Journal of Research, Innovation and Technologies
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The Effect of Digital Leadership and Cloud Intelligence in Driving Organizational Innovation: The Mediating Role of Ethical Artificial Intelligence

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Received: 11-07-2025 **Revised:** 12-25-2025 **Accepted:** 01-08-2026

Citation: Awamleh, F. T., Awamleh, A. A. M., & Jarrah, M. A. A. (2026). The effect of digital leadership and cloud intelligence in driving organizational innovation: The mediating role of ethical artificial intelligence. *J. Res. Innov. Technol.*, *5*(1), 98–109. https://doi.org/10.56578/jorit050106.

Abstract: The study explores the link between digital leadership and cloud intelligence in the context of ethical artificial intelligence (EAI) in relation to three telecom operators in Jordan: Orange, Zain, and Umniah. A total of 424 e-questionnaires were also sent to managers (senior and junior) and staff. The results were processed using SmartPLS4 in PLS-SEM. These results demonstrate that we can develop improved cloud technology solutions to enhance our ethical AI capabilities. This ethical AI facilitates the mediating process in the link between digital leadership and business innovation. Findings lead telecom companies to be much more responsible and ethical in their responsiveness and trust-building with the help of AI-induced cloud intelligence. Finally, the results will summarize theoretical and empirical evidence about responsibility dimensions in AI innovation and data-intensive telecom companies. Along with other important variables such as innovation and integrity, the study emphasizes that telecom managers in today's digital leadership era are expected to think ahead to ensure that both technological advancement and corporate social responsibility not only develop but genuinely prosper.

Keywords: Digital leadership; Cloud intelligence; Ethical artificial intelligence; Organizational innovation; Telecom sector; SmartPLS4; Jordan

JEL Classification: M12, M15, O32, O33

1. Introduction

Organizations are compelled to operate in the digital space and adopt technological advancements, which present challenges and unresolved issues that need to be addressed (Alkalbani & Hussain, 2021; Almajali et al., 2025). Moreover, the need for organizations to adapt to the new normal of operating in the digital space has made it more challenging to address moral issues related to client information, particularly concerning transparency, and has introduced complexities in algorithmic bias and accountability for the future (Altarawneh et al., 2025; Bataineh et al., 2024). It is rather difficult to notice in the telecom organizations the challenges and issues that arise with the management of large amounts of information about the clients they cater to in the process of delivering their organizational functions and objectives to the required audience in the market (Awamleh et al., 2025a; Bustami et al., 2025). Studies regarding the concept of the digital transformation of emerging economies show that the success of AI systems, being based on the evolution of machine systems, depends not only on technological development and investments but also on proper leadership and organizational behavior and other related best practices in the organization, as explained by Abdelzaher et al. (2020).

Therefore, the telecommunication companies have the challenge of managing the technological aspect of digitization while considering the ethics of justice, clarity, and corporate social responsibility (Cui, 2025; Malik et al., 2025). Even though the world has experienced rapid growth in the applications of artificial intelligence (AI)

and cloud technology, little research has focused on the aspect of cloud intelligence and the ethics of AI, particularly among up-and-coming markets (Senadjki et al., 2024). The previous study primarily focused on the digitization occurring within the telecommunication industry, giving little consideration to the ethics of AI-driven decision-making systems, even after their incorporation into cloud systems, particularly in the Jordanian context (Suljic, 2025). Digitization has significantly transformed the telecommunication industry in Jordan, involving the companies Zain, Orange, and Umniah. However, little research has specifically examined the ethical considerations that should be followed in the adoption of AI within these operations (Yılmaz et al., 2024). The role of AI as a moderator or mediator between leadership dynamics and innovation performance has not yet been explored, especially regarding the application of advanced modeling techniques like SmartPLS version 4, within the context of leadership dynamics and innovation performance (Suljic, 2025; Wreikat & Awamleh, 2025).

Despite this, there appears to be a gap in the relationship between organizational innovation and the increasing volume of scholarly work on digital leadership, cloud technology, and AI. Additionally, the scholarly work on digital leadership within the context of organizational innovation also appears inadequate within the framework of offering representation on how the scholarly work can validate its contribution to its accompaniments on digital leadership facilitated through the principles of responsible decision-making within the parameters of organizational innovation by AI. This scholarly work also aims to conceptualize a framework that outlines the role of cloud technology in digital leadership and responsible organizational innovation.

2. Theoretical Framework and Hypotheses Development

2.1 Digital Leadership

Digital leadership is the management of digital assets to enhance and expedite a fundamental business strategy and mission-oriented enterprise: a data-driven, inquiry-focused business plan propelled by innovative ideation (Sajid & Rasool, 2023). This paradigm significantly differs from the traditional model of classical liberal arts education that was widely accepted in the past, particularly due to the current need for adaptability and comprehensive implementation in our fast-paced, globalized world shaped by the digitization era (Cui, 2025; Hadi et al., 2024; Malik et al., 2025). A digital leader embodies an individual who captures culture and knowledge and can provide an atmosphere to facilitate the establishment and evolution of digital spaces that are structured around the technologies that reduce the need for creative insights (Suljic, 2025; Yılmaz et al., 2024). These people encourage the application and dissemination of the best practices and innovations as a result of collaboration by different sectors and digital platforms. This concept of digital leadership plays a critical role in the telecommunications industry as a strategy that combines digital technology and client-centric servicing techniques that help the firm to work towards the goal of excellence (Albannai et al., 2025). These people can analyze the data to identify the trends and the developments within the environment and shape the strategy to prepare the firm for intelligent automation (Albannai et al., 2025; Bhatta, 2021). The digital leaders follow ethics and have the skills to manage the developments and advancements that take place as a result of the early process and phase of the digitization transformation. Finally, the concept of digital transformation acts as the foundation that provides a competitive and innovative drive within the digitization world (Cui, 2025; Hadi et al., 2024; Malik et al., 2025).

2.2 Cloud Intelligence

Cloud intelligence is defined as the ability of an organization to leverage cloud infrastructures and data environments for improving agility, scalability, and quality of analysis (Alkalbani & Hussain, 2021; Chen, 2017). It is based on cloud computing, storage, analytics, and AI capabilities for strengthening decision-making based on data. Hence, cloud intelligence technology adoption enables telecommunication firms to provide real-time accessibility for data, which helps reallocation of resources periodically, whenever needed (Choudhary et al., 2025; Dhruvitkumar, 2024; Kunduru, 2023). Cloud intelligence is a centralized, non-functional, geographically widespread repository of managers and teams, along with the best digital assets, for enabling collaborative interdepartmental undertakings and resource sharing over different business areas (Pan, 2022; Prabhakaran, 2024; Yang et al., 2023). Cloud intelligence helps reduce overall organizational expenditure, optimizing resource management, which, being a decentralized process, improves security (Dhruvitkumar, 2024; Pan, 2022). The innovation organization is a unified entity providing capabilities for predictive maintenance, intelligent understanding of the customer, and process optimization. Optimized management of cloud intelligence enables the transformation of data from being a precious resource, acting as a source for competitive differentiation, and perpetuating continuous enhancement for process improvement and organizational knowledge (Pareigis et al., 2025; Sharif & Badi, 2025; Yang et al., 2023).

2.3 Ethical Artificial Intelligence

Ethical artificial intelligence (EAI) refers to the process and procedures related to the integration and application of AI technology that align with the ethics and values prevailing within society (Polat et al., 2025; Rane et al., 2025). Within this context, EAI tends to concentrate on justice and accountability and tends to emphasize the significance of ethics and values associated with human rights and the responsible management and control of data (Law et al., 2025). EAI within an organizational setup tends not to have an organic presence as a natural result and output associated with the technology application and implementation process but tends to be developed and constructed as a result of the behavior of the administration and the organizational leadership associated with the articulation of ethics and organizational values related to the application and implementation of AI technology (Hanna et al., 2025; Law et al., 2025). When the administration and organizational leadership demonstrate their commitment to the ethics of AI technology application and implementation, this commitment influences the establishment of trust among the workforce and stakeholders, which is critical for the long-term acceptance and adoption of innovation within the organization (Machucho & Ortiz, 2025). The ethical use and application of AI technology are significant and critical due to their crucial implications for managing and controlling sensitive client information in the telecommunications industry, necessitating that these practices be carried out with the utmost care and attention (Polat et al., 2025; Rane et al., 2025). In this context, EAI serves as a crucial mediating factor that influences the transformation of technological ambitions and the latest developments in cloud computing into outcomes aligned with ethical standards and values (Coovadia et al., 2025).

2.4 Organizational Innovation

Organizational innovation is the experimentation process to pilot a new practice or technology and, through this new practice or technology, make the products and services more attractive to human beings (Aggarwal et al., 2025; Bataineh et al., 2024). It starts with vision, innovative thinking, experimenting with things that don't work sometimes, and intelligent risk-taking (Alateeg & Alhammadi, 2024). Blend digital tech, team setups, and what data teaches you (Bataineh et al., 2024). That's how new value is made, isn't it? In telecommunication, innovation is achieved since business companies can provide solutions to customers in teams beforehand, so that firms can gain an early advantage (Bataineh et al., 2024; Korayim et al., 2024). Digital transformation has impacted all aspects of innovation: technology itself (software) and behavioral innovation (innovation of new ideas) (Malik et al., 2025). Although we observe that innovation radiates from leadership, it is driven by visionary and bold leaders who possess digital literacy (Mirzani, 2024; Singh et al., 2024). Organizational innovation is not just about product production; it also involves business models, processes, and customer experiences (Singh et al., 2024; Yılmaz et al., 2024). Thus, telecommunication firms become competitive and growth-oriented forces in an age of digitalization by integrating innovation into operations for maximizing business growth (Korayim et al., 2024; Machucho & Ortiz, 2025; Yılmaz et al., 2024).

2.5 Hypotheses Development

2.5.1 Digital leadership and cloud intelligence

Digital leadership is the extent to which a leader leads in adapting, utilizing technology effectively, making data-driven decisions, and transforming an organization's culture to be more digital (Malik et al., 2025; Senadjki et al., 2024). Top telecommunications companies with digital skills and foresight would most probably leverage cloud infrastructures to manage network operations, customer interactions, and real-time data analysis (Cui, 2025). Those with digital foresight and expertise in new ideas seem better suited to help the companies make information technology flexible and bring in cloud technology sooner (Kunduru, 2023; Lister et al., 2023; Pan, 2022; Yang et al., 2023). Digital leadership is important in telecom, and you wouldn't think it would surprise you that satisfactory service and large piles of data are just a day-to-day thing (Choudhary et al., 2025; Dhruvitkumar, 2024). Leaders set up cloud systems (Prabhakaran, 2024; Sharif & Badi, 2025; Yang et al., 2023). They have predictive analytics, and they make sure teams are in various areas of business (Lister et al., 2023; Pareigis et al., 2025). Based on the logic presented above, the following assumption can be made:

Hypothesis 1: Digital leadership positively affects cloud intelligence.

2.5.2 Cloud intelligence and ethical artificial intelligence

Cloud intelligence helps telecommunication operators manage the unpredictable and massive piles of data at the appropriate time. It also requires ethics and openness at the time, in the midst of the presence of the digital world (Polat et al., 2025; Singh et al., 2024). By combining smart analytics and effective governance in the cloud, you can identify sneaky biases, adhere to regulations, and enhance people's privacy (George & Wooden, 2025; Law et al., 2025). Cloud data settings govern the insides of an algorithm and limit leaked data (Polat et al., 2025; Singh et al., 2024; Suljic, 2025). They also make AI transparent (Coovadia et al., 2025). Real-world examples

explain this cloud intelligence version of the secret to ethical AI in such a way that information is being treated equally, and you are able to trace it (Coovadia et al., 2025; George & Wooden, 2025; Law et al., 2025). Based on the logic presented above, the following assumption can be made:

Hypothesis 2: Cloud intelligence positively affects EAI.

2.5.3 Organizational innovation and ethical artificial intelligence

Doing what is right, rather than doing the right thing, is what ethical AI is all about (Alateeg & Alhammadi, 2024). It really generates new ideas (Korayim et al., 2024; Machucho & Ortiz, 2025). Jordan's communications providers who believe in fairness, transparency, and accountability with their AI (think chatbots, intelligent network solutions, and green tech) gain everyone's trust (Mirzani, 2024; Singh et al., 2024; Yılmaz et al., 2024). Customers begin to feel that regulators don't bother them, and partners fall into place (Machucho & Ortiz, 2025). It makes people collaborate and toss ideas against each other (Mirzani, 2024). That is when you see increased collaboration and new ideas (Korayim et al., 2024). The research asserts that ethical AI involves more individuals in the game of data-driven services interactivity and enables businesses to create new things quickly (Malik et al., 2025); these telecos are socially responsible in any case (Singh et al., 2024). Based on the logic presented above, the following assumption can be made:

Hypothesis 3: EAI positively affects organizational innovation.

2.5.4 Ethical artificial intelligence facilitates the digital leadership-organizational innovation relationship

Digital leadership plays a pivotal role in fostering organizational innovation through its interaction with EAI practices (Shwawreh et al., 2025; Wreikat & Awamleh, 2025). Digital leaders determine the vision and direction of a new technology, but how exactly they put things ethically ultimately determines people's trust and commitment to stay with these products or services for the long term (Suljic, 2025). Leaders significantly influence the design, monitoring, and implementation of EAI systems. Without a moral framework, digital transformation could have privacy- and bias-related, or reputational-related, adverse effects (Wreikat & Awamleh, 2025; Yang et al., 2023). EAI serves as the vehicle by which leadership competencies become responsible innovation outputs (Bustami et al., 2025; Choudhary et al., 2025).

In governance structures, training, education, policy, and ethical governance, EAI bridges the separation between technology capabilities and social credibility (Farid, 2024; George & Wooden, 2025; Hadi et al., 2024). Within the telecom industry, digital leaders in telecoms use AI technologies like AI to analyze their customers' data, do advanced customer analytics and network automation, and offer personalized service based on service and network automation (Choudhary et al., 2025). When directed by ethical standards, such changes build consumer confidence, and the sustainability of companies is built on ethical standards (Cui, 2025; Dhruvitkumar, 2024; George & Wooden, 2025). In other words, EAI operationalizes digital leadership, turning technical promise into innovation performance that meets societal and legal requirements (Cheah et al., 2024).

Hence, EAI is more than a mechanism for the protection of enabling technology because it enables the interaction between the notions of digital leadership and cloud intelligence and the procedure of organizational innovation. It is assumed that EAI mediates the relationships between digital leadership and organizational innovation, as well as between cloud intelligence and organizational innovation. Based on the aforementioned logic, the following assumption can be made:

Hypothesis 4: EAI positively affects and mediates the relationship between digital leadership and organizational innovation.

3. Methodology

3.1 Research Design

This quantitative research design used a cross-sectional survey to empirically test the proposed model linking Digital Leadership (DL), Cloud Intelligence (CI), EAI, and Organizational Innovation (OI). Based on the previous empirical frameworks in digital transformation and AI ethics, Partial Least Squares Structural Equation Modeling (PLS-SEM) was performed with SmartPLS 4 software to validate the measurement and structural models. In fact, work for excavating tough questions, especially when there is a knot of connections and things like moderation or mediation impact. It works well in both reflective and formative models. This paper assessed the major telecom networks in Jordan (e.g., Zain, Orange, and Umniah) as they really steer both AI adoption and digital leadership there. The primary model integrates digital leadership, cloud intelligence, and EAI. In this configuration, we locate the EAI in the middle, helping to predict new ideas, like innovation (Ahmad & Wilkins, 2025).

3.2 Population and Sample

The total sample consisted of 424 managers employed by the three largest telecommunications companies in

Jordan: Zain, Orange, and Umniah. The participants were senior as well as junior managers from different departments in the industry, leading digital transformation and AI programs. A non-probability purposive sampling method was used to obtain respondents who have adequate knowledge required for the study related to digital leadership, cloud intelligence, and ethical uses and practices in AI. For this study, purposive sampling was employed to identify the managers in telecommunications corporations that have direct involvement in digital leadership and AI projects. Such an approach may cause a limitation in how broadly applicable this study is, but at least relevant information is gathered, and the findings will be addressed in future studies. The collection of responses was done using e-questionnaires that were mailed out through official channels. A pilot study, a pre-study of 30 participants from this population, was performed before the introduction of the main survey to examine the clarity, reliability, and validity of the items of the questionnaire. Feedback from pilot participants helped in testing the ambiguous answers and the overall instrument design. Values of Cronbach's alpha in the pilot exceeded the recommended threshold value of 0.70, suggesting acceptable internal consistency. Following these refinements, the questionnaire was applied to the whole sample. Out of 424 questionnaires distributed, all were good to analyze following the screening of data. The dataset presented sufficient statistical power for PLS-SEM analysis with the aid of SmartPLS 4 (Ahmad & Wilkins, 2025).

3.3 Measurement and Instrument Design

The researchers depend on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) for all items. The researchers adapted the constructs for the telecom industry using sources that have already been proven to be reliable. DL depends on four parts: digital vision (DL1, DL2), encouraging innovation (DL3, DL4), ethical orientation (DL5, DL6), and technological empowerment (DL7, DL8) (Cui, 2025; Hadi et al., 2024; Senadjki et al., 2024). For CI, the researchers explored system integration (CI1, CI2), analytical capability (CI3, CI4), and scalability (CI5, CI6) (Abdelzaher et al., 2020; Chen, 2017; Choudhary et al., 2025). EAI: assessment of fairness (EAI1, EAI2), transparency (EAI3, EAI4), and accountability (EAI5, EAI6) (Coovadia et al., 2025; Law et al., 2025; Polat et al., 2025). OI: assessed on process innovation (OI1, OI2, OI3), product innovation (OI4, OI5), and cultural innovation (OI6) (Aggarwal et al., 2025; Alateeg & Alhammadi, 2024; Bataineh et al., 2024).

3.4 Data Collection Procedures

Questionnaires were distributed using secure company email and/or corporate intranet portals and official email networks of corporate correspondence to keep confidentiality. Eligible volunteers were informed about the purpose of the study and the anonymity of participation. Eligible volunteers were informed about the purpose of the study and participants' anonymity. A follow-up reminder was sent to everyone one week after the response to ensure the highest possible attendance. Ethical research protocols were followed by this study by obtaining informed consent and ensuring voluntary participation. Data was checked for missing values, if any, outliers, and normal distribution. The final dataset (n = 424) is adequate for PLS-SEM, beyond the recommended minimum sample size (Hair Jr et al., 2017).

3.5 Data Analysis

Since SmartPLS 4 is robust when analyzing complex causal relationships and mediation modeling, we applied this to the data analysis. The analysis was done in two sections, namely, testing the measurement model in terms of reliability, convergent validity, and discriminant validity. Structural Model Assessment: assessing the hypotheses via path coefficients (β), t-values, and p-values through bootstrapping of 5,000 resamples. Goodness of fit was tested by SRMR, NFI, and Chi-square/df model fit indices (Cheah et al., 2024; Hair Jr et al., 2017; Sarstedt et al., 2024).

4. Results and Analysis

Table 1 shows that the sample only included mid-career professionals, 46.7% of the sample were between 35 and 44 years of age, and 48.6% of them possessed master's degrees. They had worked for six to fifteen years, with prominent exposure to digital transformation and AI-driven business (Sarstedt et al., 2024).

The data in Table 2 show that the findings yielded high mean scores for all categories, implying support for CI, DL, EAI, and OI, respectively. The low standard deviations reveal a remarkable consistency in respondents' answers to all categories. The highest mean score was placed on DL (4.18), emphasizing its importance in facilitating digital behavior, whereas the lowest mean score was recorded on EAI (3.96), pointing out some shortcomings in improving its applications for businesses in terms of supporting EAI (Hair Jr et al., 2017).

Table 1. Demographic characteristics of the sample

Variable	Category	Frequency (*n*)	Percentage (%)
Gender	Male	246	58.0
	Female	178	42.0
Age	25–34	108	25.5
	35–44	198	46.7
	45–54	92	21.7
	55+	26	6.1
Education	Bachelor	172	40.6
	Master	206	48.6
	PhD	46	10.8
Experience	1–5 years	92	21.7
	6–10 years	148	34.9
	11–15 years	118	27.8
	16+ years	66	15.6

Table 2. Descriptive statistics of study variables

Construct	Mean	Std. Dev.	Min	Max
Digital Leadership (DL)	4.18	0.52	2.60	5.00
Cloud Intelligence (CI)	4.09	0.57	2.50	5.00
Ethical Artificial Intelligence (EAI)	3.96	0.63	2.20	5.00
Organizational Innovation (OI)	4.03	0.54	2.70	5.00

Table 3. Reliability and validity analysis of constructs

Construct	Codes—Items	Loading	*α*	CR	AVE
Digital Leadership (DL)	DL1: Digital vision clarity	0.81	0.87	0.90	0.64
	DL2: Communicating a digital roadmap	0.83			
	DL3: Promoting Innovative Thought	0.84			
	DL4: Supporting Experimentation	0.78			
	DL5: Encouraging ethical online behavior	0.80			
	DL6: Ensuring the moral use of technology	0.82			
	DL7: Equip the workforce with digital solutions	0.76			
	DL8: Supporting technological learning	0.79			
Cloud Intelligence (CI)	CI1: Integrating cloud systems across departments	0.82	0.85	0.89	0.62
	CI2: Facilitating seamless data connectivity	0.80			
	CI3: Utilizing Analytical Tools in the Decision-Making Process	0.83			
	CI4: Utilizing real-time analytics capabilities	0.81			
	CI5: Scalable cloud resource expansion	0.77			
	CI6: Rapid adaptation to workloads	0.75			
Ethical Artificial Intelligence (EAI)	EAI1: Ensuring fairness in AI-driven outcomes	0.84	0.88	0.91	0.67
	EAI2: Reducing Algorithmic Biases	0.85			
	EAI3: Keeping Things Transparent in AI Processes	0.87			
	EAI4: Explaining AI Decision Logic Clearly	0.82			
	EAI5: Accountability for the impact of AI	0.80			
	EAI6: Monitoring ethical compliance of AI systems	0.81			
Organizational Innovation (OI)	OI1: Innovating internal processes for improvement	0.80	0.84	0.88	0.61
	OI2: Digitizing operational processes	0.78			
	OI3: Enhancing efficiency through innovation	0.77			
	OI4: Development of new telecom products/services	0.83			
	OI5: Innovation of existing offerings	0.81			
	OI6: Fomentar una cultura con potencial innovador	0.75			

Table 3 indicates that the internal reliability of all constructs was quite good, demonstrating strong internal consistency with a high-quality Cronbach's α value exceeding 0.84. Scores for composite reliability (CR) ranged from 0.88 to 0.91 (≥0.70), thus indicating the robustness of the construct reliability. Average variance extracted (AVE) values (0.61–0.67) exceeded the 0.50 threshold and suggested that the criteria for convergent validity were reasonable. All factor loadings (0.75–0.87) are significant (>0.70); that is, it means that the reliability of the indicator is satisfactory and that all items closely demonstrate the construct. Those results definitively verify that DL, CI, EAI, and OI were measured with accuracy, trustworthiness, and validity in the telecom industry (Sarstedt et al., 2024).

Table 4 shows that the discriminant validity for all constructs is confirmed by Fornell–Larcker analysis. The

square root of AVE for each construct (0.78–0.82) is higher than its correlations with other variables, showing that each construct shares more variance with its measures than with others. The inter-construct correlations fall between 0.48 and 0.57, which shows these ideas are connected but still stand apart from each other. Evidence indicates that DL, CI, EAI, and OI each measure something different, although they are theoretically related. Therefore, this measurement model holds in the telecom sector (Cheah et al., 2024).

Table 4. Discriminant validity (fornell–larcker criterion)

Construct	DL	CI	EAI	OI
Digital Leadership (DL)	0.80			
Cloud Intelligence (CI)	0.56	0.79		
Ethical Artificial Intelligence (EAI)	0.48	0.52	0.82	
Organizational Innovation (OI)	0.49	0.50	0.57	0.78

Table 5 shows that in the model tested, all relationships were positive and significant ($p < 0.001$); the results showed substantial support for the model. DL increases CI ($\beta = 0.426$), which is closely linked with EAI ($\beta = 0.398$). The third factor—EAI—shows a significant effect on OI ($\beta = 0.421$). Together, these findings suggest that DL indirectly stimulates innovation by two mechanisms—CI and EAI as mediators (Hair Jr et al., 2017).

Table 5. Path analysis results for direct hypotheses

Hypothesis	Path Coefficient (β)	t-Value	p-Value	Decision
H1: DL → CI	0.426	7.12	0.000	Supported
H2: CI → EAI	0.398	6.47	0.000	Supported
H3: EAI → OI	0.421	7.33	0.000	Supported

Note: DL: Digital Leadership; CI: Cloud Intelligence; EAI: Ethical Artificial Intelligence; OI: Organizational Innovation

Figure 1 and Table 6 show that EAI has a significant indirect mediation impact on the connection between DL and OI (β_{indirect} = 0.197, $t = 4.86$, $p < 0.001$). The direct effect (0.285) remains significant, while the total effect (0.482) suggests that EAI moderates the impact of DL on innovation. Leaders who promote EAI practices can directly and indirectly stimulate innovation in telecom companies by integrating responsible AI (Sarstedt et al., 2024).

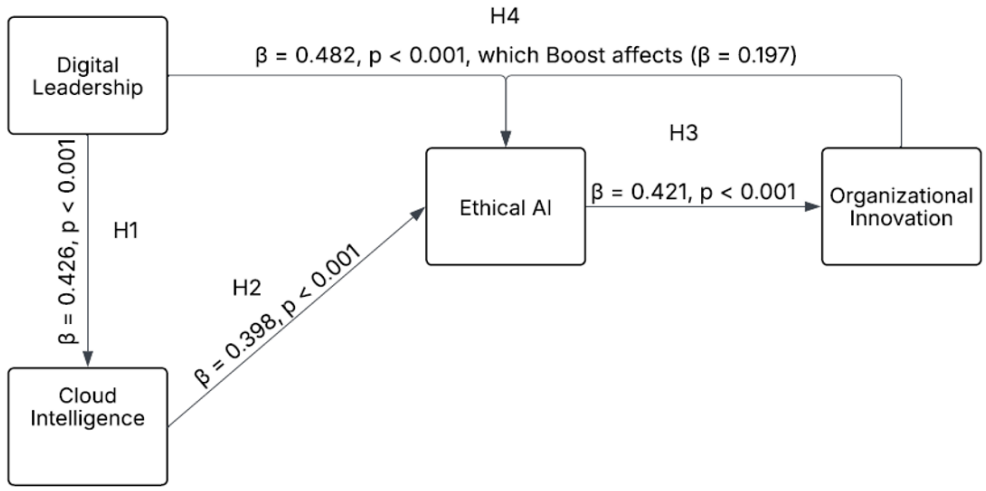

Figure 1. Illustrates the structural model of the study

Table 6. Mediation analysis results

Path	Direct Effect	Indirect Effect	Total Effect	t-Value	p-Value	Mediation Type
DL → EAI → OI	0.285	0.197	0.482	4.86	0.000	Partial mediation

Note: DL: Digital Leadership; EAI: Ethical Artificial Intelligence; OI: Organizational Innovation

Table 7 shows that, overall, the model fits perfectly with the observed data. SRMR and NFI values are within recommended values, indicating a well-described model for interpretation. Through the model, the results show strong empirical support for all of the hypotheses tested above, in that EAI acts as a mediator in the DL-OI

relationship and that CI acts as a technological enabler in Jordan's telecommunications. Though it has some limitations, the study has several advantages (Cheah et al., 2024).

Table 7. Model fit indices

Fit Index	Value	Threshold
SRMR	0.056	<0.08
NFI	0.93	>0.90
Chi-Square/df	1.84	<3.0
RMS_theta	0.11	<0.12

5. Discussion

The results demonstrate that digital leadership significantly boosts cloud intelligence (β = 0.462, p < 0.001), indicating that leadership vision, digital culture, and technological empowerment are central factors at the heart of promoting intelligent cloud ecosystems (Albannai et al., 2025; Cui, 2025; Farid, 2024). This result supports what was claimed by those who argue that the ability of leaders and organizations to be skilled in leadership ultimately influences the success of cloud adoption in data-driven businesses (Malik et al., 2025; Polat et al., 2025; Senadjki et al., 2024). Corresponding studies in the telecom industry prove that digital leadership is used to manage resource orchestration and integrate infrastructure with innovation strategy (Albannai et al., 2025; Bhatta, 2021; Cui, 2025). However, in the case of Jordan specifically, where telecom firms are aggressively digitizing operations, leadership commitment will ensure that the strategy behind integrating AI-ready cloud architectures is coherent (Malik et al., 2025; Polat et al., 2025; Senadjki et al., 2024).

Therefore, this result supports that digital leaders transform data intelligence and establish ethical AI governance as a pillar of their work. The second hypothesis stated that cloud intelligence had a positive impact on ethical AI (β = 0.398, p < 0.001) (Suljic, 2025). This lends credence to the claim that cloud infrastructure provides the technical and analytical underpinnings to build AI systems that are transparent and accountable (Rane et al., 2025). Cloud intelligence enables traceability, helps ensure the fairness of algorithms, and facilitates the safe handling of data, all of which contribute to effective ethical governance of AI (Suljic, 2025; Wreikat & Awamleh, 2025). Findings are consistent with those argued by scholars who propose that cloud intelligence-driven explanations remove the bias of AI (Sajid & Rasool, 2023; Shwawreh et al., 2025). Cloud intelligence assists the telecom firms in the Jordan region to comply with the regulation of governing data protection legislation and also enhances the ethics of AI in the global arena (Wreikat & Awamleh, 2025; Yılmaz et al., 2024). This analysis confirms the need for the ethical use of AI to be based on the application of highly developed cloud intelligence technology (Pan, 2022; Polat et al., 2025; Rane et al., 2025).

This paper shows that ethical AI enhances organizational innovation by identifying that ethical AI has a profoundly positive relationship with organizational innovation (β = 0.421, p < 0.001) because of the increased legitimacy and trust associated with the use of AI systems that include ethical considerations (Rane et al., 2025; Sajid & Rasool, 2023). In past research, fairness and responsibility associated with AI-driven decisions help generate internal innovation and customer acceptance (Sharif & Badi, 2025). In the telecommunications sector, ethical AI results in fresh innovation, such as predictive maintenance, personalized customer services, and governance of sustainable energy. It also provides ethical standards for telecommunication organizations (Rane et al., 2025). This hypothesis supports Brown's research work that explains that ethical leadership practices and the accountabilities associated with AI help generate innovation and prevent reputational damages (Pan, 2022; Sarstedt et al., 2024).

Mediation analysis supports that ethical AI (β = 0.197, p < 0.001) acts as a mediator between digital transformation and innovation within an organization. There are two types of leaders that influence innovation, namely, through personal visionary activities and empowerment and through technological development within an organization based on ethical foundations (Awamleh et al., 2025b; Bhatta, 2021). This study supports that ethical AI influences innovation within an organization when leaders apply ethical knowledge (Bustami et al., 2025). This study bolsters the professional argument that leaders in digital transformation should adhere to ethical standards (Wreikat & Awamleh, 2025). A real-life study of Zain, Orange, and Umniah demonstrates that strong leadership along with reliable AI technology can induce a competitive advantage through rapid innovation while preserving consumer loyalty (Singh et al., 2024). This study aims to create an innovation pattern that combines technological expertise, digital transformation, and alignment with ethical rules. This study explores the mechanisms and logic about the role of ethical cloud intelligence and AI as a bridge between digital transformation and innovation within an organization (Wreikat & Awamleh, 2025; Yılmaz et al., 2024). Dynamic capacity theory (DCT), resource-based view (RBV), and ethical leadership theories will claim that they shape the way in which digital ethical information works as a best-input resource for social innovation (Shwawreh et al., 2025).

Telcommunications CEOs commonly choose outsourcing for managing information systems, increasing cloud involvement with all their work (Sharif & Badi, 2025; Wreikat & Awamleh, 2025). However, having IT investment

also requires having an AI ethics platform—a simple solution that will provide telecom CEOs with intelligent yet fair, open, and traceable technological solutions (Suljic, 2025). Aldalaien et al. (2025) asserted that the combination of intelligence and accountability can significantly transform the industry. The question is, for businesses, the biggest question is, "How do people place value judgments upon the utilization of technology, and are they managing it correctly?" That is the significance of building businesses that would truly succeed in the digital age itself (Alkalbani & Hussain, 2021).

However, while testing the proposed correlations, the results provided key insights into the role of ethical AI as a significant explanatory component, rather than as an 'achievement' in technology itself. This set of results suggests that innovation in the data-intensive sectors is not strictly reliant on the available digital infrastructure but also depends on the convergence of leadership intentions, ethics, and the capabilities of cloud intelligence. In other words, the mediated effect of ethical AI suggests that the impact of digital leadership is most significant in the realm of innovation because of the ethics it upholds. This study suggests that the complexity of ethics within organizations, rather than their technology, better explains the differences in innovation.

6. Conclusion

This research also investigated the significance of digital leadership and cloud intelligence and ethical organizational innovation in Jordanian telecom firms (Zain, Orange, and Umniah). The Role of Artificial Intelligence. The SmartPLS4 model with 424 valid responses was used to test each hypothesis with strong relationships among the constructs. In addition, digital leadership affects cloud intelligence and innovation indirectly. Ethical AI partially mediates the effect. These results serve as an important reminder that innovation with such technology should be grounded in the ethics and appropriate governance practices of leadership. This work, from a theoretical perspective, aims to contribute to the existing dynamic capabilities and ethical leadership frameworks by showing the significant role that digital leaders have in innovating ethically informed clouds. From the point of view of a solution to an existing problem, this work argues that the current telecom firms should adopt the proposed ethical AI to be used in the clouds to guarantee innovation. This research contributes to the current state of the art by applying the theories that relate to dynamic capabilities and ethical leadership to a new context that involves digital leadership and the role that this leadership plays with clouds in ethical AI. It also makes contributions by providing telecom firms with a solution to the problem that involves the use of the proposed ethical AI systems in the cloud to achieve innovation. It also contributes to the current state by providing lessons that relate to the significance of ethics associated with AI and its impact on the role of digital transformation.

6.1 Study Limitations

To start with, since these studies employ a cross-sectional approach, it is not possible to determine these relationships causally. Longitudinal studies can be used to explore how such relationships might emerge in the future, they argue. Second, since they focus on no more than three large telecom firms operating in Jordan, their results cannot be generalized, and external validity might have been increased if similar replication analyses had been conducted in other industries and various other countries. Third, since they adopt self-report measures, these might be vulnerable to 'common method biases' in future research work. Fourth, the lack of control variables is a drawback.

6.2 Future Research Directions

Future research could explore the relationship between legislative structures, or levels of AI maturity, and the adoption of ethical AI in different organizations. Including more sustainability performance metrics, such as carbon footprint or digital ethics training, could improve the results. It is also suggested to conduct a comparative analysis in the MENA telcos to determine cross-cultural differences in digital ethics and cloud intelligence. This research provides the foundation for the development of a trusted and human-oriented innovation environment in the digital era by connecting ethical leadership with cloud intelligence and AI.

Author Contributions

Conceptualization, F.T.A.; methodology, F.T.A.; software, F.T.A., A.A.M.A., and M.A.A.J.; validation, F.T.A. and A.A.M.A.; formal analysis, F.T.A.; investigation, F.T.A.; resources, F.T.A., A.A.M.A., and M.A.A.J.; data curation, F.T.A.; writing—original draft preparation, F.T.A.; writing—review and editing, F.T.A. and A.A.M.A.; visualization, F.T.A.; supervision, F.T.A. and A.A.M.A.; project administration, F.T.A. All authors have read and agreed to the published version of the manuscript.

Data Availability

The data used to support the research findings are available from the corresponding author upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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