



The Impact of Transformational Leadership Style and Digital Transformation on the Use of Artificial Intelligence in Accounting

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Abstract

This study aimed to investigate the impact of transformational leadership style and digital transformation on the use of artificial intelligence (AI) in accounting. The research population consisted of all managers and accountants working in knowledge-based companies in Tehran Province. A sample of 384 managers and accountants from knowledge-based companies in Tehran Province was selected, and an equal number of questionnaires were distributed and collected. The data obtained from the questionnaires were analyzed using SPSS version 24 and AMOS version 24 through structural equation modeling (SEM). Analysis of the collected data indicated that transformational leadership style had a positive and significant effect on the use of artificial intelligence in accounting. Digital transformation also had a positive and significant effect on the use of artificial intelligence in accounting. Furthermore, transformational leadership style had a positive and significant effect on digital transformation in accounting. Based on the findings, transformational leadership style can play an important role in strengthening digital transformation in accounting. Overall, strengthening transformational leadership and advancing digital transformation can provide the necessary conditions for more extensive and effective utilization of artificial intelligence in accounting.

Keywords: Digital transformation, transformational leadership, artificial intelligence in accounting.

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1. Introduction

The rapid diffusion of digital technologies has fundamentally altered the architecture of contemporary organizations and the manner in which information is generated, processed, communicated, and used for decision-making. Accounting, traditionally characterized by structured procedures, standardized reporting practices, and substantial reliance on human judgment, has increasingly become embedded within broader processes of digital transformation. The development of cloud-based systems, big data analytics, robotic process automation, machine learning, and artificial intelligence (AI) has expanded the technological capabilities available to accounting functions and has challenged conventional assumptions about the roles

of accountants, managers, and organizational information systems. In this context, AI represents more than a technological tool for automating routine tasks; it constitutes an increasingly important component of digital accounting ecosystems in which data processing, prediction, classification, anomaly detection, decision support, and reporting can be performed with greater speed and analytical depth. The transition from traditional accounting toward digitally enabled accounting therefore requires organizations to reconsider both their technological infrastructure and their managerial capabilities [1]. As the accounting profession becomes increasingly dependent on intelligent information systems, understanding the organizational conditions that facilitate effective AI adoption has emerged as an important research concern.



Artificial intelligence has the potential to transform multiple accounting activities, including transaction processing, bookkeeping, financial reporting, auditing, management accounting, forecasting, risk assessment, fraud detection, and internal decision support. By processing large and complex datasets, AI-based systems can assist accountants and managers in identifying patterns that may be difficult to detect through conventional analytical procedures. These capabilities can improve the timeliness, consistency, and analytical value of accounting information while reducing the burden associated with repetitive and highly structured tasks. At the same time, the adoption of AI involves important challenges related to system reliability, data quality, professional judgment, accountability, and the interpretation of algorithmic outputs. Earlier work on AI and accounting information emphasized that intelligent technologies could create both significant opportunities and substantial reliability challenges in the digital era, particularly when accounting information is increasingly generated through automated systems [2]. More recent evidence also indicates that AI can enhance the efficiency of accounting information systems, although organizational benefits may depend on complementary conditions such as cybersecurity and the protection of digital information assets [3]. Consequently, AI adoption in accounting cannot be understood solely as a technical decision; it must be examined as an organizational transformation involving technology, people, leadership, processes, and governance.

The growing importance of AI in accounting is also connected to broader developments in data-driven organizational management. Contemporary organizations generate unprecedented volumes of financial and non-financial data, and accounting departments increasingly operate at the intersection of information technology, analytics, control, and strategic decision-making. Evidence from financial reporting contexts suggests that advanced data analytics can improve the capacity of organizations to process information and contribute to higher-quality financial reporting when appropriate organizational and professional conditions are present [4]. Similarly, research examining AI in the audit context indicates that the use of intelligent technologies can influence the quality of financial statement audit processes by enhancing analytical procedures and supporting more systematic examination of accounting evidence [5]. These developments indicate that the value of AI extends beyond automation. AI may increase the interpretive and predictive capacity of accounting systems, thereby changing the contribution of accounting

from primarily recording historical transactions toward providing more dynamic support for organizational planning, control, risk management, and strategic action.

Nevertheless, the existence of advanced AI technologies does not automatically ensure their successful acceptance or effective use. Organizational members must perceive such technologies as useful, understandable, reliable, and compatible with existing work processes. Technology readiness and users' perceptions have therefore become central factors in explaining AI adoption in accounting. Research has demonstrated that perceptions regarding the usefulness and appropriateness of AI can mediate the relationship between technology readiness and actual adoption behavior, suggesting that accountants' acceptance of intelligent systems depends not only on technical accessibility but also on how users cognitively evaluate the technology [6]. This issue is especially important because accounting is a professional domain characterized by institutionalized standards, established routines, regulatory requirements, and considerable responsibility for the accuracy and integrity of information. Accordingly, resistance to technological change may arise when employees believe that new systems threaten professional autonomy, complicate existing procedures, or create uncertainty regarding accountability. Organizations seeking to expand AI use in accounting therefore need not only technological resources but also leadership practices capable of shaping favorable attitudes toward change, learning, experimentation, and innovation.

Transformational leadership is particularly relevant in this regard because it emphasizes the ability of leaders to articulate a compelling vision, stimulate followers intellectually, encourage innovation, provide individualized support, and motivate organizational members to transcend established routines in pursuit of broader organizational objectives. In environments characterized by technological disruption, transformational leaders can facilitate adaptation by helping employees understand why change is necessary and how new technologies can contribute to collective performance. Such leadership may reduce resistance to digital initiatives by developing shared meaning around change and by encouraging employees to experiment with unfamiliar systems. Transformational leadership has also been linked to the use of management accounting information, suggesting that leaders who encourage innovation, risk taking, and strategic thinking can influence the extent to which accounting information systems are actively utilized in managerial decision-making [7]. This

connection is theoretically important because AI-based accounting represents a further evolution of accounting information systems, requiring not only technical implementation but also active managerial endorsement and user engagement.

The role of transformational leadership becomes even more salient when AI adoption is considered within the broader framework of digital transformation. Digital transformation refers to a strategic and organizational process through which digital technologies are integrated into business models, structures, processes, capabilities, and value-creation mechanisms. It extends beyond the acquisition of individual technologies and involves deeper changes in organizational routines, competencies, decision-making arrangements, and relationships among organizational actors. Research examining digital transformation through the lens of transformational leadership suggests that leadership plays an important role in directing and sustaining digital change because leaders influence organizational vision, employee commitment, innovation orientation, and responsiveness to technological disruption [8]. In this perspective, transformational leadership can be regarded as a behavioral and strategic mechanism that enables organizations to translate technological possibilities into organization-wide transformation. This leadership style may therefore have both a direct influence on the adoption of AI in accounting and an indirect influence by strengthening the broader process of digital transformation.

Digital transformation provides an important organizational foundation for AI implementation because artificial intelligence depends on the availability of digital data, integrated information systems, technological infrastructure, standardized processes, and organizational capabilities for managing digitally mediated work. An organization with fragmented systems, limited data accessibility, weak digital competencies, or poorly integrated processes may encounter substantial difficulties in implementing AI even when individual AI applications are technically available. Conversely, organizations with more mature digital infrastructures are better positioned to incorporate intelligent technologies into operational and accounting processes. Recent research on digital accounting demonstrates that AI adoption is closely related to the broader transition from conventional accounting practices to digital accounting environments, where accounting functions become increasingly interconnected with automated and data-intensive technologies [9]. Likewise, the

development of AI-based models for transitioning from traditional to digital accounting underscores the central role of technological integration and organizational digitalization in reshaping accounting systems [1]. Thus, digital transformation can be conceptualized as an enabling condition that prepares the organizational environment for the effective utilization of AI in accounting.

The significance of digital transformation is reinforced by evidence from other organizational domains demonstrating that AI-related innovation can generate important performance and resilience benefits when supported by appropriate organizational capabilities. For example, AI-driven innovation has been shown to contribute to supply chain resilience and performance, especially in dynamic environments where organizations must rapidly interpret information and respond to uncertainty [10]. Although supply chain management differs from accounting, the underlying implication is relevant: the strategic value of AI depends on an organization's ability to embed intelligent technologies within broader systems of information processing and decision-making. This observation is particularly applicable to knowledge-based firms, where intangible resources, technological knowledge, innovation capability, and information processing are central to competitive advantage. In such firms, digital transformation may create an organizational context in which accounting functions can move beyond conventional reporting and participate more directly in data-driven planning, monitoring, and strategic decision-making.

The business value of AI also depends on whether organizations and their members trust AI-enabled systems and perceive their outputs as useful for organizational objectives. Studies of AI usefulness and business performance suggest that trust is an important mechanism shaping the organizational consequences of AI implementation [11]. Trust becomes especially critical in accounting because accounting information often serves as the basis for financial reporting, investment decisions, managerial control, taxation, auditing, and regulatory compliance. If managers and accountants do not trust AI-generated recommendations or outputs, the technological system may remain underutilized regardless of its technical sophistication. Transformational leaders can potentially strengthen such trust by creating transparent implementation processes, encouraging learning, communicating the strategic rationale for AI use, and establishing a climate in which employees are supported during technological transition. Therefore, the relationship between leadership

and AI use may reflect not only formal managerial authority but also leaders' capacity to influence organizational perceptions of technology and create psychologically supportive conditions for innovation.

At the same time, AI adoption in accounting raises ethical and professional concerns that further emphasize the need for effective leadership and organizational governance. AI systems may introduce issues related to algorithmic opacity, bias, responsibility, professional independence, privacy, data security, and the displacement or reconfiguration of human judgment. Research examining the ethical implications of AI in managerial accounting highlights the need for organizations to recognize that intelligent technologies may alter responsibility structures and generate new ethical dilemmas in accounting decision-making [12]. These concerns indicate that the successful use of AI cannot be evaluated solely in terms of efficiency gains. Organizations also need leadership capable of establishing responsible technology-use norms, encouraging ethical reflection, and balancing technological innovation with accountability. Transformational leadership may be particularly relevant because intellectual stimulation can encourage employees to critically examine established practices and emerging technological consequences, while inspirational motivation can connect digital innovation to broader organizational values and goals.

Recent studies have increasingly conceptualized AI adoption as part of an interconnected system involving organizational infrastructure, risk management, competitiveness, and managerial information technology capabilities. Evidence indicates that AI in accounting can interact with managerial IT infrastructure and risk management processes in ways that contribute to sustainable competitiveness [13]. This perspective suggests that AI should not be treated as an isolated accounting application; rather, its value depends on how effectively it is embedded within organizational systems and strategic capabilities. The same reasoning applies to digital transformation, which creates the technological and organizational architecture necessary for AI to generate sustained value. Where digital transformation remains partial or fragmented, AI applications may be implemented in isolated functions without producing meaningful improvements in organizational coordination or accounting decision support. By contrast, a comprehensive digital transformation can facilitate interoperability, real-time information flows, advanced analytics, and cross-functional integration, thereby

increasing the likelihood that AI tools will become embedded in routine accounting practice.

Transformational leadership may be especially influential in this integration process because digital transformation frequently requires substantial changes in organizational culture and employee behavior. Digital initiatives often fail not because technologies are unavailable but because organizations are unable to align people, processes, structures, and strategic priorities around technological change. Leaders who communicate a clear vision of digital transformation can help employees interpret technological change as an opportunity for organizational development rather than merely as a threat to established roles. They may also encourage collaboration between accounting professionals and technology specialists, promote training and knowledge sharing, and support experimentation with AI-based applications. The relationship between transformational leadership and accounting information use documented in previous research indicates that leadership characteristics can shape how management accounting systems are employed in organizational decision-making [7]. Extending this logic, transformational leadership can be expected to influence the adoption and use of AI by creating a more innovative, learning-oriented, and digitally receptive organizational environment.

Despite growing scholarly interest in AI, digital transformation, and leadership, these domains have often been studied separately. Research on AI in accounting has frequently focused on technology readiness, perceived usefulness, system efficiency, audit quality, financial reporting, or ethical implications [3-6, 12]. Meanwhile, studies of digital transformation have emphasized organizational adaptation and leadership as key mechanisms facilitating technological change [8], whereas broader research on AI-enabled innovation has examined its implications for performance, resilience, trust, and strategic competitiveness [10, 11, 13]. Although these streams collectively demonstrate the importance of technological, organizational, and behavioral factors, relatively less attention has been directed toward simultaneously examining transformational leadership, digital transformation, and AI use within the accounting function. Such integration is necessary because accounting AI adoption is likely to emerge from the interaction between technological readiness and managerial conditions rather than from either dimension independently.

This gap is particularly relevant in knowledge-based companies, where organizational performance depends

heavily on knowledge resources, innovation, technological capabilities, and the rapid conversion of information into decisions. Knowledge-based firms are generally more exposed to technological change and may have stronger incentives to adopt digital accounting systems capable of supporting real-time analysis and strategic management. Nevertheless, high technological intensity does not eliminate the need for effective leadership. On the contrary, rapid technological development may increase uncertainty, intensify the need for organizational learning, and place greater demands on leaders to coordinate digital initiatives. In such settings, transformational leadership may contribute to digital transformation by fostering innovation and commitment to technological change, while digital transformation may subsequently create the infrastructure and capabilities required for more extensive use of AI in accounting. Experimental evidence concerning the digitalization of accounting and AI adoption further suggests that organizational acceptance of AI is influenced by the context in which the technology is introduced and interpreted by users [9]. These relationships make it important to examine both direct and interconnected effects among leadership, digital transformation, and AI utilization.

Moreover, the transition toward AI-enabled accounting should be understood as a gradual organizational transformation rather than a single technological implementation decision. Organizations may begin by digitizing accounting records, integrating enterprise systems, automating repetitive transactions, and developing data analytics capabilities before moving toward more advanced AI-based applications. This staged transition implies that digital transformation may function as an important bridge between leadership and AI use. Transformational leaders can encourage the strategic integration of digital technologies, while digital transformation creates the technical and organizational conditions that make AI applications feasible and useful. The development of models for moving from traditional accounting to digital accounting reinforces this sequential logic, emphasizing that AI adoption is embedded in a broader transition toward technology-intensive accounting practices [1]. In parallel, evidence that AI can contribute to accounting-related risk management and sustainable competitiveness suggests that organizations capable of integrating AI with managerial IT infrastructure may obtain broader strategic benefits from such transformation [13].

Accordingly, a comprehensive explanation of AI use in accounting should incorporate both leadership and digital

transformation as complementary determinants. Transformational leadership represents the behavioral and strategic capacity to mobilize organizational members, articulate a digital vision, encourage innovation, and support change, whereas digital transformation represents the organizational and technological restructuring through which such a vision can be operationalized. AI use in accounting can then be viewed as an outcome of this combined managerial and technological environment. This perspective is also consistent with evidence that AI usefulness and organizational performance are influenced by trust [11], that AI-driven innovation can strengthen organizational performance and resilience [10], and that intelligent accounting systems create both opportunities and governance challenges [2]. Examining these relationships within a single structural model can therefore provide a more integrated understanding of why some organizations are better positioned than others to incorporate AI into accounting activities.

Therefore, the present study aimed to investigate the effects of transformational leadership style and digital transformation on the use of artificial intelligence in accounting among managers and accountants of knowledge-based companies in Tehran Province.

2. Methodology

In terms of its objective, the present study is applied research, while in terms of its approach and methodology, it is classified as descriptive-survey and correlational research. To develop the theoretical literature and review the research background, library research and the examination of credible documents were employed. In addition, the survey method and a questionnaire were used to test the hypotheses and collect quantitative data. The research structure was designed in such a way as to ensure alignment between the theoretical foundations and empirical findings in analyzing the relationships among the study variables.

The statistical population consisted of managers and accountants working in knowledge-based companies in Tehran Province. Because the population was considered unlimited and no precise sampling frame was available, convenience non-probability sampling was employed. According to the Krejcie and Morgan sample size table, a statistical sample of 384 participants was determined, and standardized questionnaires were distributed among them. The measurement instrument consisted of two sections: demographic information and 14 specialized items designed

to measure the study variables. Responses to the second section were recorded using a five-point Likert scale.

To evaluate the quality of the measurement instrument, questionnaire reliability was assessed by calculating Cronbach's alpha coefficients using SPSS. Since all coefficients obtained for the research variables exceeded the conventional threshold of 0.70, the internal consistency of

the items was confirmed, and the reliability of the questionnaire was considered satisfactory. Accordingly, the instrument possessed an acceptable level of validity and reliability for conducting statistical analyses and accurately testing the research hypotheses. Table 1 presents the Cronbach's alpha coefficients.

Table 1. Cronbach's Alpha Coefficients

Variable	Number of Items	Cronbach's Alpha
Transformational leadership style	5	0.911
Digital transformation	3	0.874
Use of artificial intelligence in accounting	6	0.923
Total questionnaire	14	0.955

3. Findings and Results

To analyze the collected data and test the hypotheses, the data analysis process was conducted at two levels: descriptive and inferential statistics. In the first stage, descriptive statistical indices, including the mean, standard deviation, and frequency, were calculated using SPSS to provide an overall profile of the data and examine the demographic characteristics of the sample. The results of this stage are presented in Table 2. In the second stage,

structural equation modeling (SEM) was employed to test the research hypotheses and examine the structural relationships among the latent variables. Given the nature of the variables and the objective of the study, which was to explain the pattern of causal relationships among them, structural equation modeling was performed using AMOS version 24. This analytical approach enabled the assessment of both the measurement model and structural model fit and facilitated the generalization of findings from the statistical sample to the target population.

Table 2. Descriptive Statistics of the Research Variables

Variable	Mean	Standard Deviation	Skewness	Kurtosis	Minimum	Maximum	N
Transformational leadership style	3.725	0.542	-0.421	0.152	1.00	5.00	384
Digital transformation	3.522	0.622	0.285	-0.114	1.00	5.00	384
Use of artificial intelligence in accounting	3.445	0.559	-0.112	-0.236	1.00	5.00	384

As shown in the table, because the skewness and kurtosis values fall within the range of -2 to $+2$, the distributions of the data can be considered approximately normal. In the present study, structural equation modeling was used to examine the research hypotheses. To test the hypotheses, the conceptual model was first fitted using structural equation modeling in AMOS version 24. Subsequently, the adequacy of the model was evaluated, and, if acceptable model fit was established, the results were used to draw conclusions regarding the research hypotheses. Before fitting the structural model, it was necessary to determine whether the 14 observed indicators, comprising the questionnaire items,

adequately represented the overall measurement model through confirmatory factor analysis (CFA). Poor model fit at this stage would indicate the need to refine the measurement model and would preclude further examination of the structural model involving latent variables. At this stage of the analysis, CFA was conducted to determine the degree of model fit, adequacy of factor loadings, standardized residuals, and explained variances of the observed variables. Figure 1 presents the measurement model used in this study. In this model, the observed and latent variables are identified by their respective names.

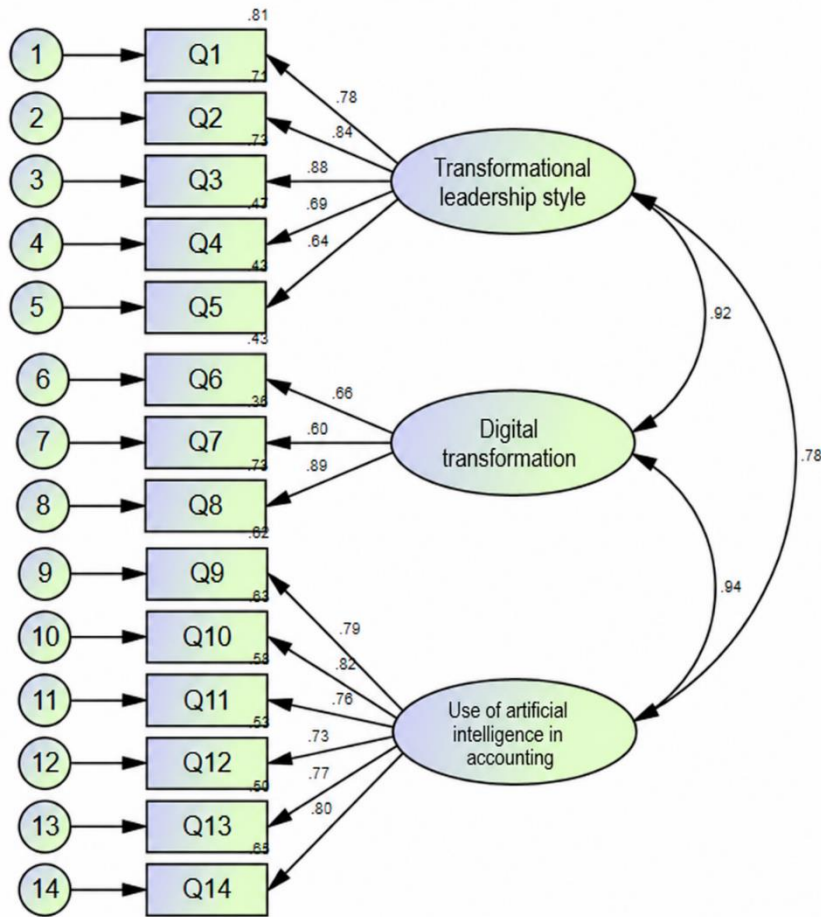


Figure 1. Standardized Measurement Model After Modifications

Before testing the research hypotheses, it was necessary to ensure the validity and accuracy of the measurement models for the study variables so that the structural

relationships could subsequently be examined. For this purpose, model fit indices were assessed. These indices are presented in Table 3.

Table 3. Goodness-of-Fit Indices for the Research Measurement Model

Model	CMIN/df	GFI	IFI	TLI	CFI	NFI	RMSEA
Main model	3.445	0.954	0.965	0.932	0.924	0.965	0.006
Acceptable level	1-5	> 0.90	> 0.90	> 0.90	> 0.90	> 0.90	< 0.08

As shown in the table above, all fit indices fall within acceptable ranges. Therefore, the adequacy of the confirmatory factor analysis model in fitting the collected

data was confirmed. In this section, the structural model of the study was fitted to test the main research hypotheses. This model is presented in Figure 2.

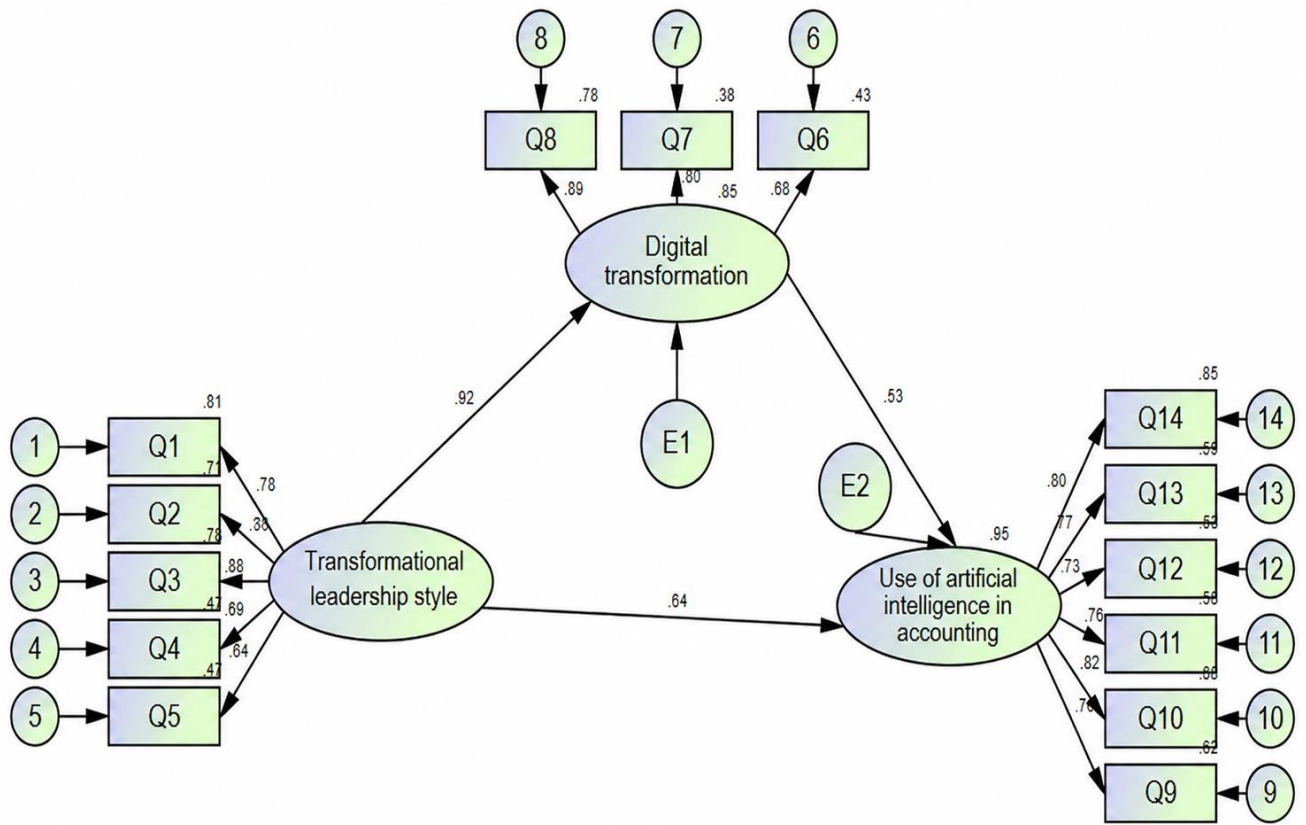


Figure 2. Structural Model of the Study

Based on the results of this model and the coefficients obtained from the structural analysis of the research data, the results of the structural path analysis, including the

relationships among the latent variables, are presented below.

Table 4. Results of Path Analysis for the Research Hypotheses

Path	Standardized Coefficient	Standard Error	t-Statistic	p-value
Transformational leadership style → Digital transformation	0.924	0.092	13.542	< .001
Digital transformation → Use of artificial intelligence in accounting	0.534	0.290	4.927	< .001
Transformational leadership style → Use of artificial intelligence in accounting	0.642	0.118	6.822	< .001

Hypothesis 1: Transformational leadership style has a significant effect on the use of artificial intelligence in accounting.

The results of the path analysis indicate that the standardized coefficient for the relationship between transformational leadership style and the use of artificial intelligence in accounting was 0.642. Given that the calculated t-statistic (6.822) exceeded the critical value of 1.96 and the significance level was below the permissible error threshold of .05 ($p < .001$), this hypothesis was supported at the 95% confidence level. Therefore, it can be concluded that transformational leadership style exerts a

direct and positive effect and plays a key role in the acceptance and implementation of artificial intelligence tools in accounting processes.

Hypothesis 2: Digital transformation has a significant effect on the use of artificial intelligence in accounting.

According to the findings presented in the table, the path coefficient for the effect of digital transformation on the use of artificial intelligence in accounting was estimated at 0.534. The t-statistic for this path was 4.927, exceeding the critical threshold of 1.96, while its significance level ($p < .001$) confirmed the statistical significance of the relationship. Therefore, the second hypothesis was

supported. This finding indicates that progress in organizational digital transformation creates the necessary technological and organizational infrastructure and directly facilitates and expands the adoption of artificial intelligence-based technologies in financial and accounting functions.

Hypothesis 3: Transformational leadership style has a significant effect on digital transformation.

Based on the results of the structural model analysis, the strongest relationship among the hypothesized paths concerned the effect of transformational leadership style on digital transformation, with a standardized path coefficient of 0.924. The t-statistic for this relationship was 13.542, indicating that this path was highly statistically significant at the 99% confidence level ($p < .01$). Support for this hypothesis suggests that transformational leaders, by fostering positive attitudes toward change and innovation, serve as major drivers of organizational digital transformation and play a critical role in facilitating the transition from traditional organizational structures and processes to digital infrastructures and digitally enabled operations.

4. Discussion and Conclusion

The present study examined the effects of transformational leadership style and digital transformation on the use of artificial intelligence in accounting among managers and accountants working in knowledge-based companies in Tehran Province. The results of the structural model supported all three research hypotheses. First, transformational leadership style had a positive and statistically significant effect on the use of artificial intelligence in accounting, with a standardized path coefficient of 0.642. Second, digital transformation had a positive and significant effect on the use of artificial intelligence in accounting, with a standardized coefficient of 0.534. Third, transformational leadership style had a strong positive and significant effect on digital transformation, with a standardized coefficient of 0.924, representing the strongest relationship in the proposed model. Taken together, these findings indicate that AI use in accounting is not merely a function of technological availability. Rather, it is embedded in a broader organizational context in which leadership behavior and digital transformation capabilities jointly shape the extent to which intelligent technologies are accepted and incorporated into accounting processes.

The first finding showed that transformational leadership style significantly increased the use of artificial intelligence

in accounting. This result suggests that leaders who articulate a compelling vision, encourage innovation, intellectually stimulate employees, and support organizational change can facilitate the acceptance and practical application of AI-based accounting tools. This finding is consistent with the argument that leadership style can shape how accounting information systems are perceived and utilized by organizational members. Abu Afifa and Nguyen found that transformational leadership was positively associated with the use of management accounting system information, indicating that leadership behaviors can substantially influence how accounting-related information technologies are integrated into managerial decision-making [7]. The current results extend this argument to the domain of artificial intelligence, showing that transformational leadership remains important as accounting systems evolve from conventional information technologies toward more sophisticated intelligent systems.

One explanation for this finding is that AI adoption often generates uncertainty among employees regarding changes in job responsibilities, professional identity, required competencies, and accountability. Accountants may perceive intelligent systems as useful, but they may simultaneously be concerned about automation, algorithmic decision-making, or possible erosion of professional judgment. Transformational leaders can reduce such resistance by communicating a clear rationale for technological adoption and presenting AI as a tool that complements rather than necessarily replaces professional expertise. They can also promote learning, experimentation, and knowledge sharing, thereby creating a climate in which accountants are more willing to engage with new technologies. This interpretation aligns with findings showing that users' perceptions mediate the relationship between technological readiness and AI adoption in accounting [6]. When employees perceive AI as useful and manageable, they are more likely to adopt it; transformational leaders may contribute to the formation of these favorable perceptions through encouragement, role modeling, and support for innovation.

The positive effect of transformational leadership on AI use is also compatible with evidence concerning the organizational usefulness of AI and the importance of trust. Güven et al. emphasized that the relationship between AI usefulness and business performance is affected by trust, suggesting that organizations need to establish confidence in AI-enabled systems if technological benefits are to be

realized [11]. Transformational leaders may help build such trust by clarifying implementation goals, providing adequate training, encouraging transparent communication, and ensuring that employees understand both the capabilities and limitations of AI. This is particularly important in accounting because accountants are responsible for information that must meet requirements of accuracy, reliability, transparency, and accountability. Therefore, leadership can influence AI use not only through motivational mechanisms but also through the development of trust in digital systems and confidence in the organizational process of technological change.

The second major finding demonstrated that digital transformation had a significant positive effect on the use of artificial intelligence in accounting. This finding indicates that AI adoption is facilitated when organizations have already developed more advanced digital infrastructures, integrated information systems, data management capabilities, and technology-oriented processes. In other words, organizations undergoing digital transformation are better prepared to incorporate AI into accounting because they possess the digital foundations required for intelligent applications to function effectively. This result corresponds closely with recent evidence showing that the transition toward digital accounting creates an environment in which AI can be increasingly incorporated into accounting functions [9]. It is also consistent with the proposition that the movement from traditional accounting to digital accounting depends on the systematic integration of AI and related digital technologies into accounting processes [1].

Digital transformation may facilitate AI use through several mechanisms. First, it increases the availability of structured and real-time data, which are essential inputs for AI-based systems. Second, it improves interoperability among financial, operational, and managerial information systems. Third, it encourages organizations to redesign traditional processes in ways that are more compatible with automation and advanced analytics. Fourth, digital transformation usually involves increased investment in employee digital capabilities, cloud infrastructure, cybersecurity, and data governance. These conditions collectively reduce technological barriers to AI implementation. The finding therefore supports the view that AI adoption in accounting should not be treated as an isolated technological intervention. Instead, it should be understood as part of a broader transformation of organizational systems, routines, competencies, and information architectures.

The present finding is also consistent with studies emphasizing the contribution of AI to accounting information system efficiency. Alrfai et al. reported that AI can improve the efficiency of accounting information systems, while also highlighting the importance of cybersecurity in shaping this relationship [3]. This suggests that digital transformation contributes not only to technological availability but also to the development of complementary capabilities required for AI to operate securely and effectively. Similarly, Askary et al. discussed both opportunities and challenges associated with AI and the reliability of accounting information, emphasizing that the digital era creates new possibilities for improving accounting processes while also raising issues related to system reliability and information integrity [2]. In the context of the present study, organizations with more advanced digital transformation are likely to possess stronger technological controls and digital governance mechanisms, thereby facilitating the reliable use of AI in accounting.

The positive relationship between digital transformation and AI use can also be explained by the changing role of accounting information in modern organizations. As organizations become increasingly data-driven, accounting departments are expected to contribute not only to transaction recording and statutory reporting but also to forecasting, strategic planning, performance analysis, and risk assessment. Saleh et al. demonstrated that big data analytics can contribute to financial reporting quality by enhancing the capacity of organizations to process and interpret large volumes of information [4]. Likewise, Zare et al. found that AI use can improve aspects of the financial statement audit process, highlighting the growing role of intelligent technologies in accounting and assurance functions [5]. These studies reinforce the present finding by indicating that digital transformation increases the relevance and applicability of AI across multiple accounting-related activities.

The broader literature on AI-enabled innovation also supports this result. Belhadi et al. showed that AI-driven innovation can improve organizational resilience and performance, particularly under dynamic environmental conditions [10]. Although their research focused on supply chains, the same logic can be applied to accounting. Organizations operating in rapidly changing environments require systems capable of processing information quickly, identifying emerging risks, and supporting timely decisions. Digital transformation provides the infrastructure through

which AI can perform these functions. Accordingly, the positive effect observed in the present study may reflect the fact that digitally mature organizations are more capable of embedding AI into accounting processes in ways that produce operational and strategic value.

The third finding showed that transformational leadership style had a particularly strong positive effect on digital transformation, with a standardized coefficient of 0.924. This finding indicates that leadership may be one of the most influential organizational drivers of digital transformation. Digital transformation typically involves substantial changes in organizational structures, processes, employee competencies, communication patterns, and strategic priorities. Such changes cannot be accomplished simply by purchasing new technologies. They require organizational members to accept new routines and continuously adapt to evolving technological environments. Transformational leaders are well positioned to facilitate this process because they provide a strategic vision, stimulate innovative thinking, and encourage employees to participate actively in change.

This result strongly aligns with Philip's analysis of digital transformation through the lens of transformational leadership, which emphasizes that transformational leadership behaviors are particularly relevant to organizations undergoing digital change [8]. Leaders who communicate a clear digital vision and create commitment around transformation can reduce uncertainty and promote organizational alignment. The particularly high coefficient found in the present study suggests that, among knowledge-based companies, digital transformation may depend heavily on the leadership capacity to integrate technology into organizational strategy rather than treating digitalization as a purely technical function.

The finding can also be understood through the relationship between transformational leadership and organizational innovation. Transformational leaders tend to encourage intellectual stimulation, challenge existing routines, and support experimentation with new approaches. These behaviors are directly relevant to digital transformation because digitalization frequently requires redesigning established procedures. In accounting, for example, transitioning from manual or semi-automated processes to integrated digital systems may require redefining reporting workflows, control structures, employee roles, and decision-making practices. The findings of Abu Afifa and Nguyen regarding the role of transformational leadership in the use of management

accounting information support this interpretation because they demonstrate that leadership affects how accounting systems are incorporated into organizational practices [7]. The present study extends this relationship by showing that transformational leadership may first strengthen digital transformation and thereby create a broader environment conducive to advanced technology adoption.

The three significant paths can also be interpreted as an interconnected organizational mechanism. Transformational leadership appears to function as an upstream organizational capability, while digital transformation operates as an enabling technological and structural condition, and AI use in accounting represents a more specific technological outcome. This pattern is consistent with contemporary perspectives that conceptualize AI adoption as part of broader organizational capabilities rather than as an isolated software implementation. Nguyen et al. emphasized the interrelationships among AI in accounting, managerial IT infrastructure, risk management, and sustainable competitiveness, showing that AI-related outcomes depend on complementary organizational and technological resources [13]. The current findings similarly suggest that leadership and digital infrastructure should be examined jointly when explaining AI adoption in accounting.

Furthermore, the results have implications for understanding how firms move from traditional accounting toward digital accounting. Ouyarhossein and Ouyarhossein proposed an AI-oriented model for facilitating the transition from conventional accounting practices to digital accounting, emphasizing that such transition requires systematic technological and organizational change [1]. The present findings support this position by showing that transformational leadership strongly predicts digital transformation and that digital transformation, in turn, facilitates AI use. Thus, organizations may be more successful in adopting AI when leadership creates the strategic and cultural conditions for digitalization before or alongside the introduction of intelligent accounting applications.

The findings should also be considered alongside the ethical implications of AI adoption. Zhang et al. emphasized that AI in managerial accounting can create ethical challenges involving accountability, transparency, professional responsibility, and the use of algorithmic outputs in decision-making [12]. Transformational leadership may therefore be important not only for encouraging AI adoption but also for ensuring that technological change remains consistent with ethical and

professional standards. Leaders influence organizational norms and can establish expectations regarding responsible AI use, human oversight, and accountability. Digital transformation must likewise incorporate governance mechanisms that ensure that efficiency gains do not occur at the expense of data integrity, transparency, or professional judgment. Consequently, the relationships identified in this study should be interpreted as involving both technological enablement and managerial responsibility.

Overall, the findings indicate that the successful use of AI in accounting depends on the interaction between human leadership and organizational digital capacity. Transformational leadership directly facilitates AI use and appears to be an especially strong determinant of digital transformation. Digital transformation, in turn, establishes the technological infrastructure and organizational readiness necessary for AI-based accounting applications. These results are consistent with prior evidence concerning AI adoption, digital accounting, accounting information systems, technological readiness, business performance, and leadership [3, 6, 8, 9, 13]. Accordingly, organizations seeking to increase AI use in accounting should approach technological adoption as a combined leadership, organizational transformation, and capability-development process rather than as a narrowly defined information technology project.

The present study was subject to several limitations that should be considered when interpreting its findings. First, the study was conducted exclusively among managers and accountants working in knowledge-based companies in Tehran Province, which may limit the generalizability of the results to organizations in other industries, geographical areas, or institutional environments. Second, the use of convenience non-probability sampling may have introduced selection bias because participants who were more accessible or more willing to respond may have differed from other members of the target population. Third, all constructs were measured through self-report questionnaires, which may increase the possibility of common method bias, social desirability effects, and perceptual measurement error. Fourth, the cross-sectional design limits the ability to establish temporal ordering or draw strong causal conclusions regarding the relationships among transformational leadership, digital transformation, and AI use. Finally, the study focused on a relatively parsimonious model and did not incorporate potentially important organizational factors such as digital competence, organizational culture, technology readiness, trust in AI,

cybersecurity capability, perceived usefulness, organizational size, or financial resources.

Future studies are recommended to examine the proposed relationships in broader and more heterogeneous samples, including manufacturing firms, financial institutions, auditing firms, public-sector organizations, and small and medium-sized enterprises. Comparative studies across provinces, countries, or institutional settings could also clarify whether the effects identified in this study vary according to technological development or organizational context. Longitudinal research would be particularly useful for examining how transformational leadership influences digital transformation over time and whether changes in digital maturity subsequently increase actual AI adoption. Future researchers may also investigate mediation models in which digital transformation mediates the relationship between transformational leadership and AI use, as well as moderation models involving organizational culture, technology readiness, employee digital literacy, trust in AI, cybersecurity capability, or top management support. Mixed-method and qualitative studies could further explore the experiences of accountants and managers during AI implementation and identify barriers that are not readily captured through standardized questionnaires. Researchers should also consider measuring actual system usage, objective digital maturity indicators, and organizational performance outcomes to complement perceptual measures.

Managers of knowledge-based companies should treat AI adoption in accounting as an organizational transformation initiative rather than merely as the purchase or installation of new software. Organizations should develop transformational leadership competencies among senior executives, financial managers, and accounting supervisors, with particular emphasis on communicating a clear digital vision, encouraging innovation, supporting employee learning, and reducing resistance to technological change. Companies should also invest systematically in digital infrastructure, integrated information systems, data quality, cybersecurity, cloud-based platforms, and interoperability among accounting and managerial systems. Accountants should receive continuous training in AI literacy, data analytics, digital ethics, and the interpretation of algorithmic outputs so that intelligent systems are used as decision-support tools rather than unquestioned substitutes for professional judgment. Organizations should establish clear governance frameworks for AI implementation, define responsibility for system outputs, maintain appropriate human oversight, and continuously evaluate the reliability

and usefulness of AI applications. Finally, digital transformation and AI strategies should be aligned with accounting objectives, organizational strategy, and employee capabilities so that technological investment produces sustainable improvements in the quality, efficiency, and strategic value of accounting processes.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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