workforce, robust data capabilities, and managerial dedication and commitment. The study thus has significant implications for organizations looking to transform technological investment into sustainable performance and competitive advantage.

INTRODUCTION

The potential of AI to revolutionize decision-making, automate business processes, analyse massive amounts of data, improve customer service and rapidly adapt to market shifts has made AI an essential tool for organizations aiming to reach their full potential. In the digital age, AI is becoming a vital tool for organizations, especially in tech-driven sectors, for predicting market trends, identifying fraud, personalizing customer interactions, optimizing processes, and making strategic decisions. As the world of technology grows, AI is becoming a key asset in many organizations, particularly in sectors such as tech, where it plays a significant role in market forecasting, fraud detection, customer

personalization, process optimization, and strategic planning. But the use of AI isn't necessarily a guarantee of better organizational results. It will only work if the organization can effectively embed technology with good data, trained staff, management experience, leadership and business practices.

The Resource Based View states that technology can be transferred to other firms and that's why the sustainable competitive advantage is not technology alone. On the contrary, it is the mix of technological, human and organizational resources that gives an advantage. In their study, (Adwey, 2026) identified that AI capability enhances the creativity of organizations and firm performance when technical infrastructure, employees skills, data resources and managerial knowledge are managed well. This means that AI should be seen as a function and not just a piece of software or automation. AI can also drive Digital Innovation by helping companies discover new opportunities, brainstorm innovative concepts, reimagine current processes, and create digitally native products and services. (Badwy et al., 2025) demonstrated that AI enhances the innovation capability by boosting digital adaptability and market perception. Similarly, (Ahmad et al., 2025) found that the skills acquired through AI enhance organizational and marketing functions, which helps companies gain insightful insights into customers and markets. These capabilities enable the creation of innovative services, custom customer experiences and better digital business solutions.

Digital Innovation is the introduction or substantial enhancement of products, services, processes, customer experiences and business models using digital technologies. AI can help with this innovation by delivering predictive data, streamlining repetitive tasks, uncovering customer preferences, and accelerating experimentation cycles. (Bai & Cui, 2026) concluded that the use of AI fosters innovative practices, leading to enhanced business performance. Their research shows that innovation plays a key role in the way in which organizations leverage AI resources to achieve a tangible commercial result. The connection between AI and Digital Innovation isn't a straightforward one, though. (Alhosani & Safian, 2024; Basit et al., 2026) showed that digital competences are also a source of innovation when the absorptive capacity of the organization is adequate for the recognition, understanding and utilization of new knowledge. Likewise, (Ali & Waqas, 2026; Alquqa, 2026; Bayode et al., 2026; Chen et al., 2026) stated that AI generates better innovation results when it is part of internal R&D efforts. These studies show that innovation must be enabled by AI, which has organizational learning and employee expertise, the sharing of knowledge and managerial support.

Digital Innovation can contribute to Business Performance by the following improvements: Operational efficiency, cost reduction, customer satisfaction, employee productivity, market responsiveness, competitive advantage. According to (Alshurideh et al., 2026; Awamleh et al., 2026; Chen & Kim, 2023; Dalain et al., 2025), digital capability, digital orientation and Digital Innovation positively impact the performance of a firm in the developing economy. The conclusions drawn by them are relevant to the scenario of Pakistan, where organizations are using digital technologies at a growing pace but are challenged by limited infrastructure, technical skills and resources. (Awwad et al., 2026) also found that digital capability enhances business performance by digital business transformation. When technology is used to transform the way organizations create products, to interact with customers, to conduct business activities, it creates value. (Cheng et al., 2026) also identified that the business that invested in Artificial Intelligence benefited from an increase in sales, jobs, and market value, while product innovation was identified as one of the key drivers of this growth. The results back up the case of Digital Innovation being linked to better organizational results and investments in AI.

AI can directly impact Business Performance as well. It can enhance forecasting, automate repetitive tasks, aid in fraud and risk detection, optimise organizational resources and boost the precision and speed of managerial decisions. According to (De Fano et al., 2026), there was a positive relationship between the use of AI and the

productivity of the firms. AI assimilation also directly affects the company performance, and has an indirect effect as well, through organizational and customer agility, as reported by (Fosso Wamba et al., 2024). The results indicate that AI can deliver operational gains today, and help build more comprehensive organizational skills. (Dinh et al., 2026) conclude that a data-driven organizational culture plays a crucial role in translating AI capacity into better firm performance. This suggests that when managers and employees use AI-generated data on a frequent basis for decision-making, it becomes valuable. Additionally, (Gao et al., 2025) showed that AI assimilation helps in boosting the performance of an organization by increasing the absorptive capacity and agility of the customers. Hence, the role of AI in the organization relies on their understanding of information, interaction with customers, and utilization of technological knowledge in practical applications. While the organizational agility, absorptive capacity, decision making, data-driven culture and employee productivity have been explored as mediators between AI and performance, few studies have investigated Digital Innovation as a mediating mechanism, especially in Pakistan. Furthermore, several previous studies have been based on cross-sectional designs which can be problematic for determining the directionality of relationships between AI, innovation and performance.

The present study aims to fill this gap; it analyses the linkage between Artificial Intelligence, Digital Innovation, and Business Performance through the study of data collected from managerial employees of three companies – Jazz, Daraz Pakistan, and Habib Bank Limited. The organizations are in highly competitive and data-driven industries where AI and digital technology is increasingly being leveraged to enhance customer services, business operations, decision-making and organizational competitiveness. The research framework proposed suggests that AI has the potential to enhance Business Performance in two ways. One way is direct improvement in performance via automation, operational efficiency, productivity and improved managerial decisions. Secondly, AI can indirectly impact performance by facilitating Digital Innovation. Digital Innovation is therefore seen as a key organizational mode that can actually enable the capability of AI to be converted into new products, processes, customer experience, and competitive results.

Research Objectives

- To analyze the impact of the capability of Artificial Intelligence on Digital Innovation.
- To understand the impact of AI capability and Digital Innovation on Business Performance.
- To understand how Digital Innovation is the mediator between AI capability and Business Performance.

Research Hypotheses

H1: Artificial Intelligence capability has a positive and significant effect on Digital Innovation.

H2: Digital Innovation has a positive and significant effect on Business Performance.

H3: Artificial Intelligence capability has a positive and significant direct effect on Business Performance.

H4: Digital Innovation significantly mediates the relationship between Artificial Intelligence capability and Business Performance.

Methodology

A quantitative, explanatory research design was used in this study which is a three-wave time-lagged survey, to explore the relationship between Artificial Intelligence (AI), Digital Innovation and Business Performance. Data was collected from 400 managerial staff from three leading organizations of Pakistan: Jazz, Daraz Pakistan and Habib Bank Limited that have adopted AI and digital technologies in a significant way. Senior managers, IT managers, digital transformation managers, innovation managers, operations managers, and department heads directly responsible for the implementation of AI and digital innovation projects were the respondents Participants were selected using a purposive sampling method, which was deemed appropriate due to the participants' relevant experiences in business processes with AI Data was gathered on three waves every 4 weeks,

capturing each wave either Artificial Intelligence capability, Digital Innovation or Business Performance. Business Performance was assessed using a validated subjective organizational performance scale comprising of financial performance, operational efficiency, customer satisfaction, innovation performance, market performance and competitive advantage vis-à-vis the most significant competitor. The data obtained was subjected to preliminary analysis using SPSS 29 and further analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis using SmartPLS 4. Cronbach's alpha, the Composite Reliability, Average Variance Extracted (AVE), the Fornell–Larcker criterion and the ratio of HTMT were used to assess the reliability and validity of the instruments, and the hypotheses proposed, and the mediation effect of Digital Innovation, were tested by bootstrapping (10,000 resamples), R^2, f^2, Q^2, SRMR and PLSpredict were used to measure the robustness and the ability of the proposed model.

RESULT

The empirical results give a coherent and convincing narration of the way in which Artificial Intelligence progressively influences organizational outcomes, through the stimulation of Digital Innovation and the final impact. The demographics of the sample shows that it is very broad and balanced representing employees from the three organizations Jazz, Daraz Pakistan & Habib Bank Limited. The respondents came from three different organisational backgrounds, enabling the analysis to take into account various business environments rather than being dominated by one institutional environment. The sample was also balanced by gender which enabled the views of both male and female employees to be adequately represented. Further, that a variety of respondents, from early career through high professional experience, provided a depth and breadth of data by reflecting on perceptions from different levels of professional experience. The overall diversity of the sample group increased the representativeness of the sample and gave a credible basis for subsequent statistical analysis, as outlined in Table 1.

Table 1 **Demographic Profile of Respondents**

Organization	Jazz	128	32.0%
	Daraz Pakistan	133	33.3%
	Habib Bank Limited	139	34.8%
Gender	Male	195	48.8%
	Female	205	51.2%
Age	20-29 years	101	25.3%
	30-39 years	108	27.0%
	40-49 years	80	20.0%
	50 years or above	111	27.8%
Experience	Less than 3 years	96	24.0%
	3-5 years	108	27.0%
	6-10 years	96	24.0%
	More than 10 years	100	25.0%

The construct-level descriptive data in Table 2 confirmed this varied population of respondents, with a trend of positive scores across the three time points of this study. At T1, respondents had generally positive attitudes towards Artificial Intelligence, suggesting a reasonably high level of presence and use of AI capabilities in the organizations they participated in. At Time 2, this positive pattern became stronger for Digital Innovation, indicating that the organizations were proactively leveraging technological capabilities into innovative digital processes, practices,

products, and services. Business performance at time 3 was the top total assessment, with positive ratings of organizational performance, efficiency, competitiveness, and responsiveness. The responses were reasonably dispersed throughout all constructs, which further verified reasonable agreement among the responses. The overall descriptive results suggest an initial pattern of increased temporal momentum, namely increased AI capability followed by increased Digital Innovation, which in turn led to increased Business Performance.

Table 2: Construct-Level Descriptive Statistics

Construct	Items	Mean	Standard Deviation
Artificial Intelligence (Time 1)	8	3.938	0.532
Digital Innovation (Time 2)	7	4.069	0.692
Business Performance (Time 3)	8	4.085	0.682

The validity of the measurement model was highly scrutinized before analyzing the relationships between the structures. As indicated in Table 3, the internal consistency for the three constructs were all good in terms of reliability and convergent-validity. The Cronbach's alpha and composite reliability values of the constructs of Artificial Intelligence, Digital Innovation and Business Performance were greater than generally accepted values, indicating that the items measuring the constructs were consistent in representing the constructs. The indicator loadings were also acceptable within desirable ranges, supporting the acceptable quality of measures. The average variance extracted for Artificial Intelligence was slightly lower than the traditional cutoff, but the satisfactory composite reliability, adequate factor loadings and logic of the construct resulted in retention of the construct. Conversely, Digital Innovation and Business Performance had very high convergent validity, as the average variance extracted surpassed the minimum thresholds. The overall pattern (also shown in Figure 1) thus supports the idea that the measurement scales were sufficiently reliable and convergent to test the hypothesis of the structural model.

Table 3: Reliability and Convergent Validity

Artificial Intelligence	0.838	0.876	0.469	0.638-0.729
Digital Innovation	0.904	0.924	0.634	0.782-0.806
Business Performance	0.915	0.931	0.628	0.759-0.824

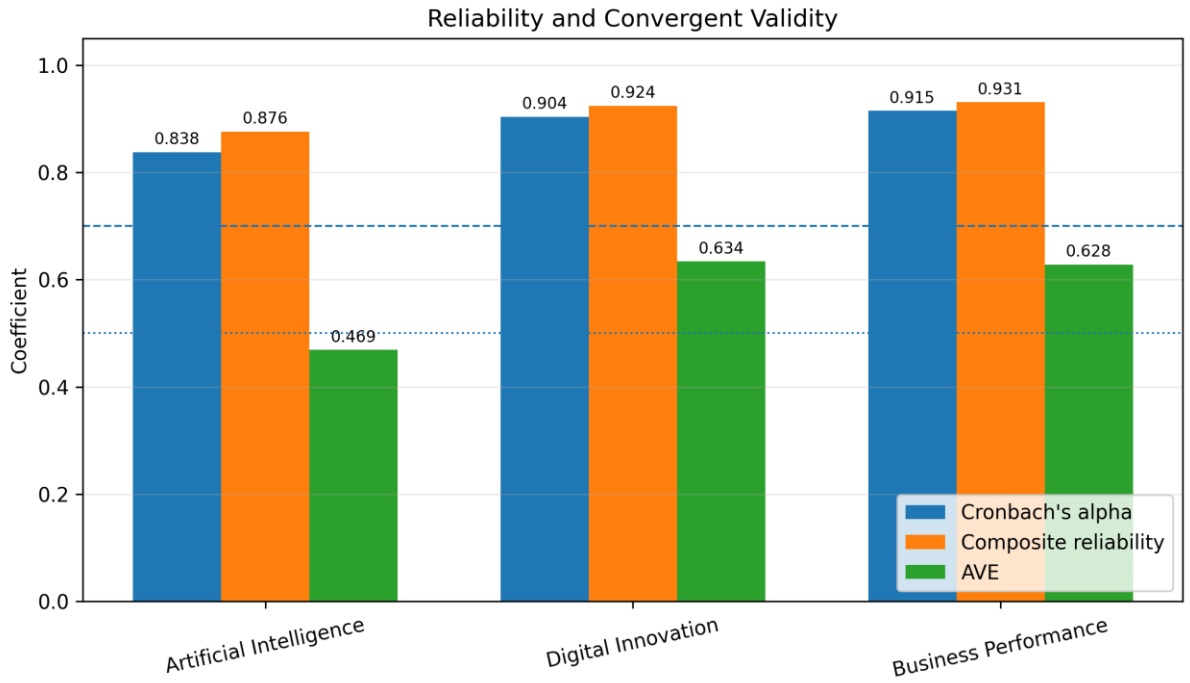


Figure 1 Reliability and convergent-validity coefficients.

Convergent validity was followed by a test of the empirical separability of the constructs. The results of the Fornell-Larcker are presented in Table 4 and indicate that the square root of the AVEs of each construct was higher than the construct correlations with the other constructs. This pattern also supports the fact that each construct had more variance with its indicators than with other constructs in the model.

Table 4: Fornell-Larcker Criterion

Artificial Intelligence	0.685		
Digital Innovation	0.588	0.796	
Business Performance	0.573	0.632	0.793

This was confirmed again by the HTMT ratios reported in Table 5 which are all well below the commonly accepted ratios. These complementary assessments confirm construct validity of the concept since Artificial Intelligence, Digital Innovation and Business Performance are theoretically connected but conceptually and statistically distinct. Thus, the measurement model was deemed as solid as a foundation for assessing the proposed three-wave temporal relationships.

Table 5: HTMT Ratios

Artificial Intelligence - Digital Innovation	0.675
Artificial Intelligence - Business Performance	0.653

Digital Innovation - Business Performance	0.695

The hypothesized progression from one phase to another was strongly supported on the empirical level based on the structural analysis reported in Table 6. Artificial Intelligence had a positive and statistically significant influence on Digital Innovation at Time 2, meaning that the stronger the AI capabilities the higher was digital innovation at time 2 for organizations. This relationship was significant, accounting for a significant amount of variance in Digital Innovation, and the magnitude of this relationship was large. This discovery formed the first chronological bridging and showed that capability of AI acts as a significant precursor to technology-enabled organizational innovations.

Table.6: Time-Lagged Phase Transition Tests

Temporal Test	Relationship	Beta	SE	t	p	R-squared	Decision
Phase 1 -> Phase 2	AI T1 -> DI T2	0.588	0.041	14.489	<.001	0.345	Supported
Phase 2 -> Phase 3 (unadjusted)	DI T2 -> BP T3	0.632	0.039	16.260	<.001	0.399	Supported
Phase 2 -> Phase 3 (adjusted)	DI T2 -> BP T3	0.450	0.046	9.897	<.001	0.461*	Supported
Time 1 -> Time 3 total	AI T1 -> BP T3	0.573	0.041	13.957	<.001	0.329	Supported
Time 1 -> Time 3 direct	AI T1 -> BP T3	0.309	0.046	6.778	<.001	0.461*	Supported

**R-squared for the full Time 3 model including both Time 1 AI and Time 2 Digital Innovation.*

As in this initial relationship, Digital Innovation at Time 2 was a significant predictor of Business Performance at Time 3, consistent with this first-stage relationship. This relationship was positive and statistically significant; even after controlling for the prior effect of Artificial Intelligence. The persistence is especially noteworthy as it shows that Digital Innovation added value to the final Business Performance, beyond just being the residual impact of the initial effect of AI capability. Artificial Intelligence at Time 1 also showed a strong total effect on Business Performance at Time 3, indicating that the organizational benefits of Artificial Intelligence went beyond that of Digital Innovation. The direct impact of Artificial Intelligence on Business Performance, however, was found to be statistically significant but decreased when Digital Innovation was added to the model. This decrease was an initial sign that Digital Innovation had a partial effect on the subsequent performance, but not a full effect.

The results of the hierarchical model comparison that is summarized in Table 7 also further underscored the incremental significance of Digital Innovation. At Time 3, the variance for Business Performance was initially meaningful and was explained by Artificial Intelligence at Time 1. These factors showed statistically significant improvements in the explanatory power of the model when Digital Innovation was added at Time 2, however. The explained variance shows the contribution of Digital Innovation to Business Performance, which was not completely explained by the previous level of AI capability. The hierarchical results thus confirm the temporal sequence that is hypothesized in the structural model: Artificial Intelligence provides a technological base for the possibility to innovate, while Digital Innovation can be considered as a more direct pathway that translates the technological base into better organizational

performance. The direct and indirect relationships are shown in a standardized way in Figure 2.

Table 7: Hierarchical Prediction of Time 3 Business Performance

Model	Predictors	R-squared	Adjusted R-squared	Delta R-squared	F-change
Step 1	Artificial Intelligence at Time 1	0.329	0.327		
Step 2	Artificial Intelligence at Time 1 and Digital Innovation at Time 2	0.461	0.459	0.133	97.943, p < .001

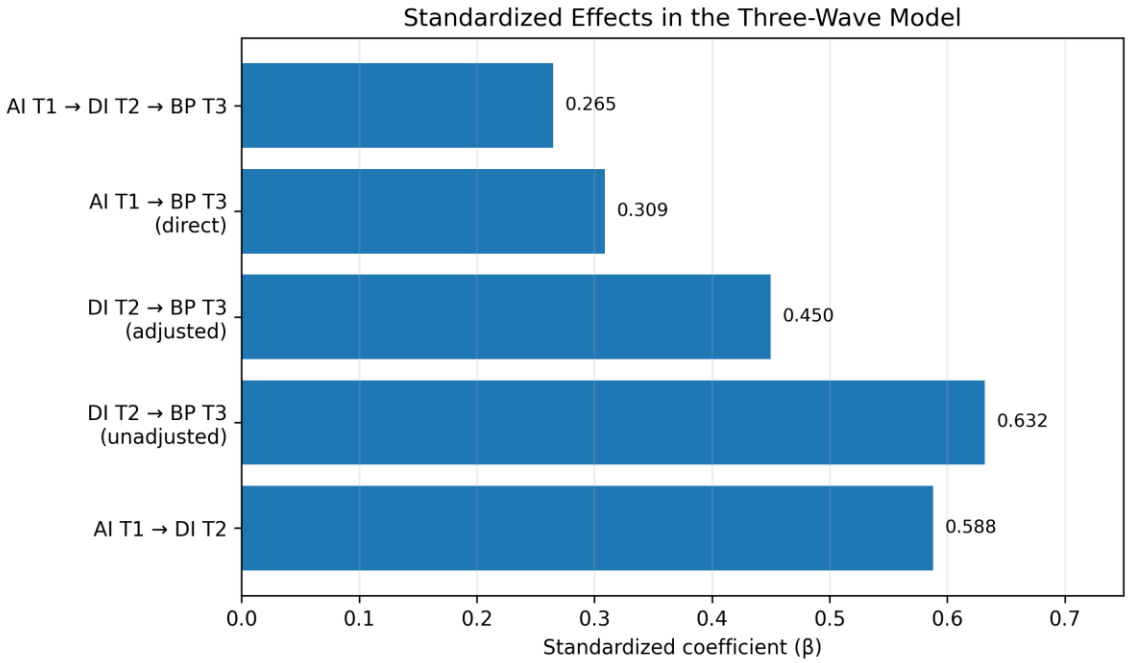


Figure 2 Standardized direct and indirect effects in the three-wave model.

The sequential three-wave mediation analysis presented in Table 8 was used to formally consider this interpretation. These two pathways were positive and statistically significant, with Business Performance at Time 3 after controlling for Artificial Intelligence. More important, the indirect effect of Artificial Intelligence on Business Performance through Digital Innovation was statistically significant, and its bootstrap confidence interval was not crossed by the zero value. This is strong evidence for the role of Digital Innovation as an intervening mechanism in the longitudinal relationship.

Table 8: Sequential Three-Wave Mediation Results

Effect	Temporal Path	Estimate	SE	t	p	95% CI
a path	AI T1 -> DI T2	0.588	0.041	14.489	<.001	[0.508, 0.667]
b path	DI T2 -> BP T3 controlling AI T1	0.450	0.046	9.897	<.001	[0.361, 0.540]

c-prime path	AI T1 -> BP T3 controlling DI T2	0.309	0.046	6.778	<.001	[0.219, 0.398]
c path	AI T1 -> BP T3 total effect	0.573	0.041	13.957	<.001	[0.493, 0.654]
Indirect a x b	AI T1 -> DI T2 -> BP T3	0.265	0.034*	7.719	<.001	[0.199, 0.335]

**Bootstrap standard error based on 10,000 resamples.*

However, the direct effect of AI on Business Performance was still significant when the mediator was added to the model. An indirect effect and a direct effect is simultaneously important, therefore there is partial and not full mediation. Thus, AI contributed to subsequent Business Performance in two complementary ways: indirectly, by influencing Digital Innovation; and directly, via other organizational mechanisms not represented in the model proposed here. The variance-accounted value suggested that Digital Innovation is the most significant part of the total longitudinal impact of Artificial Intelligence on business performance as it accounts for almost half of it. The proportions are significant, and this substantial mediated proportion indicates that AI's impact can be significant as well: through improvements in decision quality, process automation, operational efficiency, resource optimization, or better organizational responsiveness, among others.

Additionally, the relative strength of these relationships is distinguished in the effect-size analysis presented in Table 9. Digital Innovation had a significant impact on Artificial Intelligence, highlighting its key role as a driver of technology innovation. After Artificial Intelligence's influence was controlled, Digital Innovation had a medium unique influence on Business Performance. In contrast, the other direct impact on Business Performance of Artificial Intelligence was rather modest. This pattern is both theoretically and practically significant as it shows that AI benefits are stronger when AI resources are used to create new digital practices as opposed to being used as stand-alone technology investments. More simply, AI capability generates performance potential, while Digital Innovation seems to be a key vehicle for delivering that potential in the form of tangible outcomes for the organization.

Table 9: Effect Sizes

Relationship	f-squared	Interpretation
AI T1 -> DI T2	0.527	Large
AI T1 -> BP T3 direct	0.116	Small
DI T2 -> BP T3 unique	0.247	Medium

Further, the results of the explanatory and predictive performance statistics in Table 10 also validate the proposed model. The structural framework was able to explain a significant amount of variance in both Digital Innovation and Business Performance, suggesting that there is meaningful explanatory power in the successive phases. The positive value of the predictive/relevance for both the endogenous constructs indicates that the model was not only fit for in-sample data but was also predictive out of sample.

observed data set. Moreover, the standardized root mean square residual was acceptable, which means that the overall fit of the model was satisfactory, and the inner variance inflation factor values were low, meaning that multicollinearity was not a problem for the stability and interpretation of the estimated path coefficients. The overall diagnostic results presented here indicated that the structural

model was statistically valid, predictive and no serious estimation problems existed.

Table 10: Explanatory and Predictive Performance

Endogenous Construct	Predictors	R-squared	Adjusted R-squared	Q-squared predict
Digital Innovation at Time 2	AI at Time 1	0.345	0.344	0.344
Business Performance at Time 3	AI at Time 1 and DI at Time 2	0.461	0.459	0.453

The inferences that resulted in the decisions about hypothesis testing that are summarized in Table 11 represent the ultimate outcome of the evidence. Artificial Intelligence at Time 1 positively and significantly influenced Digital Innovation at Time 2, which was in line with the first hypothesis. This positive effect of Digital Innovation at Time 2 on Business Performance at Time 3 was very large and confirmed the second hypothesis. The third hypothesis was also supported that Artificial Intelligence had significant longitudinal effect on Business Performance. Lastly, the strong indirect route validates the fourth hypothesis Digital Innovation as a partial mediator between Artificial Intelligence and Business Performance.

Table 11: Summary of Hypothesis Decisions

Hypothesis	Statement	Decision
H1	Artificial Intelligence at Time 1 positively affects Digital Innovation at Time 2.	Supported
H2	Digital Innovation at Time 2 positively affects Business Performance at Time 3.	Supported
H3	Artificial Intelligence at Time 1 positively affects Business Performance at Time 3.	Supported
H4	Digital Innovation at Time 2 mediates the relationship between Time 1 AI and Time 3 Business Performance.	Supported

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The results overall are consistent and converging in support of the proposed three wave framework. They depict a sequence that can be summarized as follows: Artificial Intelligence creates Digital Innovation, Digital Innovation influences the following Business Performance and Artificial Intelligence directly influences the Business Performance again as in the first two steps.

Discussion

This study's results show that the benefits of Artificial Intelligence for organizations depend more on it being built as an organizational capability, and not as a technological investment. The three waves represent a logical temporal link that explains how the level of AI capability that is achieved in the first wave affects the Digital Innovation in the second, and the Digital Innovation in the second affects the Business Performance in the third. This pattern indicates that AI adds value by enhancing the capacity of an organization to analyze information, automate processes, discover new opportunities, and design digitally-influenced products, services and processes. In line with (Dinh et al., 2026; Fu et al., 2025; Karkoulian & Boulos, 2026), AI capability benefits Digital Innovation by improving organizational creativity and firm performance when technological resources are augmented by human skills, data and managerial skills. Their study underscores the importance of innovation in organizations, as it is not just about technology but

also about the ability to leverage that technology effectively, and their research indicates that this involves other capabilities that organizations must possess. Likewise, (Kastelli et al., 2024; Liu, 2024) discovered that the innovation capability is enhanced by AI's digital adaptability and market perception. The current results align with these, as AI seems to allow companies to identify shifts in the market and to turn information into new digital goods.

In B2B marketing, AI capabilities not only enhance B2B marketing capabilities but also drive organizational performance improvements, as reported by (Khan et al., 2022; Liu et al., 2026; Mahmood et al., 2026). Through their study, the authors shed light on the potential for Digital Innovation in Jazz, Daraz Pakistan, and HBL through the use of AI tools that enhance customer analysis, service personalization, market targeting, and digital decision-making. Digital capability, digital orientation are also linked to Digital Innovation, and this in turn has positive consequences for Digital Innovation and firm performance in developing economies, as (Masoud, 2026; Rahman et al., 2026) have observed. Their conclusions are especially important since they indicate that the positive impact observed in this study can be produced within an organization situated in a different country, such as a developing country.

AI and innovation, however, are not the same, but rather, their relationship might be assumed. For innovation, digital capability has been shown to have a significant influence, primarily through absorptive capacity, according to (Monroy-Osorio, 2024; Ratanacharoenchai & Jantapoon, 2026; Sari et al., 2026). Their study suggests that before digital technologies can create innovation, organizations need to be able to identify, understand and apply new knowledge. This makes the current results particularly noteworthy because the participating organizations might have had the advantage of experienced management, know-how, and a digital system. AI also has the potential to enhance innovation when it supports internal R&D, as (Munir et al., 2023) observed, though in certain cases, it can also facilitate a decrease in dependence on external knowledge collaboration. Their research shows that AI works best if it is leveraged through an organization's knowledge and innovation processes.

In contrast, (Shah et al., 2024; Tran et al., 2026; Wahab & Radmehr, 2024) demonstrated that some forms of AI-supported cognitive engagement had a negative impact on performance in public organizations despite the improvements in automation and cognitive insight found with the use of AI. This disparity can occur due to the fact that public entities experience more stringent bureaucratic constraints, less clear performance incentives and less competition. The sectors of Jazz, Daraz Pakistan, and HBL are more data- and competition-driven, with more direct linkages of AI applications to customer service, operational efficiency, financial risk, digital transactions, and market responsiveness.

In fact, the positive impact of Digital Innovation on Business Performance indicates that value is added when resources are used in an effective way to enact positive organizational change. (Shao et al., 2026; Wang et al., 2023; Zeng et al., 2022) discovered that the capability of digital enhances small-business performance by means of digital enterprise transformation. This aligns with the present study, as both show that digital resources have to influence business processes and practices to be effective in improving performance. Much like (Shahid et al., 2026; Shatila, 2025), found that AI skills foster open innovation practices, these practices further enhance business performance. Their research strengthens the case that innovation is not just the by-product of AI, but a critical pathway to commercializing AI. (Shatila, 2025) offer broad-based evidence that companies that invest in AI have sales and job growth as well as increased market value, and that product innovation is a significant driver of this growth. Their results lent robust support to the current research by demonstrating the link between AI investments and firm-level outcomes. The current research builds on this argument to show that Digital Innovation may also increase operational efficiency, customer satisfaction, market responsiveness and competitive advantage. (Wang et al., 2023) also discovered that responsible innovation, with dynamic capabilities and digital

innovation, contributes to be more competitive. Based on their work, we need to pay special attention to the ethical and strategic regulation of digital innovations, especially if it helps to handle customer data, make decisions automatically, respect privacy, be transparent, or avoid algorithmic bias or discrimination.

In line with this, (Basit et al., 2026; Dalain et al., 2025; Fosso Wamba et al., 2024) in their meta-analysis found that digital transformation leads to a positive multidimensional impact on sustainable business performance. Their synthesis and the current study indicate that the relationship between innovation and performance is fairly similar across organizational settings. Their research, however, also indicates that this relationship differs across industry, technological readiness, managerial capabilities, and the type of performance being measured.

The direct impact of AI on Business Performance is ongoing, suggesting that AI makes other contributions beyond Digital Innovation. AI can enhance current processes by automating them, predicting customer needs, preventing fraud, mitigating risks, optimizing resources, aiding customer service, and making quicker decisions. In an AI assimilation context, (Ahmad et al., 2025; Alshurideh et al., 2026; Chen & Kim, 2023) discovered that AI assimilation has an immediate positive effect on the firm's performance, with organizational agility and customer agility playing a partial mediating role. This fits very closely the current study, as it demonstrates the operational benefits of AI, along with the performance it engenders created by its capability in the wider organization. (Dinh et al., 2026; Fosso Wamba et al., 2024; Leoni et al., 2022; Liu et al., 2026) found that AI capability enhances firm performance through a data-driven organizational culture. When managers and employees regularly leverage data to inform their decisions, the value of AI insights is realized, their research indicates. In the current study, Digital Innovation has a related but different function: it enables the adoption of AI-generated knowledge in a data-driven culture, and it transforms knowledge into increased value in the services, products, processes, and business solutions. Decision-making processes were also shown to lie between AI capability and organizational performance by (Cheng et al., 2026). This lends weight to the idea that AI can directly enhance performance through improved decision-making processes, such as faster, more accurate, and better decisions. (Karkoulian & Boulos, 2026) conducted a study to examine the impact of artificial intelligence on productivity at the firm level, and found that the use of AI is positively associated with productivity at the firm level. Their objective productivity evidence may be useful to support the current findings as it demonstrates the benefits of AI are not just perceived by managers but can also be seen in economic output. In another developing country context, (Fosso Wamba et al., 2024) reported that the use of AI in a firm enhances performances via absorptive capacity and customer agility. The findings show that AI can create value in low-resource environments but results rely on the organization's capacity for knowledge assimilation and quick reaction to customers' needs.

Therefore, the mediation of Digital Innovation is theoretically important as it accounts for the process in which AI capability becomes organizational value. Given the partialness of the mediation, it suggests that Digital Innovation is a key, but not the only, mechanism. This is in line with the findings by (Awwad et al., 2026) which revealed that employee productivity plays a mediating role between AI and organizational performance. Analysed together, the findings of these recent studies indicate that AI impacts performance in five interwoven ways: Innovation, Agility, Quality of Decision, Data-driven Culture, Employee Productivity, and Absorptive Capacity.

This explanation is supported by the temporal order of the present study. The assessment of AI was done prior to Digital Innovation, and of Business Performance later on. This design does not prove causality, it does, however, give more credence to the proposed sequence than a one wave cross-sectional study. The results support the dynamic capabilities view, which posits that AI aids firms in recognizing new technology and market opportunities, Digital Innovation helps firms grab and leverage those opportunities, and

better performance arises from the successful reconfigure of organizational resources.

There is also some value in the existing literature in the Pakistani context. Jazz, Daraz Pakistan, and HBL are businesses that engage in many digital transactions, have big customer bases, are highly competitive, and have highly dynamic customer expectations. These situations have the potential to amplify the utility of AI-powered analytics, automation, personalization, risk evaluation, and digital-service innovation. The results are not representative of the entire Pakistani organizations due to the fact that the firms participated are large and relatively digitally mature. Smaller companies might have more severe restrictions in financing, technical expertise, information quality, infrastructure, and preparation.

Overall, the study confirmed that the adoption of AI does not necessarily result in better organizational performance. It is crucial that the organization's operational processes can incorporate AI and managerial knowledge, combined with their employees' skills, data resources, innovation processes and strategic objectives. Digital Innovation is an important link between technological capacity and organizational performance, and direct operational and decision making value creation is another pathway. The study's main finding is that the competitive advantage is not realized when acquiring technology but is developed by the organization changing and developing their capabilities.

Conclusion

This study's main finding is that Artificial Intelligence can contribute to the creation of sustainable business value more than just through the use of technology, but through the successful transformation into Digital Innovation. According to the aforementioned evidence, the capability of using AI has a significant positive effect on Digital Innovation (β = 0.588) and accounts for 34.5% of the variance. This also highlights that organizations that have strong AI capabilities are more likely to be in a better position to develop AI-powered products, services, processes, and customer solutions. Digital Innovation in turn positively affects Business Performance (β = 0.450), and AI also has a significant direct impact on performance (β = 0.309). Artificial Intelligence and Digital Innovation account for 46.1% of the overall variation in Business Performance. Partial mediation is confirmed by the substantial indirect effect of Digital Innovation (β = 0.265, 95% CI [0.199, 0.335]). Digital Innovation accounts for around 46.2% of the overall impact of AI on the performance of organizations. The results show that AI aids performance in two complementary ways. It directly contributes to automation, productivity, operational efficiency, customer service and managerial decision making, and indirectly, by creating valuable digital solutions that are innovative. So, organizations need to go beyond acquiring AI technologies and build reliable data systems, employee expertise, organizational practices that are innovative, and managerial support. The study concludes that Digital Innovation is a key strategic link between AI capability and Business Performance in general. Those organizations that effectively leverage AI into their innovation strategies are more likely to deliver better customer experiences, operational efficiencies, competitive edges and even sustainable organizational success.

Limitations

The study has a number of limitations. Firstly, the data was gathered from three big organizations in Pakistan which could restrict the findings of the study to smaller firms and other industries. Second, Business Performance was not measured in terms of actual business results but in terms of perceptions of managerial performance. Third, there was a possibility of selection bias due to the use of purposive sampling which excluded participants outside the scope of the authors' knowledge of the field. The time-lagged design enhanced the temporal separation of the variables, but not all variables were measured at each survey wave. Longitudinal panel designs, objective performance measures, more representative industry samples and other mediators (e.g., organizational agility, employee productivity, data-based culture, absorptive capacity) should be employed in future studies.

REFERENCES

Adwey, L. (2026). Artificial Intelligence and Unethical Financial Practices: Examining the Mediating Role of Environmental; Social; and Governance (ESG) performance in the Saudi Financial Sector. *Borsa Istanbul Review*, 100784.

Ahmad, Z., AlWadi, B. M., Kumar, H., Ng, B.-K., & Nguyen, D. N. (2025). Digital transformation of family-owned small businesses: a nexus of internet entrepreneurial self-efficacy, artificial intelligence usage and strategic agility. *Kybernetes*, *54*(11), 6223-6251.

Alhosani, S. E. E. S., & Safian, E. E. M. (2024). Framework of the Mediation Effect of Artificial Intelligence Usage on the Relationship Between Innovation Factors and Organisational Performance. *International Journal of Sustainable Construction Engineering and Technology*, *15*(2), 175-188.

Ali, M., & Waqas, H. M. (2026). Transforming HR Performance Through AI Competence: Knowledge Management Capability as a Mediator and Training & Development as a Moderator. *Journal of Management & Social Science*, *3*(1), 189-205.

Alquqa, E. K. (2026). Revolutionising Business Intelligence in Banking: The Mediating Role of Fifth Industrial Revolution Technology in Artificial Intelligence Integration in the Commercial Sector.

Alshurideh, M. T., Ahmed, G., Shrouf, H., Shwedeh, F., & Alzoubi, H. M. (2026). Leveraging Artificial Intelligence and Data Analytics for Digital Innovation: Insights from Banking Sector.

Awamleh, F., Awamleh, A., & Jarrah, M. (2026). The effect of digital leadership and cloud intelligence in driving organizational innovation: The mediating role of ethical artificial intelligence. *J. Res. Innov. Technol*, *5*(1), 98-109.

Awwad, B., Zaid, M. A., & Sarea, A. (2026). Does generative artificial intelligence reinforce financial performance? The mediating role of governance quality. *Future Business Journal*, *12*(1), 14.

Badwy, H. E., Qalati, S. A., Marzouk, A. A., Esmael, A. F. M., Taha, E. H., Abdelrazek, M. A., & Al Asrag, A. S. A. (2025). Corporate social responsibility digitalization and sustainable competitive performance: the mediating role of digital capability and innovation in Egypt's telecommunications sector. *Social Responsibility Journal*, *22*(2), 445-464. https://doi.org/10.1108/SRJ-05-2025-0448

Bai, L., & Cui, D. (2026). Artificial intelligence investment, data factor accumulation, and enterprise digital transformation performance. *Finance Research Letters*, 109573.

Basit, H. M., Nasir, N., & Akram, I. (2026). Digital Transformation Enablers Examining the Mediating Role of Digital Agility in Marketing Performance. *The Critical Review of Social Sciences Studies*, *4*(1), 01-19.

Bayode, O. B., Olaleye, B. R., Fasanmi, O. O., Ademola, E. A., & Oshatimi, O. O. (2026). Strategic Integration of Artificial Intelligence and Innovation Management for Enhancing Organizational Performance: The Moderating Role of Organizational Agility. *International Review of Management and Marketing*, *16*(1), 438.

Chen, M., Zhang, Y., & Xue, J. (2026). Human-artificial intelligence interaction, knowledge sharing and R&D team innovation performance. *Journal of Knowledge Management*, 1-23. https://doi.org/10.1108/JKM-02-2025-0226

Chen, P., & Kim, S. (2023). The impact of digital transformation on innovation performance-The mediating role of innovation factors. *Heliyon*, *9*(3).

Cheng, Q., Peng, C., Dai, Y., & Zhang, S. (2026). Unlocking interorganizational knowledge sharing: the mediating role of knowledge digitization in the age of digital innovation. *Journal of Knowledge Management*, *30*(1), 69-89.

Dalain, A. F., Alnadi, M., Allahham, M. I., & Yamin, M. A. (2025). The Impact of Technological Innovations on Digital Supply Chain Management: The Mediating Role of Artificial Intelligence: An Empirical Study. *Logistics*, *9*(4), 138.

De Fano, D., Schena, R., & Russo, A. (2026). Harnessing AI ambidexterity for competitive advantage: the role of dynamic capabilities in digital innovation ecosystems. *European Journal of Innovation Management*, *29*(2), 490-504.

Dinh, H. T., Nguyen, N. H., Nguyen, A. N., & Bui, T. T. K. (2026). Harnessing AI and digital innovation for green innovation and sustainable performance. *Journal of Hospitality and Tourism Insights*, *9*(2), 767-785.

Fosso Wamba, S., Queiroz, M. M., Pappas, I. O., & Sullivan, Y. (2024). Artificial intelligence capability and firm performance: a sustainable development perspective by the mediating role of data-driven culture. *Information Systems Frontiers*, *26*(6), 2189-2203.

Fu, Y., Ni, J., & Fang, M. (2025). The impact of artificial intelligence on digital enterprise innovation. *Journal of Strategy & Innovation*, *36*(1), 200538.

Gao, Y., Liu, S., & Yang, L. (2025). Artificial intelligence and innovation capability: A dynamic capabilities perspective. *International Review of Economics & Finance*, *98*, 103923.

Karkoulian, S. K., & Boulos, R. (2026). The moderating role of artificial intelligence on the relationship between knowledge management and employees innovative work behavior. *Journal of Knowledge Management*, 1-23.

Kastelli, I., Dimas, P., Stamopoulos, D., & Tsakanikas, A. (2024). Linking digital capacity to innovation performance: The mediating role of absorptive capacity. *Journal of the Knowledge Economy*, *15*(1), 238-272.

Khan, M. A., Mazliham, M., Alam, M. M., Aman, N., Malik, S., Urooj, S. F., & Taj, T. (2022). An empirical mediation analysis of technological innovation based on artificial intelligence in the relationship between economic development and corporate governance mechanism. *Frontiers in Environmental Science*, *10*, 999096.

Leoni, L., Ardolino, M., El Baz, J., Gueli, G., & Bacchetti, A. (2022). The mediating role of knowledge management processes in the effective use of artificial intelligence in manufacturing firms. *International Journal of Operations & Production Management*, *42*(13), 411-437.

Liu, C. (2024). The application of AI and product innovation efficiency: the role of knowledge innovation under SECI model. *Aslib Journal of Information Management*, *78*(3), 690-714. https://doi.org/10.1108/AJIM-04-2024-0348

Liu, X., Chau, K. Y., Chang, T. C., & Moslehpour, M. (2026). Driving Sustainable Performance Through Green Business Strategy, Artificial Intelligence Capability, and Green Supply Chain Management: The Mediating Roles of Knowledge Integration and Green Innovation. *Corporate Social Responsibility and Environmental Management*.

Mahmood, G., Anum, R., & Munir, S. (2026). Role of Artificial Intelligence and Digital Infrastructure in Enhancing Innovation Performance of Manufacturing Sector in Emerging Economies. *Research Consortium Archive*, *4*(1), 433-449.

Masoud, N. (2026). AI, big data and knowledge management: enhancing green innovation and sustainability in business. *SAM Advanced Management Journal*, 1-37.

Monroy-Osorio, J. C. (2024). Assessing the impact of digital service innovation (DSI) on business performance: the mediating effect of Artificial Intelligence (AI). *Journal of Enterprise Information Management*.

Munir, S., Mahmood, G., Abdullah, F., & Noreen, A. (2023). Exploring the impact of digital leadership on sustainable performance with mediating role of artificial intelligence. *Journal of Accounting and Finance in Emerging Economies*, *9*(3), 213-226.

Rahman, S., Adeel, S., Ali, M., Bajaba, S., & Latan, H. (2026). Power of green capabilities and artificial intelligence (AI): Understanding how and when green innovation promotes sustainability. *Business Strategy and the Environment*, *35*(2), 2502-2525.

Ratanacharoenchai, C., & Jantapoon, K. (2026). The mediating role of supply chain resilience in the relationship between AI capabilities and sustainability performance: evidence from manufacturing SMEs. *Sustainable Futures*, *11*, 101677.

Sari, R. M., Sundjoto, S., Rahayu, S., & Fitrianty, R. (2026). The Impact of Digital Literacy and Achievement Motivation on Employee Performance: The Mediating Role of Innovative Behavior in the Communication and Information Office of Pasuruan Regency. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *4*(4), 3923-3931.

Shah, N., Zehri, A. W., Saraih, U. N., Abdelwahed, N. A. A., & Soomro, B. A. (2024). The role of digital technology and digital innovation towards firm performance in a digital economy. *Kybernetes*, *53*(2), 620-644.

Shahid, M. K., Mahmood, K., Altayyar, R. S., & Abdullah, H. (2026). Role of AI capabilities in sustainable firm performance: mediating role of innovative work behavior and the moderating effect of environmental dynamism. *International Journal of Productivity and Performance Management*, *75*(2), 651-671.

Shao, S., Shao, Z., & Xiong, Y. (2026). The influence of AI capability on enterprise competitive advantage: the mediating effect of business model innovation. *Journal of Enterprise Information Management*, 1-25.

Shatila, K. (2025). Artificial intelligence and organizational resilience: the mediating role of agility, innovation, and digital leadership. *Strategy & Leadership*, 1-25.

Tran, T. H. T., Abu Afifa, M., Hoang Nguyen, T., Huynh, L. D., & Nguyen, N. M. (2026). Artificial intelligence in accounting and sustainability performance: moderated-mediating model with IT capability and circular economy. *Asian Review of Accounting*, 1-25.

Wahab, M. D. A., & Radmehr, M. (2024). The impact of AI assimilation on firm performance in small and medium-sized enterprises: A moderated multi-mediation model. *Heliyon*, *10*(8).

Wang, Z., Lin, S., Chen, Y., Lyulyov, O., & Pimonenko, T. (2023). Digitalization effect on business performance: role of business model innovation. *Sustainability*, *15*(11), 9020.

Zeng, X., Li, S., & Yousaf, Z. (2022). Artificial intelligence adoption and digital innovation: how does digital resilience act as a mediator and training protocols as a moderator? *Sustainability*, *14*(14), 8286.