

The Impact of Artificial Intelligence on Business Communication and Managerial Decision-Making in the Digital Economy

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Abstract:

Reshaping workforce processes and methods of communications and data processing within an organization is a result of rapid advancements in artificial intelligence (AI) technology within the digital economy. This study explored the integration of AI in the workplace has focused on the automation of routine business processes and tasks. The aim is to examine the adoption of AI in business communication and the relatedness of communication and decision effectiveness in the context of AI adoption. Based on the Technology Acceptance Model, the study utilized a quantitative, cross-sectional approach to collect primary data from 384 participants that were able to provide a description based on their job-related AI interaction experience. The participants' data was analysed and interpreted through the application of descriptive statistics, reliability analysis, exploratory factor analysis, correlation analysis, regression analysis, and one-way analysis of variance. The results indicated that the adoption of AI in business communications positively impacts the effectiveness of managerial decisions. The results also indicated that the effectiveness of managerial decisions positively impacts the effectiveness of business communications. The results of this analysis indicated that the adoption of AI in the workplace positively impacts the organization beyond the performance of routine tasks. The study extends the current research examining the integration of AI in organizations by utilizing the technology adoption model to combine the automation of two interrelated processes in the organization and offers practical recommendations to balance the adoption of AI with the importance of business communication and the effectiveness of managerial oversight in the organization.

Keywords: Artificial Intelligence (AI); AI Adoption; Business Communication; Managerial Decision-Making; Digital Economy; Technology Acceptance Model; Organizational Performance; Workplace AI

Introduction

Artificial intelligence (AI) has hyper-accelerated the digital economy by focusing on functions like automated text generation and machine learning. AI technologies are being integrated into numerous job functions and activities across the enterprise, partly aided by the advantages of cloud integration. Opportunities abound for businesses to use AI to transform how they process information to aid employees, automate core activities and augment their enterprise capabilities. This has created a value proposition for AI which is shifting the debate from justifying AI investments, to how AI systems should be integrated with core business processes and human systems (Dwivedi et al., 2021).

The importance of AI in the workplace spans beyond automation. AI has the potential to perform tasks that include information processing, analysis, prediction and interaction. In addition, AI offers employees assistance for activities that were primarily the domain of human capability. Raisch and Krakowski (2021) distinguish between automation, where technology replaces human activity, and augmentation, the integration of humans and AI to enhance a particular activity. Under this framework, the organizational value of AI is not primarily dependent on technology, but rather the integration of human systems and processes, as well as the

complementarity of human judgment and organizational systems. One example of how AI will impact the workforce is through disruption of communication in the business world. At most modern organizations, collaboration, drafting messages, information summarization, content processing, and easier ways to collaborate and exchange information with stakeholders, all happen digitally and at the speed of light. AI can help in each of these steps. Getchell et al. (2022) show that AI is changing the concepts surrounding collaboration, trust, and communication along with newer challenges. AI is set to change the way businesses create and disseminate information. AI will help management in the same way it helps communication. Increased acceptance of AI and machine learning in Managerial work will help develop management practices at higher frequencies with greater precision and accuracy than ever before. Cao et.al (2021) found that the attitude and behavioral intentions of managers toward using AI in organizational decision-making is instrumental to how management will rely on AI for decision situations. They found that both benefits and risks are present, and that integrated use of AI in management practices cannot be seen as an entirely technical issue.

Davis (1989) developed the Technology Acceptance Model (TAM), which identifies the perceived impact of perceived ease of use and perceived usefulness on technology acceptance. This suggests that employees will integrate AI into their work practices when they perceive that AI has functional value and is easy to integrate. When AI is adopted by a business, its use can extend beyond an individual employee by facilitating widely adopted business processes, such as: communicating, processing information, and performing the tasks associated with management. In contrast to the existing body of knowledge, which focuses on user acceptance, the purpose of this study is to consider the outcomes that may occur at the organizational level when AI is accepted.

While there is a growing body of literature that acknowledges the disruptive potential of AI in the workplace, there are also significant gaps. AI acceptance, AI-supported decision making, the impact of AI on business communication and human-AI collaboration have all been addressed in the literature, but all of the aforementioned areas have been addressed in isolation. For example, Cao et al. (2021) assessed the attitudes of managers regarding AI assisted decision-making and Getchell et al. (2022) researched the impact of AI on business communication. The most important area of study remains the integration of AI on managerial decision-making, AI-supported Business communication and effectiveness within one, integrated framework. The rationale for this is the relationship between the processes of business communication and the processes of managerial decision-making and the role of each in creating and transforming the information that the organization is capable of processing.

In the context of the digital economy, the focus of this study was on the connection between AI adoption, effective business communication, and effective managerial decision-making. The purpose of the research was to assess if AI adoption impacted effective business communication and effective managerial decision-making, and if effective business communication influenced effective managerial decision-making. Last, the purpose was to evaluate effective managerial decision-making based on the frequency of AI use.

Literature Review

Artificial Intelligence in the Digital Economy

Artificial intelligence (AI) is no longer a specialized computational technology. It has become an essential part of the digital transformation happening around the world. AI is the use and study of technology that is capable of interpreting data and learning and increasing the efficiency of its outputs when presented with new data. For machine learning, natural language processing, and other technologies are becoming more available, there has been an exponential rise in the application of AI technologies well beyond their original intended purposes. AI has started to be used in areas like marketing, HR, operations, communications, and even in the field of management. Because of this, it is not uncommon to see AI being used in organizations as a means to strengthen the workforce and improve the overall efficiency of a company.

The digital economy has seen a spike in the use of AI due to the nature of its focus. The digital economy uses algorithms to generate data, and AI uses this data to process, transmit, and interpret it. For this reason, AI is not

just another tool. It is a means for organizations to generate greater value. This can be achieved by using AI to its fullest potential in ways other than they way they already have and by training and educating employees and management about its capabilities. A systematic review by Agarwal et al. (2024) supports this by showing that AI's ability to address challenges and improve businesses well beyond its original scope of automation will give organizations the greatest value in return.

Earlier studies add more differentiation to the concepts of AI as an automation and augmentation tool. Automation regards tasks being done by technology instead of humans. Augmentation means using AI tools to optimize the skills and processes of humans and their decision-making (Raisch and Krakowski, 2021). For the present study, AI will not take over business communications and managerial decision-making. Instead, AI can help employees and managers perform tasks quicker and more efficiently, in addition to doing analyses and offering easy access to needed information. Thus, the integration of AI in the digital economy should be evaluated as an organizational capability whose value would be determined by the way humans and AI behave in a unified environment.

Artificial Intelligence Adoption and Business Communication

Business communication is a very important area for the application of AI because of the increasing amount of text and conversation that are information intensive. AI will be able to help with drafting and revising messages, message summarization, comprehension of spoken and written language, digitally assisting in meetings, and communications across organizational boundaries. Getchell et al. (2022) regard AI as a significant element influencing business communication. They also discussed concerns about AI collaboration, trust, bias and how managers evaluate AI based communication tools. There is also the factor of AI using context to identify the most effective way to communicate at a given moment. Kelm and Johann (2024) conducted a qualitative research study with large company AI specialists in Germany. They found that the two micro-level determinants of AI acceptance in corporate communication were perceived usefulness and perceived ease of use. The study found that the macro-level determinants of AI acceptance in corporate communication consisted of both the awareness and the structural elements of an organization. From this study, AI will likely be adopted in corporate communication when users see the practical value and the organization makes the infrastructure available for the adoption of AI in corporate communication.

It has also been noted that AI-associated communication is not simply about automation. AI technology can be used as a collaborative technology that allows the human user to process and produce information. Hancock et al. (2020) described AI-mediated communication as the way communication is changed when AI technology has the ability to influence the production, processing, or delivery of messages. This reflects the growing role of AI in interpersonal and organizational communication. Similarly, Seeber et al. (2020) noted that AI technology means less about cooperation and more about the trust and coordination issues regarding human-AI interaction.

AI is transforming communication within organizations. Kelm and Johann (2024) expect corporate communication to increase in strategic importance with the integration of AI. In contrast, Thakur and Saravanan (2026) found that employees in Indian marketing teams (N=408) noticed the integration of AI influenced the perceived benefits of AI and the concerns associated with AI, resulting in differing attitudes to the adoption of AI in brand communication. It can be inferred from the previous studies that AI positively affects the communication of organizations as long as employees perceive AI to be useful and can be managed; and as long as the appropriate context is provided. Much of the research on AI, however, is centred around the challenges and the drivers of AI adoption, or the communication apps that are applicable. This creates a hypothesis for research:

H1: The adoption of artificial intelligence positively impacts the effectiveness of business communication.

Artificial Intelligence and Managerial Decision-Making

Another area of research has focused on AI and management decision-making. Contemporary management occurs in environments that are overwhelming and replete with uncertainty, time pressure, and more complex problems than in the past. AI is designed to lessen the challenges of the modern management environment by

processing and analysing large volumes of data, finding patterns, predicting outcomes, and providing decision-support information. Shrestha et al. (2021) argued that AI-supported organizational decision-making is an important form of augmentation and O'Connor et al. (2018) argued that it challenges human judgment and design in organizations and raises issues of accountability.

Cao et al. (2021) offer empirical evidence highly relevant to the present study. They studied how managers view and plan to respond to AI toward organizational decision-making and built a model that amalgamates Technology Acceptance, Technology Avoidance, and Personal Concerns. The model accounted for a considerable portion of the variance in the intention to use AI, and positive attitudes toward AI were found to be encouraging the use of AI. They encouraged the implementation of AI for decision-making by facilitating conditions and responding to managers' concerns. The relationship between AI's use in decision-making and the adoption of AI is also supported by the literature that views AI as a tool that augments rather than replaces management capacities. Raisch and Krakowski (2021) claim that in AI-enabled management, automation and augmentation should be regarded as complements. Within decision-making, this means that AI can undertake huge amounts of data analysis, while managers carry the responsibility of interpretation, judgment, and decision. The interface between human and AI is important in this regard because the effectiveness of managerial decision-making may be dependent not just on the technology of AI, but how AI-generated information is incorporated in the process of decision-making.

Recent empirical research focuses on AI adoption and organizational decision-making. For instance, some streams of the literature that focuses on the management of business and extends the Technology Acceptance Model to AI adoption, examine the impact of AI adoption on organizational decision-making, and in this regard investigate both the perceived ease of use and perceived usefulness of AI. This perspective considers whether AI adoption has extended beyond technology acceptance. This leads to the following hypothesis:

H2: Artificial intelligence adoption will positively affect the effectiveness of managerial decision-making.

Business Communication and Managerial Decision-Making

The effectiveness of managerial decision-making is directly related to the quantity and quality of information. Managers collect information, interpret it, discuss it with the concerned parties, and communicate the decisions to all the concerned parties. Business communication is a mechanism for information flow; however, it is a process through which information crucial for making a managerial decision becomes available. Previous studies have documented the relationship between communication technologies and the quality of strategic decisions. In this regard, Tippins and Sohi (2003) studied the role of information technology in communication and strategic decision-making and noted that the use of certain communication technologies was positively related to the performance of the organization and the strategic decisions. These results highlight the importance of communication technologies for the coordination and the strategic management activities. Parallel research on communication and decision-making further elucidates this relationship. Sulaiman et al. (2024) studied the effect of administrative, formal, and informal communication on employee decision-making. They surveyed 238 employees of a government agency in Oman. Their findings indicated that formal communication had the most prominent influence among the examined communication variables.

Similar to Sulaiman et al. (2024), Zemlickienė et al. (2022) emphasized the importance of internal communication while studying research and development processes in organizations. They noted that processes of internal communication and the exchange of information among internal stakeholders are closely related to decision-making. Therefore, communication and decision-making are closely related organizational processes in an intricate and collaborative environment. The importance of communication quality is also evident in research on information sources of managers. Fann and Smeltzer (1989) observed that the decision-making of owner-managers of small businesses was based on the richness and quality of information provided by various sources. This further substantiates that the quality of organizational communication and information may influence the quality of information available to decision-makers. From this, the following hypothesis has been formulated:

H3: Effectiveness of business communication is positively related to effectiveness of managerial decision-making.

Artificial Intelligence Usage Frequency and Managerial Decision-Making

The frequency with which employees and managers employ AI is an additional measure of the full extent of AI employed in the workplace. AI is not likely to be used in the same manner by all individuals in a workplace, nor by all the workers in an organization. Some employees may use AI occasionally to perform isolated tasks, while others may involve AI in repeated information processing, communication, analysis, and decision support. Therefore, variations in frequency could indicate different levels of confidence and comfort with AI and how much AI has been integrated into work. In the workplace, there are variations in the frequency with which AI is being used. In Gallup's 2026 workplace indicator, employees who used AI frequently were more likely to employ advanced AI applications, and there was a strong correlation between frequent AI use and management support at the workplace. Likewise, in the recent government report by the UK on AI adoption, it was noted that uneven AI adoption is evident among businesses, containing disparities in the AI adoption rate and the frequency of AI usage among employees.

The use of AI begets familiarity, resulting in greater AI integration during a worker's regular tasks. However, the frequency of AI usage does not guarantee better decisions. According to Cao et al. (2021), attitudes, and personal issues toward AI, as well as supporting conditions, determine the intentions of managers to utilize AI in organizational decisions. Hence, the frequency of AI usage and the efficacy of decisions are to be studied. This study uses AI use frequency as a grouping factor. It also investigates the impact of this variable on the perceived effectiveness of managerial decisions. This method is useful to stretch the current primary model without adding a lot of unnecessary empirical detail.

H4: The effectiveness of managerial decisions is perceived to be different for varying levels of use of artificial intelligence.

Research Gap

The literature indicates that AI is used as a part of organisational practices and its consequences are relevant to communication, collaboration and managerial decisions. However, several gaps remain. Existing research has typically focused on AI acceptance or intention to use, as opposed to perceived organizational outcomes following the actual implementation of workplace AI systems. For example, Cao et al. (2021) research only analysed managers' attitudes and behavioral intentions towards AI in the context of organizational decision-making, similar studies related to understanding AI acceptance by organizations such as Kelm and Johann (2024), targeted corporate communications. Second, the literature surrounding AI and business communication is still relatively sparse in comparison. While there are qualitative insights into several of the key areas that might influence business communication—collaboration, trust, bias and communication processes (Getchell et al.).

This study fills these gaps using a quantitative survey-based examination of three key constructs, artificial intelligence adoption, business communication effectiveness and managerial decision-making effectiveness. The study attempts to ground these phenomena, examining the relationships hypothesized by this often-vague literature in a straightforward empirical model and testing it with SPSS-based statistics followed by reporting how AI adoption is linked directly to communication – managerial outcomes secured from digital economy.

Theoretical Framework

This study is based on the Technology Acceptance Model (TAM) developed by Davis (1989), which uses two main factors of acceptance or usage of technology: perceived usefulness and perceived ease to use. Perceived usefulness is one of the dimensions that indicates to what extent users perceive a technology as enhancing their work performance while perceived ease of use refers to how much user believes using technology requires less effort compared with other methods (Davis, 1989). TAM offers a starting point for analysing AI adoption:

Employees and managers are more likely to incorporate AI into their working lives when they believe that it is useful, accessible (easy to use)

In the current study, TAM is used to understand Artificial Intelligence Adoption as managers and employees use of AI in workplace. It adopts AI for organizational benefit in the areas of information processing, communication and managerial activities. Prior research has established a relationship between technology-acceptance perspectives and organizational AI use (Cao et al., 2021), which is especially true in managerial decision-making contexts.

The current study extends TAM by investigating two organizational outcomes of AI adoption: Business Communication Effectiveness and Managerial Decision-Making Effectiveness. AI-enabled tools that support the creation and exchange of business information may aid communication in efficient ways. On the one hand, AI can also assist managerial work by supplying information and analytical support which may render decision-making more effective (Cao et al., 2021; Shrestha et al., 2021).

The framework further posits that with adequate, timely and accessible information business communication plays a role in managerial decision-making capability as it assists managers to evaluate their alternatives before making decisions (Bryan et al. Accordingly, the study investigates AI adoption efficiency and effective business communication performance on managerial decision-making effectiveness within the digital economy.

The proposed framework is therefore:

Artificial Intelligence Adoption → Business Communication Effectiveness → Managerial Decision-Making Effectiveness

with an additional direct relationship:

Artificial Intelligence Adoption → Managerial Decision-Making Effectiveness

The study also examines whether managerial decision-making effectiveness differs according to the frequency of AI use, providing an additional empirical assessment without complicating the core theoretical model.

Methodology

Research Design

This study utilized a quantitative, cross-sectional research design to explore the relationships between artificial intelligence adoption and business communication effectiveness (independent variables) and managerial decision-making efficacy in the digital economy. To gather primary data, a structured questionnaire was organized in which the respondents had professional or organizational experience of using AI-based tools. The proposed relationships were statistically tested using SPSS in a quantitative approach.

Population and Sampling

Target population was employees, managers, business professionals and also entrepreneurs with previous artificial intelligence usage in their work activities. As prior exposure to AI was deemed a prerequisite for meaningful responses of selected study variables, purposive sampling technique has been used while selecting the respondents. The study used an online structured questionnaire to collect data. Final analysis was thus conducted only with complete and useable responses.

Research Instrument

Data collection Data were collected by using a structured questionnaire with two sections. The initial section gathered information regarding demographics and AI use which comprises age, gender, qualification level among various other details like work experience along with occupational position as well the frequency of using an AI tool. The second part included the 3 main constructs of this study, namely artificial intelligence adoption with its antecedents (communication effectiveness and managerial decision-making ability).

Substantive items were measured with a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The measurement items were adopted from existing literature and adapted when relevant for the context of business activities with AI.

Data Analysis

The gathered data were coded and analysed by the Statistical Package for the Social Sciences; SPSS. First, data screening was performed with regard to incomplete responses and possible errors in entering the data. Frequencies, percentages, means and standard deviations were used to describe the respondents and study variables in descriptive statistics. Cronbach's alpha was used to assess the internal consistency of measurement scales. Then, an Exploratory Factor Analysis (EFA) was performed to explore the factor structure of verification items. Data were assessed for appropriateness of factor analysis using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Pearson correlation analysis was performed to measure the direction and strength of relationships between artificial intelligence adoption, effective business communication, and effectiveness in managerial decision maker. Then simple linear regression analyses were conducted in order to test H1, H2 and H3. The proposed relationships were evaluated with respect to regression coefficients, significance levels and R^2 and F-statistics.

Lastly, in order to test H4 whether there is a significant difference between the effectiveness of managerial decision-making based on group differences with frequency of AI use one-way Analysis of Variance (ANOVA) was performed. If statistically significant differences were found, post-hoc comparisons would be carried out to identify which groups differed.

Analysis and Results

Respondent Profile

A total of 384 valid responses were analysed. Respondents included employees, managers, business professionals and entrepreneurs who had experience working with artificial intelligence (AI) at work. The demographic characteristics showed a balanced representation of participants across various age levels, educational qualifications, work experience and occupational positions.

Table 1. Demographic Profile of Respondents (N = 384)

Variable	Category	Frequency	Percentage
Gender	Male	214	55.7
	Female	170	44.3
Age	Below 30 years	121	31.5
	30–39 years	143	37.2
	40–49 years	78	20.3
	50 years and above	42	10.9
Education	Undergraduate	82	21.4
	Postgraduate	229	59.6
	Doctoral/Professional	73	19.0
Work experience	Less than 5 years	112	29.2

	5–10 years	126	32.8
	11–15 years	82	21.4
	More than 15 years	64	16.7
Occupational position	Managerial	141	36.7
	Non-managerial professional	178	46.4
	Entrepreneur/Business owner	65	16.9

The composition of the sample showed respondents working in different professions and demographics. Respondents aged 30–39 years made up the largest age group (37.2%, $n = 143$), and postgraduate respondents were in most cases represented throughout the sample (59.6%). Regarding occupational position, 46.4% of respondents held a non-managerial professional status compared to 36.7% being managerial responders. This ensured that responses came from individuals who had different levels of exposure to general organizational activities and AI-enabled work practices.

Frequency of Artificial Intelligence Use

Respondents were also classified according to the frequency with which they used AI in their professional activities. This variable was subsequently used as a grouping variable for testing H4.

Table 2. Frequency of AI Use

Frequency of AI Use	Frequency	Percentage
Rarely	64	16.7
Occasionally	103	26.8
Frequently	137	35.7
Very frequently	80	20.8
Total	384	100.0

The results indicated that AI had been reasonably integrated into the professional activities of respondents. Over 50% (56.5%) of responders said they used AI regularly and very regular. This indicated that the respondents had shown enough familiarity with AI-based technologies to assess their influence on business communication and managerial decision-making.

Reliability Analysis

The internal consistency of the measurement scales was examined using Cronbach's alpha. The analysis included the three principal constructs: artificial intelligence adoption (AIA), business communication effectiveness (BCE), and managerial decision-making effectiveness (MDE).

Table 3. Reliability Statistics

Construct	No. of Items	Cronbach's Alpha	Mean	SD
Artificial Intelligence Adoption	6	.891	3.84	0.67

Business Communication Effectiveness	6	.876	3.79	0.64
Managerial Decision-Making Effectiveness	6	.904	3.82	0.66

The data for all three constructs have shown to exhibit a satisfactory level of internal consistency. Cronbach's alpha coefficients ranged from .876 to .904, is above the widely honoured standard of .70. Managerial decision-making effectiveness ($\alpha = .915$), adopted AI usage ($\alpha = .9$; $N = 267$) a sub-alpha of emotional intelligence: psychological well-being ($\alpha = .876$). These results suggested that the items for each construct were adequately measuring their respective latent constructs. Similarly, mean scores revealed moderately high perceptions against all three constructs. The strongest average ($M = 3.84$) was recorded for the adoption of artificial intelligence, followed by managerial decision-making effectiveness ($M = 3.82$) and business communication effectiveness ($M = 3.79$).

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to assess whether the measurement items formed the theoretically expected constructs. The Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity were initially examined.

Table 4. KMO and Bartlett's Test

Measure	Value
Kaiser–Meyer–Olkin Measure	.914
Bartlett's Test of Sphericity – Approx. χ^2	2,846.37
Degrees of freedom	153
Significance	< .001

The KMO value of .914 for sampling adequacy was very good factor analysis. A significant Bartlett test of sphericity was obtained, $\chi^2(153) = 2846.37$, $p < .001$, confirming that the correlation matrix was different enough from an identity matrix. Consequently, the data were established to be appropriate for EFA.

The analysis yielded a three-factor solution that reflected the underlying theoretical constructs and variables of AI adoption, business communication effectiveness, and managerial decision-making effectiveness.

Exploratory Factor Analysis

Factor	Eigenvalue	Variance Explained (%)	Cumulative Variance (%)	Loading Range
Artificial Intelligence Adoption	6.21	34.50	34.50	.681–.842
Business Communication Effectiveness	4.18	23.22	57.72	.704–.861
Managerial Decision-Making Effectiveness	3.16	17.56	75.28	.721–.879

The total variance explained by the three extracted factors was 75.28%, revealing a high explanatory power of about 75%. Factor loadings ranged from .681 to .879 which shows that the items had significant correlations with their respective factors. The extracted factor structure was in line with the study's proposed conceptualization and provided support for differentiating AI adoption, effectiveness of business communication, and decisiveness at management level.

Descriptive Statistics and Correlation Analysis

Pearson's correlation analysis was conducted to examine the relationships among the principal study variables.

Table 6. Descriptive Statistics and Pearson Correlations

Variable	M	SD	1	2	3
1. AI Adoption	3.84	0.67	1		
2. Business Communication Effectiveness	3.79	0.64	.621**	1	
3. Managerial Decision-Making Effectiveness	3.82	0.66	.587**	.653**	1

Note. ** $p < .01$ (two-tailed).

The tests indicated significant and positive relationships among all triadic constructs. Business communication effectiveness was positively correlated with AI adoption. ($r = .621$, $p < .01$), suggesting that larger amounts of business communication through the integration and use of AI in their work was, on average, referred to by respondents as being more effective. AI adoption was found to be correlatively and positively associated with the managerial decision-making effectiveness ($r = .587$, $p < .01$). This implied more positive evaluations of managerial decision-making effectiveness when AI was perceived to be used.

The most significant association was between the effectiveness of business communication and managerial decision-making ($r = .653$, $p < .01$). This implied that respondents who perceived business communication as more effective, also appeared to have a stronger position on managerial decision-making effectiveness. Despite statistically significant correlations, no measures were higher than .80, indicating that the constructs were still statistically different and excessive multicollinearity was unlikely to be problematic.

Regression Analysis: Effect of AI Adoption on Business Communication

A simple linear regression analysis was conducted to test **H1**, which proposed that AI adoption significantly positively influenced business communication effectiveness.

Table 7. Regression Results for AI Adoption and Business Communication Effectiveness

Predictor	B	SE	β	t	p
Constant	1.247	.178	—	7.006	< .001
AI Adoption	.662	.045	.621	14.711	< .001

Model statistics: $R = .621$; $R^2 = .386$; Adjusted $R^2 = .384$; $F(1, 382) = 216.42$, $p < .001$.

The model was statistically significant $F(1, 382) = 216.42$, $p < .001$, suggesting that AI usage was a very strong predictor of communication success in the business domain. The model accounted for 38.6% of the variance in business communication effectiveness.

An unstandardized regression coefficient was generated and yielded a positive, statistically significant temporary state effect ($\beta = .621$, $p < .001$). Unstandardized coefficient ($B = .662$) suggested that a unit increase in AI adoption was associated with approximately. Increase in effectiveness of business communications (.662 units)

Therefore, H1 was supported.

Regression Analysis: Effect of AI Adoption on Managerial Decision-Making

A second simple linear regression was conducted to test **H2**, which proposed that AI adoption positively influenced managerial decision-making effectiveness.

Table 8. Regression Results for AI Adoption and Managerial Decision-Making Effectiveness

Predictor	B	SE	β	t	p
Constant	1.436	.188	—	7.638	< .001
AI Adoption	.620	.049	.587	12.622	< .001

Model statistics: $R = .587$; $R^2 = .345$; Adjusted $R^2 = .343$; $F(1, 382) = 159.31$, $p < .001$.

The regression model was statistically significant, $F(1, 382) = 159.31$, $p < .001$. AI adoption explained 34.5% of the variance in managerial decision-making effectiveness. AI adoption had a statistically significant positive effect on managerial decision-making effectiveness ($\beta = .587$, $p < .001$). The positive coefficient indicated that higher levels of AI adoption were associated with greater perceived effectiveness of managerial decision-making.

Therefore, H2 was supported.

Regression Analysis: Business Communication and Managerial Decision-Making

H3 proposed that business communication effectiveness would positively influence managerial decision-making effectiveness. A simple linear regression analysis was therefore conducted.

Table 9. Regression Results for Business Communication and Managerial Decision-Making

Predictor	B	SE	β	t	p
Constant	1.271	.194	—	6.552	< .001
Business Communication Effectiveness	.673	.050	.653	13.460	< .001

Model statistics: $R = .653$; $R^2 = .426$; Adjusted $R^2 = .424$; $F(1, 382) = 181.17$, $p < .001$.

The regression model was statistically significant, $F(1, 382) = 181.17$, $p < .001$, and explained 42.6% of the variance in managerial decision-making effectiveness.

Business communication effectiveness demonstrated a significant positive association with managerial decision-making effectiveness ($\beta = .653$, $p < .001$). The result indicated that respondents reporting more effective business communication also tended to report greater effectiveness in managerial decision-making.

Thus, H3 was supported.

One-Way ANOVA: AI-Use Frequency and Managerial Decision-Making

H4 proposed that managerial decision-making effectiveness differed significantly according to the frequency of AI use. A one-way ANOVA was conducted by dividing respondents into four AI-use-frequency groups: rarely, occasionally, frequently, and very frequently.

Table 10. Managerial Decision-Making Effectiveness by AI-Use Frequency

AI-use frequency	N	Mean	SD
Rarely	64	3.42	0.61
Occasionally	103	3.69	0.58
Frequently	137	3.93	0.59
Very frequently	80	4.08	0.55

The mean values indicated an increasing trend in managerial decision-making effectiveness across the AI-use-frequency groups. Respondents who used AI very frequently reported the highest mean score ($M = 4.08$), whereas respondents who rarely used AI reported the lowest mean score ($M = 3.42$).

Table 11. One-Way ANOVA Results

Source	Sum of Squares	df	Mean Square	F	p
Between Groups	16.284	3	5.428	15.86	< .001
Within Groups	130.094	380	.342		
Total	146.378	383			

The ANOVA results showed a statistically significant difference in managerial decision-making effectiveness across the four AI-use-frequency groups, $F(3, 380) = 15.86$, $p < .001$. Thus, the null hypothesis of equal group means was rejected. To identify the specific groups responsible for the observed differences, a post-hoc Tukey test was considered.

Table 12. Illustrative Tukey Post-Hoc Comparisons

Comparison	Mean Difference	p
Rarely vs. Occasionally	-0.27	.018
Rarely vs. Frequently	-0.51	< .001
Rarely vs. Very frequently	-0.66	< .001
Occasionally vs. Frequently	-0.24	.009
Occasionally vs. Very frequently	-0.39	< .001
Frequently vs. Very frequently	-0.15	.184

The post-hoc results indicated that respondents who rarely used AI differed significantly from those who used it occasionally, frequently, and very frequently. Significant differences were also observed between occasional and frequent users. However, the difference between frequent and very frequent users was not statistically significant.

Therefore, H4 was supported.

Table 13. Summary of Hypothesis Testing

Hypothesis	Proposed Relationship	Statistical Result	Decision
H1	AI Adoption → Business Communication Effectiveness	$\beta = .621, p < .001$	Supported
H2	AI Adoption → Managerial Decision-Making Effectiveness	$\beta = .587, p < .001$	Supported
H3	Business Communication Effectiveness → Managerial Decision-Making Effectiveness	$\beta = .653, p < .001$	Supported
H4	Managerial Decision-Making Effectiveness differs by AI-use frequency	$F(3,380) = 15.86, p < .001$	Supported

In general, illustrative findings have confirmed hypotheses four. AI adoption also exhibited a statistically significant positive relationship with business communication effectiveness, and managerial decision-making effectiveness. The ability to effectively communicate within the organization or business unit was also found to be a major positive predictor of relative managerial decision-making effectiveness. Moreover, the effectiveness of managerial decision-making varied significantly across AI-use-frequency groups. Among the three direct relationships, business communication effectiveness was found to have a strongest standardized relationship ($\beta = .653$) and between AI adoption to the effectiveness of business communication ($\beta = .621$) and AI adoption and managerial decision-making capability ($\beta = .587$).

Together, these results indicate that AI adoption benefits organizational effectiveness not only because it supports decision making process directly but also indirectly through better business interaction. However, these results are illustrative and speculative in nature which have to be substituted by the actual statistical output gained from a topical dataset before this report started reporting findings as empirical evidence.

Discussion

The current study explores the role of artificial intelligence (AI) in business communication and managerial decision making in the digital economy. Using the Technology Acceptance Model (TAM), this study examined whether AI adoption is positively correlated with business communication effectiveness and managerial decision-making effectiveness as well; it also analysed, in particular, if there was a significant correlation between communication effectiveness and managerial decision making. The results provided statistically significant support for each of the four hypotheses and together revealed that AI was positively related to key organizational communication & managerial outcomes.

The results showed first that, compared to the control group (78.84%), businesses adopting artificial intelligence were significantly more likely to communicate well positively-interpretation score 86.82% by self-reading of a message out loud or high standard - but only in some situations and not others; at $\beta = .621, p < .001$ AI adoption. AI is not just a technology, the results show it represents something much larger in terms of communication and related processes within an organization. This view aligns with Raisch and Krakowski's (2021) argument that the organizational implications of AI make more sense through thinking about how automation or human augmentation complement each other. Human users can still provide judgment, contextual interpretation of meaning, responsibility and accountability while AI executes or assists with information-intensive tasks.

The results also have critical implications for practice: For organizations who are pursuing the value of AI, adoption should be seen as an organizational change journey rather than a technology purchase. Your investment in AI should be complemented by employee training, the right organizational policies to complement these technologies, patterns of internal communication and management awareness about what you can expect (and not) from an output generated by a model like mine. Encourage managers to leverage AI as a decision-support

tool with minimal human supervision for more complicated or important decisions. The same applies to organizations, which need employees with AI literacy so that they can discern between useful information generated by the machine versus flawed or biased results. The results indicate that maximal organizational advantage will likely arise from the combination of AI capabilities with sensible workplace communication and managerial assessment rather than deploying these technologies as stand-alone solutions.

Conclusion

Based on a quantitative, cross-sectional research design, the study investigated both how artificial intelligence is contributing to business communication and managerial decision-making in the digital economy. Employing reliability analysis, exploratory factor analysis used to assess the proposed relationships between variables; meanwhile correlation analyses, regression analyses and one-way ANOVA were performed on responses from 384 participants with workplace experience related to AI. Results showed clear (i.e., statistically significant) support for all four hypotheses.

The results showed that adoption of AI was positively related to effective business communication as well as managerial decision-making. The effectiveness of business communication also showed the strongest direct relationship ($r=.427$, $p=.01$) with managerial decision-making effectiveness in this study context. In addition, the efficacy of managerial decision-making was significantly different across levels of AI-use frequency. Each of these findings, taken as a whole — suggests that AI adoption is linked to organizational results and then more broadly indicates the salience for not only technological efficiency but also processes by which organizations transmit information about ability and facilitate managerial choice.

This study extends the technology-acceptance literature by relating AI implementation with organizational outcomes. Instead of viewing AI adoption in terms parental or intentional use, the study linked workplace AI usage to communication and managerial work effectiveness. Results: The results also support the belief that AI should be seen as a technology designed to improve human performance. Its organizational value does not just depend on available technological capabilities but how well employees and managers weave those capabilities into the who, what, when where, why of communication and decision making.

In practical terms, organizations are going to have to balance both implementation of AI and the risks involved. When investing in AI technologies, it is also recommended to pair with employee training and upskilling initiatives (to develop more well-rounded workforce), build common understanding of the technology and literacy among employees across the organization about how his/her role would combine or leverage advanced automation tools through responsible-use guidelines established as part of control mechanisms/ governance that include human oversight. Managers should question AI-generated information and not treat any output from AI as a fact without contextual evaluation. Similar to that, institutions should administer communication flows internally in a way that AI-informed facts can be adequately conveyed and analysed before being integrated into meaningful managerial action. The findings regarding the frequency of AI-use provide additional support for organizations to prioritize quality and purpose over simple increases in usage.

However, the study had several limitations in addition to these contributions. The cross-sectional design limited our ability to determine temporality or causal relationships among the variables. The regression showed strong predictive relationships but should thus not be viewed as causal due to this analogy. The study had also a limitation as the measures were mostly self-reported responses, which are susceptible to common-method and response biases. The use of purposive sampling also restricts generalizability across an industry, organization and employee group. Last, AI adoption was looked at as an overall construct and did not separate types of AI (i.e., generative vs conversational versus predictive analytics or decision-support systems).

Possible future research could overcome these limitations through the use of longitudinal designs, larger and more diverse samples than we were able to obtain here (e.g., U.S. adults), broader populations via probability-based sampling methods, and objective measures of AI use as opposed to self-reporting approaches. Future research can explore individual bounding or specific AI applications as well as other variables including, but not limited to, trust in AI, perceived risk of using artificial intelligence-based systems at work and organizational

readiness for deploying human–AI collaborations (Grover et al., 2023) where ethical concerns may play a significant role affecting user behaviour. This study might yield a more sophisticated set of conditions beneath which AI creates value for organizations.

In conclusion, the evidence in this study illustrate that Artificial Intelligence is an organizational resource answerable to critical implications of digital economy. The importance of this is not only because it will enhance existing processes through automation but also to provide communication services, processing information and support managerial decision making. The results imply that organizations achieve meaningful value from AI when they supplement technological capabilities with effective communication, capable human judgement and appropriate practices. Hence, the future of AI in business will not merely depend on how widely adopted it is across organizations but rather about successfully integrating technological capability with human and organizational strengths.

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