

Artificial Intelligence Adoption and Perceived Business Performance in Kosovo: Evidence from a Firm-Level Survey

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Abstract

This study examines the associations between Artificial Intelligence (AI) adoption and organisational outcomes among businesses in Kosovo, focusing on customer communication, process facilitation, organisational satisfaction, and perceived business performance. A quantitative cross-sectional design was employed using survey data from 250 respondents representing 250 distinct businesses. Data were analysed using descriptive statistics, reliability analysis, Pearson correlation, linear regression, an independent-samples t-test, and a chi-square test.

The findings indicate significant positive associations between AI adoption and the examined organizational outcomes. AI adoption was positively associated with organizational satisfaction and perceived business performance, while regression analysis showed that it significantly predicted perceived business performance, explaining 37% of its variance ($R^2 = 0.37$). Corporations reported higher AI adoption than family-owned businesses, and perceived COVID-19 impact was significantly associated with AI adoption. Overall, the findings suggest that AI adoption is associated with improved organizational processes and higher perceived business performance in the Kosovo business context. Given the cross-sectional design and self-reported measures, the results should not be interpreted causally. The study provides firm-level evidence from an underexplored emerging economy and offers implications for managers and policymakers supporting responsible AI adoption and digital transformation.

Keywords: artificial intelligence adoption, perceived business performance, digital transformation, organizational efficiency, small and medium-sized enterprises, Kosovo.

JEL Classification: O33; O32; M15; L25; C12.

Introduction

Over the last decade, rapid technological advancement and digital transformation have fundamentally reshaped the ways in which organizations create value, compete in markets, manage internal processes, and interact with customers. Among these developments, Artificial Intelligence (AI) has emerged as an important driver of organizational innovation, productivity enhancement, and business transformation (Vrontis et al., 2022). More broadly, technological innovation has long represented a major source of economic and organizational progress. General-purpose technologies, such as the steam engine, electricity, and the internal combustion engine, have transformed economic structures and organizational capabilities across different historical periods.

AI is increasingly regarded as one of the most significant general-purpose technologies of the contemporary era. Its growing importance is closely associated with advances in Machine Learning (ML), which enable computer systems to learn from data, identify patterns, generate predictions, and improve performance without requiring explicit programming for every individual task (Crafts, 2021). Unlike conventional digital technologies, AI-based systems can support decision-making, automate complex or repetitive processes, generate content, and provide predictive or personalized insights through computational capabilities involving learning, reasoning, and intelligent problem-solving (Russell and Norvig, 2021).

Recent studies emphasize that AI should not be viewed solely as a substitute for human capabilities but also as a complementary technology that can create synergies between human expertise and intelligent systems (Dellermann et al., 2021; Islami and Mulolli, 2024).

Advances in machine learning have also made AI technologies more effective, accessible, and applicable across a broad range of organizational activities. Organizations can increasingly use AI-enabled systems to support tasks such as customer-service automation, demand forecasting, data analysis, recommendation generation, and managerial decision-making (Kaplan and Haenlein, 2019).

These developments are particularly relevant because many organizational activities involve tacit knowledge and complex cognitive processes that are difficult to formalize or incorporate into traditional computer systems. Activities such as recognizing customer preferences, interpreting large volumes of information, and supporting strategic decisions may require the identification of complex patterns that are difficult to process through conventional approaches. By learning from data and improving performance over time, AI-enabled systems may help organizations address these limitations and enhance operational efficiency, innovation, and competitiveness (Dwivedi et al., 2023). The integration of AI into organizational and societal processes reflects a broader phase of digital transformation in which intelligent technologies are becoming progressively embedded across multiple domains (Vasuki et al., 2025).

In Kosovo, the adoption of digital technologies has expanded across the private and public sectors, contributing to the modernization of business operations and service delivery (Kosovo Agency Statistics, 2024; UNDP, 2025). Businesses are increasingly using digital platforms and AI-supported applications to improve operational efficiency, strengthen marketing activities, enhance customer relationships, and support managerial decision-making (World Bank, 2025; OECD.AI, 2025). AI-enabled solutions, including intelligent customer-service systems, chatbots, predictive analytics, recommendation systems, generative AI applications, and automated decision-support tools, may provide businesses with new opportunities to analyse information, better understand customer needs, and respond more effectively to changing market conditions.

The growing relevance of AI is particularly important for small and medium-sized enterprises (SMEs), which constitute a substantial share of the business sector in Kosovo and may operate under constraints related to financial resources, technological capabilities, access to specialized knowledge, and skilled human capital. AI-enabled tools may assist SMEs in automating repetitive activities, improving customer communication, facilitating organizational processes, supporting managerial decision-making, and developing more flexible business models (Wamba et al., 2020). However, the organizational outcomes associated with AI adoption may differ depending on business size, technological readiness, managerial competencies, employee skills, organizational resources, and the specific AI applications adopted. Therefore, AI adoption should not be understood as a uniform technological process but rather as a context-dependent form of organizational transformation. The organizational value of AI adoption also depends on managerial capabilities and digital leadership, which can influence how emerging technologies are understood, integrated, and strategically deployed within organizations (Mulolli and Islami, 2025).

Within this context, Entrepreneurial Marketing (EM) has gained increasing attention as an approach that combines entrepreneurial orientation with innovative, proactive, opportunity-driven, and market-oriented marketing activities. The concept of Entrepreneurial Marketing emerged during the early 1980s and has subsequently been developed to explain how entrepreneurial firms create value and respond to market opportunities under conditions of uncertainty and limited resources (Ramadani et al., 2019). EM is particularly relevant to SMEs, which often rely on creativity, flexibility, innovation, and opportunity-oriented marketing strategies to compete effectively (Morris et al., 2002).

The integration of AI technologies may further support Entrepreneurial Marketing practices by enabling businesses to analyse customer and market information, personalize communication, automate selected marketing activities, identify emerging opportunities, and respond more rapidly to changes in market conditions. Through these capabilities, AI may support entrepreneurial decision-making and contribute to the development of more customer-oriented and competitive business strategies. However, the extent to which AI adoption is associated with organizational outcomes and perceived business performance remains an empirical question, particularly in emerging and relatively underexplored business environments such as Kosovo.

The COVID-19 pandemic further accelerated digital transformation by increasing organizations' dependence on online platforms, digital communication channels, remote work arrangements, and automated technologies (Bytyçi et al., 2021). These changes increased the strategic relevance of digital and AI-enabled solutions for organizational adaptation, resilience, and competitiveness (Dwivedi et al., 2021; World Economic Forum, 2025; International Monetary Fund, 2025). Nevertheless, the present study does not examine changes in AI adoption over time or establish that the pandemic caused an increase in AI adoption. Instead, it examines the association between respondents' perceived impact of the COVID-19 pandemic and AI adoption among the businesses included in the survey.

1. Research Background

Previous studies have extensively examined the role of Artificial Intelligence (AI) in organizational performance, innovation, and digital transformation, much of the existing empirical evidence has focused on developed and technologically advanced economies. Comparatively less is known about how AI adoption is associated with organizational outcomes in emerging and transition economies, where businesses may operate under different conditions related to digital

infrastructure, financial resources, technological readiness, institutional support, and access to specialized human capital. In particular, quantitative evidence concerning the relationships between AI adoption, customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance remains limited in the context of Kosovo.

Kosovo provides relevant research setting because its business environment is characterized by increasing digitalization and growing interest in AI-enabled solutions, while many businesses continue to face resource constraints, gaps in technological capabilities, and institutional challenges. Findings derived from technologically advanced economies may therefore not be directly transferable to this context. Examining AI adoption at the firm level in Kosovo may provide context-specific evidence regarding how businesses perceive the organizational outcomes associated with the use of AI-enabled technologies.

To properly evaluate these dynamics, it is essential to conceptually distinguish AI-specific capabilities from general digital technologies. In this study, AI-related capabilities include data-driven learning and prediction, intelligent recommendation systems, natural-language processing, AI-enabled customer interaction, and automated decision-support mechanisms. This distinction is important because the adoption of general digital technologies does not necessarily constitute AI adoption.

Accordingly, the study aims to examine the associations between AI adoption and selected organizational outcomes among businesses operating in Kosovo. More specifically, it investigates the relationships between AI adoption-related practices and customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance. The study also examines whether reported levels of AI adoption differ across selected business categories and whether the perceived impact of the COVID-19 pandemic is associated with AI adoption among the surveyed businesses (Dwivedi et al., 2021).

Based on this objective, the study addresses the following research questions:

RQ1: How are AI adoption-related practices associated with customer communication and the facilitation of organizational processes among businesses in Kosovo?

RQ2: How is AI adoption associated with organizational satisfaction and perceived business performance?

RQ3: Do reported levels of AI adoption differ across different types of businesses?

RQ4: Is the perceived impact of the COVID-19 pandemic significantly associated with AI adoption among the surveyed businesses?

Gap and Scientific Novelty

Despite the growing body of literature, quantitative evidence concerning the relationships between AI adoption, customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance remains strictly limited in the context of Kosovo.

The scientific novelty of this study lies in its integrated empirical framework, which examines the relationships between AI adoption and several organizational-level outcomes among businesses operating in Kosovo. Rather than treating AI adoption as a direct indicator of business performance or interpreting self-reported perceptions as evidence of objective economic growth, the study focuses on organizational outcomes reported by survey respondents. These outcomes include AI-supported customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance. This approach provides a more conceptually

appropriate assessment of the organizational outcomes associated with AI adoption within the context of an emerging and transition economy.

Furthermore, the study contributes firm-level empirical evidence based on survey data collected from 250 respondents representing businesses operating across different sectors of the Kosovar economy. The study conceptually distinguishes AI-specific capabilities from general digital technologies. In this study, AI-related capabilities include data-driven learning and prediction, intelligent recommendation systems, natural-language processing, AI-enabled customer interaction, and automated decision-support mechanisms. This distinction is important because the adoption of general digital technologies does not necessarily constitute AI adoption.

Finally, the study explicitly addresses methodological boundaries by recognizing that its findings are based on cross-sectional, self-reported survey data collected at a single point in time. Accordingly, the results are interpreted as statistical associations between AI adoption and the examined organizational outcomes rather than as evidence of direct causal effects, objective improvements in firm performance, or economic growth. Explicitly recognizing these boundaries supports a transparent, cautious, and appropriately contextualized interpretation of the findings. By addressing the research questions, the study contributes valuable empirical evidence to the growing literature on AI adoption in emerging markets, providing insights relevant to business managers, policymakers, and academic institutions.

2. Study Objectives

The primary objective of this study is to examine the associations between Artificial Intelligence (AI) adoption and selected organizational outcomes among businesses operating in Kosovo. Particular attention is given to AI-supported customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance within the context of an emerging and transition economy.

AI adoption is not treated as a direct measure of business performance or as evidence of objective improvements in firm outcomes. Rather, the study examines organizational-level perceptions reported by business owners, managers, and other business representatives. Given the cross-sectional and self-reported nature of the data, the findings are interpreted as statistical associations rather than causal effects (Verhoef et al., 2021). To provide a coherent analytical structure, the specific objectives are organized into four interrelated dimensions, as summarized in Table 1.

Table 1. Analytical Framework of the Study Objectives

Analytical Dimension	Specific Objectives
I. AI Adoption and Organizational Integration	O1. Assess the reported level of AI adoption among businesses in Kosovo, with particular attention to AI-enabled applications such as generative AI, chatbots, machine-learning systems, predictive analytics, recommendation systems, and automated decision-support tools. O2. Examine the association between AI adoption-related practices and AI-supported customer communication, including automation, response efficiency, and personalized interactions. O3. Examine the association between AI adoption-related practices and organizational process facilitation, particularly routine task automation, information processing, managerial decision support, and operational coordination.
II. Organizational Outcomes	O4. Examine the associations between AI adoption, organizational satisfaction, and perceived business performance, including perceived organizational effectiveness, process improvements, managerial support, and business competitiveness.

Analytical Dimension	Specific Objectives
III. Adoption Context and Determinants	O5. Identify the main perceived technological and organizational barriers to AI adoption, including technological expertise, implementation costs, availability of qualified professionals, AI-related knowledge, and organizational readiness. O6. Compare reported AI adoption between family-owned businesses and corporations. O7. Examine the association between the perceived impact of the COVID-19 pandemic and reported AI adoption among surveyed businesses.
IV. Managerial and Policy Implications	O8. Formulate evidence-based recommendations for businesses, policymakers, and institutional stakeholders regarding responsible AI adoption, workforce capabilities, digital transformation strategies, and institutional support within the Kosovar business environment.

Source: Authors' conceptualization based on the study objectives and research framework.

These objectives establish the analytical framework for addressing the research questions and testing the proposed hypotheses. By integrating organizational, performance-related, and contextual dimensions of AI adoption, the study provides firm-level evidence from Kosovo and contributes to the literature on AI adoption and digital transformation in emerging and transition economies. Figure 1 summarizes the conceptual structure of the study objectives, illustrating the relationships between AI adoption and organizational integration, organizational outcomes, contextual determinants, and managerial and policy implications.

Figure 1: Conceptual Framework of Study Objectives



Note: Solid arrows indicate the main analytical pathways, while dashed arrows represent contextual factors influencing AI adoption and organizational outcomes.

3. Research Hypotheses

The hypotheses of this study are developed based on contemporary literature and theoretical perspectives related to Artificial Intelligence (AI) adoption, digital transformation, organizational capabilities, and business performance. The proposed hypotheses examine the associations between AI adoption and selected organizational outcomes among businesses operating in Kosovo.

The study conceptualizes AI adoption as an organizational capability that may be associated with customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance. Because the study employs a cross-sectional research design based on self-reported survey data, the hypotheses are formulated in terms of statistical relationships and associations rather than direct causal effects.

Hypothesis H1: AI Supported Customer Communication and Organizational Process Facilitation: - AI-supported customer communication technologies, including chatbots, generative AI applications, intelligent customer-service systems, and automated communication tools, may enhance the speed of customer responses, information exchange, and communication efficiency. These capabilities may also support organizational coordination, improve access to information, and facilitate the management of routine activities. Therefore, businesses reporting higher levels of AI-supported customer communication are expected to report higher levels of AI-supported organizational process facilitation.

H1: AI-supported customer communication is positively associated with AI-supported organizational process facilitation.

Hypothesis H2: AI Adoption and Perceived Business Performance: AI-enabled technologies may support organizations by facilitating process automation, improving information management, supporting data-driven decision-making, enhancing operational efficiency, and strengthening organizational competitiveness. Accordingly, businesses reporting higher levels of AI adoption are expected to report more favourable perceptions of business performance.

This hypothesis focuses on perceived firm-level outcomes and does not treat AI adoption as a direct measure of business performance or objective financial performance. Instead, it examines whether reported levels of AI adoption are statistically associated with perceived business performance among the surveyed businesses.

H2: AI Adoption is positively associated with perceived business performance.

Hypothesis H3: AI Adoption and Organizational Satisfaction: AI-enabled technologies may contribute to improved organizational activities by supporting process efficiency, managerial decision-making, access to information, and the automation of selected administrative tasks. Accordingly, businesses reporting higher levels of AI adoption are expected to report higher levels of organizational satisfaction.

H3: AI adoption is positively associated with organizational satisfaction.

Hypothesis H4: Differences in AI Adoption Between Family-Owned Businesses and Corporations: Businesses may differ in their levels of AI adoption due to variations in organizational structure, financial resources, technological readiness, managerial capabilities, and access to specialized knowledge. Family-owned businesses and corporations represent distinct organizational forms that may differ in resource availability, decision-making structures, technological capabilities, and access to specialized knowledge. These differences may influence their ability to adopt and integrate Artificial Intelligence technologies. Accordingly, this study examines whether reported levels of AI adoption differ significantly between family-owned businesses and corporations.

H4: AI adoption levels differ significantly between family-owned businesses and corporations.

Additional Hypothesis H5: Perceived COVID-19 Impact and AI Adoption: The COVID-19 pandemic increased the importance of digital communication, online platforms, and technology-enabled business activities. However, the present study does not test whether the COVID-19 pandemic caused an increase in AI adoption over time. Instead, it examines whether respondents' perceived impact of the COVID-19 pandemic is statistically associated with reported AI adoption among the surveyed businesses.

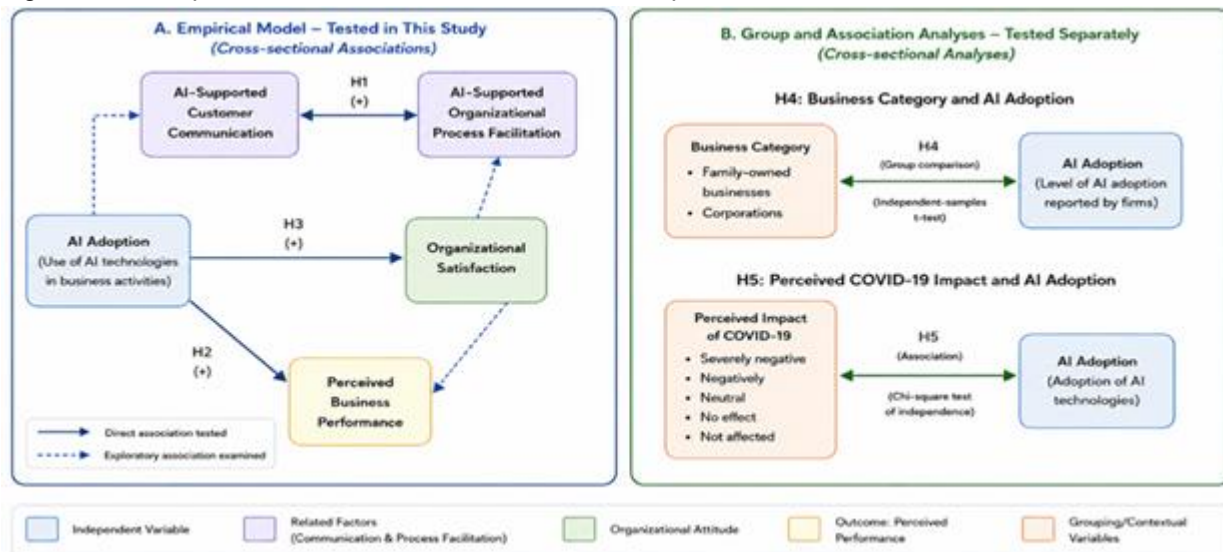
H5: The perceived impact of the COVID-19 pandemic is significantly associated with AI adoption.

4. Conceptual Framework

Based on the Technology Acceptance Model (TAM), together with insights from the Resource-Based View (RBV) and Dynamic Capability Theory, the conceptual framework summarizes the main statistical associations examined in this study. The framework includes AI adoption, AI-supported customer communication, AI-supported organizational process facilitation, organizational satisfaction, perceived business performance, business category, and perceived COVID-19 impact. The framework is intended to organize the variables and relationships examined empirically rather than to specify a causal or sequential process among them.

The relationships presented in Figure 2 correspond to the hypotheses and statistical tests employed in the study. Specifically, the study examines the association between AI-supported customer communication and AI-supported organizational process facilitation, the association between AI adoption and organizational satisfaction, the association between AI adoption and perceived business performance, differences in AI adoption across business categories, and the association between perceived COVID-19 impact and AI adoption. Because the study uses a cross-sectional design and self-reported survey data, these relationships are interpreted as statistical associations rather than causal effects or mediation pathways.

Figure 2: Conceptual Framework and Tested Relationships



Source: Author's conceptualization based on the theoretical foundations and study variables.

The connections shown in Figure 2 represent statistical associations examined in the present cross-sectional study and should not be interpreted as causal, sequential, or mediation pathways. The empirical relationships were examined using Pearson correlation analysis, linear regression, an independent-samples t-test, and a chi-square test of independence.

The conceptual framework integrates three complementary theoretical perspectives: the Technology Acceptance Model (TAM), the Resource-Based View (RBV), and Dynamic Capability Theory. TAM explains how perceptions of usefulness and ease of use may influence the acceptance and adoption of technological innovations. The RBV conceptualizes AI-related capabilities as potentially valuable organizational resources that may support organizational effectiveness and competitive advantage when effectively integrated into business processes. Dynamic Capability Theory emphasizes the ability of organizations to adapt, innovate, and respond to technological and market changes through the development, integration, and reconfiguration of organizational capabilities.

Based on these theoretical perspectives, the framework organizes the study variables around the empirical associations examined in the dataset. AI adoption is examined in relation to organizational satisfaction and perceived business performance, while AI-supported customer communication is examined in relation to AI-supported organizational process facilitation. Business category and perceived COVID-19 impact are examined in relation to reported AI adoption. These relationships are presented as statistical associations consistent with the cross-sectional design of the study and are not intended to imply causal ordering or mediation.

The theoretical foundations of the study are informed by the Technology Acceptance Model (TAM) (Davis, 1986; Lai, 2017), the Resource-Based View (RBV) (Barney (1991), and Dynamic Capability Theory (Teece et al., 1997).

5. Research Methodology

Research Design

This study employed a quantitative, cross-sectional research design based on a firm-level survey of 250 respondents representing 250 distinct businesses operating in Kosovo. Each business contributed one respondent, ensuring that each observation corresponded to a unique business entity. Accordingly, the business entity constituted the unit of analysis, while respondents served as knowledgeable informants regarding their respective organizations. The study examined the associations between AI adoption and AI-supported customer communication, organizational process facilitation, organizational satisfaction, and perceived business performance.

Primary data were collected through a structured questionnaire administered to business owners, chief executive officers, managers, administrative staff, and employees involved in technology implementation, digital processes, or customer communication. The survey method enabled the systematic collection of standardized data across different business categories and economic sectors (Saunders et al., 2019). The questionnaire was administered between January and May 2026, and all responses refer to the organizational situation reported at the time of data collection.

Given the cross-sectional and self-reported nature of the research design, the findings are interpreted as statistical associations rather than evidence of causal relationships.

Population, Sampling, and Sample

The target population consisted of legally operating businesses in Kosovo, including sole proprietorships, family-owned businesses, and corporations. Because a complete and publicly available sampling frame containing detailed information on businesses and their AI adoption characteristics was unavailable, probability-based random sampling could not be fully implemented. The study therefore employed a non-probability sampling approach combining convenience and purposive sampling. Convenience sampling facilitated access to eligible

businesses, while purposive sampling ensured that respondents possessed relevant knowledge of organizational activities, digital technologies, customer communication, or AI-related processes.

Businesses were initially approached through direct email invitations and face-to-face visits. A total of 250 questionnaires were distributed, all of which were returned fully completed and met the study inclusion criteria, resulting in 250 valid responses (response rate = 100%). To ensure independence of observations, only one respondent was accepted from each business. Thus, the final sample comprised 250 respondents representing 250 distinct businesses, with each observation corresponding to a unique business entity.

Participants were selected according to the following criteria: the business was legally registered and operating in Kosovo; the respondent had sufficient knowledge of the organization's activities and operational processes; and the respondent was involved in managerial decision-making, administration, digital processes, technology implementation, or customer communication. Respondents included business owners, chief executive officers, managers, administrative staff, and individuals responsible for technology management, digital processes, or customer communication.

The sample covered different municipalities, economic sectors, and organizational categories across Kosovo. This geographical and organizational diversity enabled the study to capture variations in reported AI adoption and related organizational outcomes across different business structures and contexts. According to the Kosovo Agency of Statistics (2024), population and economic activity are distributed across several major municipalities, including Pristina, Prizren, Peja, Ferizaj, Gjilan, Mitrovica, Gjakova, Podujeva, Vushtrri, Lipjan, Suhareka, Drenas.

Sample Size Justification

An a priori power analysis was conducted using G*Power 3.1 to assess the minimum sample size required for the main regression analysis. The test family was F tests, and the statistical test was linear regression: fixed model, R^2 deviation from zero. Assuming one predictor, a medium effect size ($f^2 = 0.15$), a significance level of $\alpha = 0.05$, and a desired statistical power of 0.80, the minimum required sample size was 55 observations. The final sample of 250 respondents substantially exceeded this requirement and was therefore considered adequate for the planned regression analysis.

Nevertheless, because the study employed a non-probability sampling approach, the findings should not be interpreted as statistically representative of all businesses operating in Kosovo. Rather, they provide empirical evidence based on the businesses and respondents included in the study.

Measurement Instrument and Study Variables

Data were collected using a structured questionnaire consisting of two main sections. The first section collected demographic and organizational characteristics, including gender, age, municipality or city, type of business, number of employees, and business or organizational experience. The second section measured the principal research constructs related to AI adoption and organizational outcomes.

The measurement instrument comprised five key constructs: AI Adoption, AI-supported Customer Communication, AI-supported Organizational Process Facilitation, Organizational Satisfaction, and Perceived Business Performance. The questionnaire was developed to examine AI adoption practices and their relationships with perceived organizational outcomes (Dwivedi et al., 2021).

To ensure conceptual clarity, AI-based technologies were distinguished from general digital technologies. The questionnaire specifically referred to AI-enabled applications, including generative AI tools, chatbots, machine-learning-based systems, predictive analytics, recommendation systems, and automated decision-support technologies.

The instrument consisted of 25 Likert-scale items covering five constructs: AI Adoption (AI1–AI5), AI-supported Customer Communication (CC1–CC5), AI-supported Organizational Process Facilitation (PF1–PF5), Organizational Satisfaction (OS1–OS5), and Perceived Business Performance (PBP1–PBP5). Each construct was measured using five items on a five-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

In addition to the construct-level items, the questionnaire contained separate categorical items designed to obtain descriptive information on specific aspects of AI use. One such item assessed AI-supported customer communication using the original response categories *Very easy*, *Neutral*, *No use/None*, and *Very difficult*. These categories were retained in their original form and were not recoded as a five-point Likert scale. “No use/None” was treated as a single response category. Because the categories do not constitute a balanced Likert scale, this item was used exclusively for descriptive analysis and was not included in the Pearson correlation analysis. Instead, the correlation involving AI-supported Customer Communication was calculated using the CC1–CC5 construct measure.

This distinction is consistent with the methodological principle that categorical response items should not be treated as equivalent to Likert-scale measurements when their response structures differ (Boone and Boone, 2012). Because the study relied on self-reported survey data, business performance is interpreted as perceived business performance rather than objective financial performance measured through indicators such as revenue growth, profitability, productivity, or employment growth (Jarrahi, 2018). Accordingly, the study examines respondents’ perceptions of the relationship between AI adoption and organizational performance outcomes rather than objective economic development at the firm level.

Reliability and Preliminary Assessment of Factorability

The internal consistency of the measurement instrument was assessed using Cronbach’s alpha. Construct-level coefficients ranged from 0.79 to 0.85, exceeding the recommended threshold of 0.70 and indicating satisfactory internal reliability (Hair et al., 2019). The overall reliability coefficient was $\alpha = 0.81$, also exceeding the recommended threshold and indicating satisfactory internal consistency of the questionnaire (Cronbach, 1951; Field, 2018).

Table 2. Reliability Analysis of Study Constructs

Construct	Items	Items	Measurement Scale	Cronbach's α
AI Adoption	AI1–AI5	5	5-point Likert scale	0.82
AI-supported Customer Communication	CC1–CC5	5	5-point Likert scale	0.79
AI-supported Organizational Process Facilitation	PF1–PF5	5	5-point Likert scale	0.83
Organizational Satisfaction	OS1–OS5	5	5-point Likert scale	0.81
Perceived Business Performance	PBP1–PBP5	5	5-point Likert scale	0.85
Overall Scale	AI1–PBP5	25	5-point Likert scale	0.81

Source: Authors’ calculations based on survey data.

The factorability of the item matrix was assessed using the Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO value was 0.82, exceeding the recommended minimum threshold of 0.70, while Bartlett's Test of Sphericity was statistically significant ($p < 0.001$). These results indicate that the correlation structure among the measurement items was adequate for examining the internal structure of the questionnaire.

Content validity was supported through the alignment of questionnaire items with the study objectives and previous literature on AI adoption, digital transformation, organizational capabilities, and perceived business performance (Dwivedi et al., 2021).

Table 3. Reliability and Sampling Adequacy Assessment

Test	Obtained Value	Recommended Value	Result
KMO	0.82	> 0.70	Accepted
Bartlett's Test of Sphericity	$p < 0.001$	< 0.05	Accepted
Cronbach's Alpha	$\alpha = 0.81$	> 0.70	Accepted

Source: Authors' calculations based on survey data.

Importantly, because a full exploratory or confirmatory factor analysis was not conducted and reported, the KMO and Bartlett's test results are interpreted only as preliminary evidence of factorability and not as evidence of construct validity (Dwivedi et al., 2021).

Statistical Analysis

The collected data were analysed using IBM SPSS Statistics. Descriptive and inferential statistical techniques were applied to examine the associations between AI adoption and selected organizational outcomes among businesses operating in Kosovo. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize sample characteristics and the main study variables.

Inferential analyses were conducted to test the proposed hypotheses and included Cronbach's alpha reliability analysis, Pearson correlation analysis, linear regression analysis, independent-samples *t*-tests, and chi-square tests of independence (Field, 2018). Statistical significance was evaluated at the 5% level ($p < 0.05$).

Consistent with the cross-sectional design of the study, the inferential findings are interpreted as statistical associations or group differences rather than causal effects.

6. Research Results and Discussion

This section presents and discusses the empirical findings in relation to the study objectives and hypotheses. Descriptive results are first used to characterize the sample and the reported patterns of AI adoption, followed by inferential analyses examining the associations between AI adoption and organizational outcomes, differences across business types, and the relationship between perceived COVID-19 impact and AI adoption. Given the cross-sectional and self-reported nature of the data, the findings are interpreted as statistical associations and group differences rather than causal effects.

6.1. Sample Characteristics and Descriptive Findings

The final sample comprised 250 respondents representing 250 distinct businesses operating in Kosovo. Regarding gender, 65% of respondents were male and 35% female. The largest age group was 30–39 years (35%), followed by respondents aged 18–29 years (30%), indicating that 65% of participants were under 40 years of age. Respondents aged 40–49 years represented 20% of the sample, those aged 50–59 years accounted for 10%, and respondents

aged 60 years or above represented 5%. These characteristics are reported descriptively, as gender- and age-based differences in AI adoption were not examined through inferential analysis.

Table 4. Distribution of Participants by Age Group

Age Group	Percentage
18–29	30%
30–39	35%
40–49	20%
50–59	10%
60+	5%

Source: Authors' calculations based on survey data.

In terms of business structure, sole proprietorships represented the largest category (44.8%), followed by family-owned businesses (35.2%) and corporations (20.0%). This distribution reflects the heterogeneous organizational structure of the surveyed businesses and provides the basis for examining differences in reported AI adoption across business categories.

Table 5. Distribution of Participants by Business Type

Type of Business	Frequency	Percentage
Sole proprietorships	112	44.8%
Family-owned businesses	88	35.2%
Corporations	50	20.0%
Total	250	100%

Source: Authors' calculations based on survey data.

The perceived impact of the COVID-19 pandemic was predominantly negative. Overall, 24.4% of respondents reported that their businesses were severely affected and 34.0% negatively affected, whereas 16.0% reported a neutral impact. A further 15.6% indicated that their business was not affected and 10.0% reported no effect. Thus, 58.4% of respondents perceived the pandemic as having negatively affected their business activities.

Table 6. Perceived Impact of the COVID-19 Pandemic on Businesses

Impact	Frequency	Percentage
Affected severely	61	24.4%
Affected negatively	85	34.0%
Neutral	40	16.0%
Did not affect the business	39	15.6%
No effect	25	10.0%
Total	250	100%

Source: Authors' calculations based on survey data.

These results provide relevant contextual evidence for assessing whether the perceived disruption associated with the pandemic was related to subsequent patterns of reported AI adoption.

6.2. AI Adoption and Organizational Outcomes

The descriptive results indicate generally favorable perceptions of AI-supported organizational activities. Regarding customer communication, 44.0% of respondents evaluated AI-supported communication as *Very easy*, 26.0% selected *Neutral*, 18.8% reported *Very difficult*, and 11.2% indicated *No use/None*. Because this categorical item does not constitute a balanced five-point Likert scale, it was used exclusively for descriptive purposes and was not included in the Pearson correlation analysis.

Table 7. Descriptive Assessment of AI-Supported Customer Communication

Evaluation	Frequency	Percentage
Very easy	110	44.0%
Neutral	65	26.0%
No use/None	28	11.2%
Very difficult	47	18.8%
Total	250	100%

Note: This categorical item was used for descriptive analysis only and was not included in the Pearson correlation analysis.

Source: Authors' calculations based on survey data.

AI-supported organizational process facilitation was also assessed positively. A total of 30.4% of respondents reported significant facilitation and 24.8% moderate facilitation, indicating that 55.2% perceived AI as making a moderate or substantial contribution to organizational processes. Another 20.0% reported slight facilitation, while 15.2% indicated no facilitation and 9.6% remained neutral.

Table 8. AI-Supported Facilitation of Organizational Processes

Facilitation by AI	Frequency	Percentage
Facilitated significantly	76	30.4%
Facilitated moderately	62	24.8%
Facilitated slightly	50	20.0%
Not facilitated at all	38	15.2%
Neutral	24	9.6%
Total	250	100%

Source: Authors' calculations based on survey data.

The organizational processes considered included routine task automation, data management and information processing, customer analytics, operational planning, and reductions in the time required for selected activities. These findings are consistent with previous studies emphasizing the role of AI in process improvement and digital transformation (Vrontis et al., 2022; Makridakis, 2017).

The overall assessment of AI adoption was similarly favorable: 36.0% of respondents rated the role of AI very highly and 29.6% moderately, while 16.4% reported a neutral assessment. Only 10.0% rated AI poorly and 8.0% indicated that they did not use AI. Thus, 65.6% of respondents provided a positive overall evaluation of AI within their businesses.

Table 9. Overall Evaluation of Artificial Intelligence Adoption

Evaluation	Frequency	Percentage
Rated very highly	90	36.0%
Rated moderately	74	29.6%
Neutral	41	16.4%
Rated poorly	25	10.0%
Did not use AI	20	8.0%
Total	250	100%

Source: Authors' calculations based on survey data.

Taken together, these descriptive findings suggest increasing organizational recognition of AI among the surveyed businesses. However, they reflect respondents' perceptions and should not be interpreted as evidence of objective improvements in organizational or financial performance.

Pearson correlation analysis was subsequently used to examine the associations among the main study constructs (Field, 2018; Pallant, 2020).

Table 10. Pearson Correlation Analysis

Variables	<i>r</i>	<i>p</i>
AI-supported Customer Communication – AI-supported Organizational Process Facilitation	0.68	0.001
AI Adoption – Organizational Satisfaction	0.59	0.003
AI Adoption – Perceived Business Performance	0.61	0.002

Source: Authors' calculations based on survey data.

AI-supported customer communication was positively and significantly associated with AI-supported organizational process facilitation ($r = 0.68$, $p = 0.001$), providing support for *H1*. This relatively strong association suggests that businesses reporting more effective AI-supported customer communication also tend to report greater facilitation of internal organizational processes. Rather than indicating causality, the result points to the complementary role of customer-oriented and process-oriented AI capabilities within the organization.

AI adoption was also positively associated with organizational satisfaction ($r = 0.59$, $p = 0.003$), supporting *H3*. This suggests that businesses reporting greater AI adoption also tend to report more favorable perceptions of organizational satisfaction. The finding is consistent with the broader view that AI-supported technologies may facilitate organizational activities when integrated with appropriate managerial and organizational capabilities.

6.3. AI Adoption and Perceived Business Performance

AI adoption was positively and significantly associated with perceived business performance ($r = 0.61$, $p = 0.002$), supporting *H2*. The result indicates that higher reported levels of AI adoption tend to coincide with more favorable assessments of organizational effectiveness and business performance. This relationship is consistent with previous research emphasizing the relevance of AI capabilities for digital transformation, organizational performance, and competitive advantage (Brynjolfsson et al., 2017; Mikalef et al., 2019; Wamba et al., 2020; Fosso Wamba et al., 2015).

To further examine this relationship, a linear regression model was estimated:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

where: Y represents perceived business performance, X represents AI adoption, β_0 is the intercept, β_1 is the regression coefficient for AI adoption, and ε represents the error term.

Table 11. Regression Analysis of AI Adoption and Perceived Business Performance

Variable	β	t	p	R	R^2
AI Adoption	0.61	5.74	< 0.001	0.61	0.37

Source: Authors' calculations based on survey data.

AI adoption was a statistically significant positive predictor of perceived business performance ($\beta = 0.61$, $t = 5.74$, $p < 0.001$), while the model explained approximately 37% of the variance in perceived business performance ($R^2 = 0.37$). Because the model included only one predictor, multicollinearity among independent variables was not applicable.

The unexplained variance indicates that perceived business performance is also likely to reflect other organizational and contextual factors, including financial resources, managerial capabilities, technological infrastructure, market conditions, and organizational strategies (Brynjolfsson and McAfee, 2017). Importantly, the regression coefficient should not be interpreted as evidence that AI adoption causes improved business performance. Instead, the findings demonstrate a significant positive association within the surveyed businesses.

From a theoretical perspective, this result is compatible with the Resource-Based View (RBV) and Dynamic Capability Theory, according to which technological resources generate organizational value when they are effectively integrated with complementary capabilities and organizational processes. In this context, AI may be understood not merely as a technological resource but as an organizational capability whose perceived value depends on its integration into business activities.

6.4. Differences in AI Adoption by Business Type

To examine H4, an independent-samples t -test compared reported AI adoption between family-owned businesses and corporations. Sole proprietorships were excluded from this comparison because the hypothesis specifically concerned these two organizational categories (Pallant, 2020).

Table 12. AI Adoption in Family-Owned Businesses and Corporations

Business Type	n	Mean	SD	t	p
Family-owned businesses	88	3.42	0.71	2.94	0.004
Corporations	50	4.11	0.66		

Source: Authors' calculations based on survey data.

Corporations reported a significantly higher mean level of AI adoption ($M = 4.11$, $SD = 0.66$) than family-owned businesses ($M = 3.42$, $SD = 0.71$), with $t = 2.94$ and $p = 0.004$. H4 is therefore supported.

This difference may reflect variations in financial resources, technological infrastructure, specialized human capital, and organizational readiness. Previous research similarly suggests that larger organizations may possess greater capacity to invest in digital technologies and organizational transformation (Ramadani et al., 2019; Verhoef et al., 2021). Nevertheless, the finding should be interpreted specifically as a difference in reported AI adoption and not as evidence that corporations generally perform better than family-owned businesses.

6.5. COVID-19 Impact and AI Adoption

The association between respondents' perceived COVID-19 impact and reported AI adoption was examined using a chi-square test of independence.

Table 13. Association between Perceived COVID-19 Impact and AI Adoption

Variables	χ^2	df	p
COVID-19 Impact $\times$ AI Adoption	18.72	4	0.001

Source: Authors' calculations based on survey data.

The results revealed a statistically significant association between perceived COVID-19 impact and AI adoption ($\chi^2 = 18.72$, $df = 4$, $p = 0.001$), providing support for **H5**. Businesses reporting different levels of pandemic-related impact also reported different patterns of AI adoption.

This finding is consistent with research suggesting that the pandemic accelerated organizational reliance on digital technologies as businesses sought to maintain operations and customer relationships under conditions of disruption (Jarrahi, 2018). However, the result does not establish that COVID-19 caused increased AI adoption. It indicates only that respondent perceived pandemic impact was statistically associated with reported AI adoption within the surveyed businesses.

6.6. Summary of Hypothesis Testing

The empirical analyses provided support for all five hypotheses. The findings indicate significant positive associations among AI-related organizational capabilities and perceived organizational outcomes, as well as significant differences in reported AI adoption according to business type and perceived COVID-19 impact.

Table 14. Summary of Hypothesis Testing

Hypothesis	Result
H1: AI-supported customer communication is positively associated with AI-supported organizational process facilitation.	Supported
H2: AI adoption is positively associated with perceived business performance among businesses operating in Kosovo.	Supported
H3: AI adoption is positively associated with organizational satisfaction among businesses operating in Kosovo.	Supported
H4: Corporations demonstrate significantly higher levels of AI adoption than family-owned businesses.	Supported
H5: Perceived COVID-19 impact is significantly associated with AI adoption among businesses operating in Kosovo.	Supported

Source: Authors' calculations based on survey data.

Overall, the findings suggest that AI adoption among the surveyed businesses is associated not only with perceived business performance but also with customer-oriented and internal organizational processes. The results therefore support a broader interpretation of AI adoption as an organizational capability embedded in digital transformation rather than as an isolated technological intervention. This interpretation is consistent with the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Dynamic Capability Theory incorporated into the study's conceptual framework.

6.7. Theoretical, Managerial, and Policy Implications

The findings contribute to the literature on AI adoption by providing firm-level evidence from Kosovo, an emerging and transition economy in which empirical research on organizational AI

adoption remains comparatively limited. The significant relationships identified between AI adoption and perceived organizational outcomes reinforce the importance of examining AI not only as a technological tool but also as an organizational capability whose value depends on its integration into business processes.

From a theoretical perspective, the findings are broadly consistent with the Technology Acceptance Model (TAM), which emphasizes the relevance of perceived usefulness and ease of use in technology adoption, and with the Resource-Based View (RBV) and Dynamic Capability Theory, which highlight the organizational value of technological resources when combined with complementary capabilities. The observed associations between AI adoption, process facilitation, organizational satisfaction, and perceived business performance suggest that the organizational benefits associated with AI may depend on the capacity of businesses to integrate technological resources into operational and managerial practices.

From a managerial perspective, the results suggest that AI adoption strategies should extend beyond technology acquisition. Businesses may benefit from developing AI-related skills, strengthening digital infrastructure, integrating AI into customer communication and operational processes, and improving organizational readiness for technological change, particularly as AI-related knowledge and preparedness remain important dimensions of effective technology engagement (Dullinja and Jashanica, 2025).

The findings also have implications for policymakers and institutional stakeholders in Kosovo. Support mechanisms may focus on improving access to AI-related knowledge and training, strengthening digital capabilities among smaller businesses, and facilitating responsible AI adoption through institutional and educational initiatives. Particular attention may be warranted for family-owned businesses and other resource-constrained firms that may face greater barriers to technological adoption.

6.8. Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, the study employed a cross-sectional design, which does not permit causal inference or assessment of changes in AI adoption over time. Second, the analysis relied on self-reported data and therefore reflects respondents' perceptions rather than independently verified measures of AI use or objective business performance. Third, the use of convenience and purposive sampling limits the statistical generalizability of the findings to the entire population of businesses operating in Kosovo.

Furthermore, perceived business performance was measured through survey responses rather than objective indicators such as profitability, revenue growth, productivity, or employment growth. The observed associations should therefore be interpreted as relationships between reported AI adoption and perceived organizational outcomes.

Future research could employ longitudinal designs to examine changes in AI adoption over time and investigate potential causal mechanisms more directly. Probability-based or stratified sampling could improve representativeness, while the integration of objective financial and operational indicators would provide a more comprehensive assessment of business performance. Further research could also examine differences across sectors, firm sizes, and stages of AI maturity and investigate whether organizational capabilities, workforce skills, or digital readiness mediate or moderate the relationship between AI adoption and organizational outcomes.

Conclusion

This study examined the associations between Artificial Intelligence (AI) adoption and selected organizational outcomes among businesses operating in Kosovo. Using firm-level survey data from 250 businesses, the analysis focused on AI-supported customer communication, organizational process facilitation, organizational satisfaction, perceived business performance, differences in AI adoption across business types, and the relationship between perceived COVID-19 impact and AI adoption.

The findings indicate that AI adoption is positively associated with organizational satisfaction and perceived business performance, while AI-supported customer communication is positively related to organizational process facilitation. Corporations reported significantly higher levels of AI adoption than family-owned businesses, suggesting that organizational resources, technological capacity, and readiness may influence adoption patterns. A significant association was also identified between perceived COVID-19 impact and reported AI adoption, indicating that businesses experiencing different levels of pandemic-related disruption exhibited different patterns of AI adoption. These findings represent statistical associations and group differences and should not be interpreted as evidence of causal relationships.

The study contributes to the literature by providing firm-level evidence on AI adoption in Kosovo, where empirical research on the organizational implications of AI remains limited. The findings support the view that AI should be considered not merely as a technological resource but as an organizational capability whose value depends on its integration with customer-oriented activities, internal processes, managerial practices, and broader digital transformation strategies. In this respect, the results are broadly consistent with the Technology Acceptance Model, Resource-Based View, and Dynamic Capability Theory applied in the study.

From a practical perspective, businesses should complement investments in AI technologies with the development of digital skills, organizational readiness, and effective integration of AI into operational and customer-oriented processes. Policymakers and institutional stakeholders can support this transition by strengthening AI-related training, digital infrastructure, and institutional support, particularly for smaller and family-owned businesses facing greater resource constraints. Overall, the study provides a context-specific basis for understanding AI adoption in Kosovo and highlights the need for continued research using longitudinal designs, broader samples, and objective performance indicators to assess how AI-related capabilities evolve and contribute to organizational outcomes over time.

CRedit Authorship Contribution Statement

Memishi, S.: Conceptualization, methodology, literature review, questionnaire design, data collection, interpretation of results, writing – review and editing, final approval of the manuscript. Mehmeti, F.: Formal analysis, questionnaire design, writing – original draft preparation, literature review.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to the publication of this manuscript.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval Statement

This study involved voluntary participation through an anonymous questionnaire survey conducted among business representatives in Kosovo. All participants were informed about the purpose of the research and provided informed consent before completing the questionnaire. No personally identifiable information was collected. According to the institutional requirements applicable to the authors, formal ethical committee approval was not required for this type of anonymous survey-based research.

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Appendix A. Complete Cleaned Survey Instrument

Survey Title: Digital Transformation, Artificial Intelligence (AI) Adoption, and Organizational Performance in Businesses

Target Respondents: Business Owners, Managers, or Authorized Representatives (1 respondent per business entity; \$N = 250\$).

Section 1: Demographic and Organizational Profile

Please select the option that best describes you and your business:

1. Gender of Respondent:

- ☐ Male
- ☐ Female

2. Age Group:

- ☐ 18–29 years
- ☐ 30–39 years
- ☐ 40–49 years
- ☐ 50–59 years
- ☐ 60+ years

3. Municipality / City where the business operates:

- ☐ Prishtinë
- ☐ Pejë
- ☐ Prizren
- ☐ Ferizaj
- ☐ Gjakovë
- ☐ Gjilan
- ☐ Mitrovicë
- ☐ Other (Specify: _____)

4. Business Legal Entity / Type:

- ☐ Family-owned business
- ☐ Sole proprietorship / Personal business
- ☐ Corporation / Joint-stock enterprise

5. Business Size (Number of Employees):

- ☐ 2 to 5 employees
- ☐ 10 or more employees
- ☐ 50 or more employees
- ☐ 100 or more employees

Section 2: Administrative Context & COVID-19 Impact

6. Business Registration Process Difficulty:

- ☐ Very problematic
- ☐ Somewhat problematic
- ☐ Neutral
- ☐ Not a problem at all

7. Guidance / Assistance Received During Business Registration:

- ☐ Yes (Received official guidance)
- ☐ No (Did not receive guidance)
- ☐ Completed independently by myself
- ☐ Completed by a third party / representative

8. Satisfaction with Public / Business Administration Services:

- ☐ 1 – Not at all satisfied
- ☐ 2 – Dissatisfied
- ☐ 3 – Neutral
- ☐ 4 – Satisfied
- ☐ 5 – Very satisfied

9. Perceived Impact of the COVID-19 Pandemic on Business Operations:

- ☐ Severely damaged / Strong negative impact
- ☐ Moderately damaged / Negative impact
- ☐ Neutral / Unaffected
- ☐ No impact
- ☐ Not damaged at all / Positive impact

Section 3: AI Adoption, Customer Communication & Organizational Challenges

10. Ease of Customer Communication via AI / Digital Channels (Categorical Item):

- ☐ No use / None (Do not use AI/digital channels for customer communication)
- ☐ Very difficult
- ☐ Neutral
- ☐ Very easy

11. Degree of Operational Problems / Challenges Encountered with AI Integration:

- ☐ Major problems encountered
- ☐ Neutral
- ☐ No problems at all

12. Perceived Operational Facilitation / Workload Reduction via AI:

- ☐ Not at all
- ☐ Very little
- ☐ A little
- ☐ Neutral
- ☐ Highly facilitated / Substantial reduction

Section 4: Main Construct Measurements (25 Likert-Scale Items)

Instruction: Please rate your level of agreement with each statement using the following 5-point Likert scale:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

Construct 1: Digital Transformation & AI Readiness

- AI1: Our business actively integrates AI-driven digital tools into daily operations.
- AI2: Employees are adequately trained and receptive to adopting AI technologies.
- AI3: Our IT infrastructure supports seamless digital and AI communication.
- AI4: AI implementation has modernized our core business workflows.
- AI5: Management prioritizes technological innovation and digital strategies.

Construct 2: AI-Assisted Customer Communication Quality

- CC1: AI tools improve the speed and responsiveness of customer communication.
- CC2: Customer inquiries are handled more accurately through automated/AI support.
- CC3: AI channels help maintain continuous (24/7) interaction with clients.
- CC4: Customer satisfaction has improved due to enhanced digital communication.
- CC5: AI solutions allow us to personalize client interactions effectively.

Construct 3: Operational Efficiency & Administrative Facilitation

- PF1: AI adoption has significantly reduced manual and redundant operational tasks.
- PF2: Administrative procedures are executed faster with digital tools.
- PF3: The cost of routine business interactions has decreased following AI integration.
- PF4: Process errors have decreased as a result of digital automation.
- PF5: AI implementation has optimized internal resource allocation.

Construct 4: Perceived Business Performance

- PBP1: AI adoption has contributed positively to our overall revenue growth.
- PBP2: Market competitiveness has increased compared to key industry peers.

- PBP3: Client acquisition and retention rates have improved through digital channels.
- PBP4: Product/service delivery speed has noticeably accelerated.
- PBP5: Overall business effectiveness has reached higher standards via AI technologies.

Construct 5: Organizational Satisfaction & Future AI Intentions

- OS1: Our management is highly satisfied with the outcomes of AI adoption.
- OS2: Employees report positive attitudes towards utilizing AI systems.
- OS3: The investment in digital and AI tools has yielded a strong return.
- OS4: Our enterprise plans to expand AI software investments in the next 1–3 years.
- OS5: Overall, AI integration has fulfilled our strategic business expectations.