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Using digital technology to standardize accounting information systems

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ABSTRACT

This study explores how digital technology helps to standardize accounting information systems. Using both qualitative and quantitative research methods, it examines socio-economic aspects of production, business, trade, and services. A theoretical framework is created, research hypotheses are presented, and primary data is analyzed using SPSS and AMOS software. The results show that digitalization supports the standardization of accounting systems by lowering production costs, strengthening administrative functions, improving financial performance, and increasing profits. The accounting information system is evaluated based on system scale, information processes, use of technology, and production activities. The study also highlights that for organizations to achieve long-term and stable growth through digital transformation, they need to plan effective business strategies and align their goals with their industry's characteristics.

1. Introduction

The increasing integration of digital technology into business operations has brought forth new and practical research challenges in systematizing the theoretical foundation of information, technology, information technology (IT), systems, and accounting information systems (AIS) (Hung et al., 2023). This study aims to provide empirical evidence through data analysis to verify the interactive relationship between digital technology metrics and AIS metrics. By doing so, it seeks to support Vietnamese enterprises and multinational corporations in developing strategic plans that facilitate the adoption of emerging technologies, ensuring that accounting information is measured and verified in a scientific, objective, consistent, accurate, and transparent manner in the financial market.

In Vietnam, businesses play a crucial role in socio-economic development by generating employment, increasing income, stabilizing macroeconomic conditions, and contributing to national interests. However, current digital technologies require further advancement and alignment with standardized AIS. Therefore, research on the application of digital technologies is essential to help organizations and individuals develop strategic plans for production, business, trade, and service activities. By adopting these technologies, businesses can deeply integrate into the global economy, fostering a sustainable socio-economic development environment (Hang and Kim, 2025).

This research stems from the increasing urgency to digitize and standardize IT. The necessity for digital transformation is widely acknowledged by policymakers, economic planners, administrators, researchers, organizations, and online communities both domestically and internationally. Despite significant interest, there remains a research gap in exploring how digital technology can contribute to standardizing AIS in a scientifically rigorous and practical manner.

The key research question guiding this study is: Does the application of information digitization technology contribute to the standardization of the AIS? To address this question, the study defines its primary objective as the digitization of IT to standardize AIS. The specific objectives include:

1. Identifying factors that directly measure information digitization technology and examining the positive or negative effects of its implementation.
2. Evaluating the direct and indirect measurement factors that assess AIS performance in the absence of IT digitization.
3. Developing a methodological framework for constructing a set of criteria to build a digital IT

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model, standardizing the theoretical AIS, and testing the model empirically.

By addressing these objectives, the study aims to provide valuable insights into how digital transformation can enhance the accuracy, reliability, and efficiency of AIS, ultimately contributing to business sustainability and economic growth.

2. Theoretical background/literature review

2.1. Technology theory

A substantial body of research highlights the critical role of technology in enhancing business performance and financial management. Mitchell et al. (1997), Stokes and Blackburn (2002), Harris et al. (2005), and Harris and Gibson (2006) emphasized that successful enterprises in production, business, trade, and service sectors must proactively adopt modern technologies. The integration of technology facilitates efficient financial transaction recording, enhances AIS, and improves financial reporting, budgeting, and performance analysis. As a result, businesses equipped with advanced technological tools can make informed managerial decisions, optimize operations, and maintain competitiveness.

Furthermore, Louadi (1998), Ismail (2009), and Esmeray (2016) argued that business performance is not solely measured by financial profitability but also by the efficient utilization of resources. In recent decades, performance evaluation has expanded beyond traditional financial indicators to include non-financial metrics such as business balance and corporate social responsibility (CSR). These broader evaluation methods reflect the multidimensional nature of enterprise activities, reinforcing the importance of integrating digital technology into AIS to achieve sustainable business performance.

By synthesizing these theoretical perspectives, this study underscores the necessity of leveraging digital technologies to optimize accounting processes, enhance decision-making, and contribute to long-term business success.

2.2. Situation theory

Esmeray (2016) highlighted that contingency theory has been widely applied to analyze the impact of technology on AIS. The adoption of modern technology in business operations contributes to AIS standardization, reducing risks, and enhancing competitive advantages in the market.

The contingency theory has been extensively utilized in the study of organizational behavior, strategic management, planning, and efficiency. This theory posits that there is no single best way to manage an organization; what works in one scenario may not be effective in another.

Weill and Olson (1989) argued that contingency theory is essential for designing and operating standardized information systems, as organizations must tailor their AIS to specific contextual factors. Furthermore, Khazanchi (2005) emphasized that contingency theory has been applied in AIS research to analyze the relationship between technology adoption and information management, particularly in the implementation of digitalization strategies.

2.3. Technology acceptance model (TAM)

Davis (1993) developed the Technology Acceptance Model (TAM) to explain users' acceptance of new technologies. The model identifies two key factors influencing technology adoption: perceived usefulness (PU) and perceived ease of use (PEU). These factors shape users' attitudes and intentions toward using technology.

TAM is widely applied to assess user behavior, predicting the extent to which individuals accept and utilize technology in various fields, including AIS. The model provides insights into how users perceive technological systems, allowing organizations to enhance system usability and user engagement. Today, TAM remains one of the most influential models for evaluating the adoption of technical and technological innovations, particularly in IT.

2.4. Unified theory of acceptance and use of technology (UTAUT)

Venkatesh et al. (2010) introduced the Unified Theory of Acceptance and Use of Technology (UTAUT) as an advanced framework for understanding technology adoption. UTAUT consolidates multiple technology acceptance theories into a single, comprehensive model. It examines how factors related to behavioral intention and actual technology use evolve over time.

Unlike earlier models, UTAUT integrates concepts from various behavioral prediction models, providing a unified approach to studying technology acceptance. The theory is particularly useful in fields such as IT, economic management, and corporate governance. Researchers widely apply UTAUT to measure the acceptance of new technologies in accounting, finance, management, and service industries, making it a fundamental model in digital transformation studies.

2.5. Systems theory

van Bertalanffy (2008) developed systems theory, which has been applied across various scientific disciplines since the 1940s. Systems theory views an organization, consisting of interconnected parts that influence one another. Changes in one part of the system can significantly impact the entire organization, emphasizing the need for integrated management approaches.

Romney et al. (2012) applied systems theory to AIS, recognizing AIS as a subsystem within the broader management information system (MIS). Their research highlights the importance of

continuously updating and adapting AIS to reflect organizational changes.

Additionally, Trabulsi (2018) and Budiarto et al. (2018) utilized systems theory to assess AIS effectiveness, determining how well AIS aligns with organizational goals and operational requirements. Their studies emphasize that a well-structured AIS enhances decision-making, financial reporting, and business efficiency.

2.6. Information systems theory

Galbraith (1973) emphasized that for an information system to be effective, its processing capacity must align with organizational information needs. The appropriateness of an AIS depends on the correspondence between financial and accounting information, reaffirming the principle that financial data must be established before accounting processes. Organizational effectiveness is achieved through a set of possible outcomes that maintain structural consistency across similar contextual settings.

Chong (1996) highlighted the critical role of information systems in providing essential data to managers, reducing uncertainty, and improving decision-making in business operations. Similarly, Louadi (1998) asserted that technological advancements significantly impact information systems, particularly in organizations with the capability to process information efficiently.

Perren and Grant (2000) observed that many organizations suffer from poor information management, leading to ineffective control and decision-making driven by intuition rather than structured data.

Mitchell et al. (2000) argued that information systems facilitate both short-term operational management (e.g., revenue, costs, and cash flow) and long-term strategic planning in a competitive business environment.

Further, Rama and Jones (2006) emphasized that AIS integrates accounting, financial, and other business-related information, serving as a critical foundation for decision-making by both internal and external stakeholders.

Kharuddin et al. (2010) noted that decision-makers, including owners, middle managers, and executives, rely heavily on AIS for timely and reliable information. The ability of an information system to meet organizational demands directly affects business performance, leading researchers to explore how technology impacts AIS optimization.

Romney et al. (2012) and Bodnar and Hopwood (2014) described an information system as a framework that collects, records, stores, and processes data, transforming it into valuable insights for business decision-making.

Ashif et al. (2013) applied information systems theory to assess the effects of digitalization on AIS standardization, reinforcing the need for continuous technological adaptation.

Budiarto et al. (2018) further emphasized that information systems are fundamental to organizational structure, improving control mechanisms and enhancing strategic decision-making. AIS, as an integral part of every business, plays a crucial role in delivering timely, accurate, and complete financial information to facilitate effective management.

2.7. Theory of IT systems

Ismail (2009) highlighted the transformative role of information systems in integrating business processes and adapting to environmental changes. The application of digital technology in AIS has significantly improved operational efficiency, yet many organizations, particularly in developing countries, face challenges such as a shortage of skilled personnel and inadequate technological infrastructure.

While digitalization has streamlined accounting processes, research on its direct impact on business performance remains limited. Manurung and Manurung (2019) and Kareem et al. (2019) pointed out that organizations still struggle with cash flow management, raw material supply, customer service, and financial constraints, often due to limited technological resources and a lack of investment in modern information systems.

Several studies, including those by Prasad and Green (2015), Esmeray (2016), and Trabulsi (2018), have empirically validated the positive correlation between digital technology adoption and AIS standardization. These findings affirm that digital transformation enhances organizational efficiency and competitive advantage in the global market.

2.8. Theory of accounting information quality

Kaplan and Roll (1972) defined information as factual data that aids decision-making by reducing uncertainty and enhancing knowledge. Accounting information, as a subset of financial data, is generated through a structured process involving the collection, storage, processing, and dissemination of financial transactions.

Mulyani and Arum (2016) posited that the quality of accounting information is determined by its relevance to user needs. High-quality AIS must deliver truthful, objective, comprehensive, timely, and comparable information to facilitate informed decision-making.

Azar et al. (2019) reinforced this perspective, stating that accounting information quality is intrinsically linked to its usefulness for end-users. To meet these standards, AIS must uphold principles of accuracy, transparency, and accessibility.

2.9. Theory of asymmetric information

Akerlof (2017) introduced the theory of asymmetric information, which explains how

imbalances in knowledge among economic agents influence transaction outcomes. When one party possesses more information than another, it can lead to adverse selection (where one side exploits superior knowledge) or moral hazard (where one party conceals actions for personal gain).

These issues are particularly relevant in financial reporting and AIS, where managers may manipulate information to serve personal interests rather than maximizing shareholder value. The implementation of advanced digital technologies can help mitigate these risks by ensuring greater transparency and accountability in financial reporting.

In summary, considering rapid international integration and the Fourth Industrial Revolution, digitalization remains a key driver in standardizing AIS. This literature review integrates multiple theoretical perspectives—including technology theory, contingency theory, technology acceptance models, system theory, and information quality theory—to establish a robust framework for digitizing AIS. The synthesis of these theories provides a foundation for developing standardized digital models that align with contemporary accounting and financial requirements.

3. Methodology

In this research, a mixed-method approach is employed, integrating both qualitative and quantitative research methods. The study begins with the development of a theoretical research model, followed by the collection of empirical data for validation using SPSS and AMOS software. This approach allows for a comprehensive evaluation of the theoretical framework's scientific and practical significance.

3.1. Theoretical framework

This study applies multiple theoretical perspectives, including technology theory, contingency theory, technology acceptance theory, system theory, and asymmetric information theory, to establish a structured set of theoretical criteria for analyzing the impact of technological digitalization on business performance and AIS.

Table 1 shows that the causal factor in this framework is the digitalization of information technology (DIT), which is directly measured by five sub-factors representing profitability and is further influenced by three main factor groups, each comprising five sub-factors representing efficiency gains from technological transformation based on Akerlof (2017), Davis (1993), Esmeray (2016), Harris and Gibson (2006), Khazanchi (2005), Mitchell et al. (1997), Louadi (1998), Ismail (2009), Stokes and Blackburn (2002), Venkatesh et al. (2010), and Weill and Olson (1989). Indeed, in Table 1, DIT consists of 5 sub-factors: DIT1 (ROA-Return on assets), DIT2 (ROE-Return on equity), DIT3 (ROI-Return on investment), DIT4 (ROS-Return on sales), and DIT5 (EBIT-Earnings before interest and tax). Also, based on Akerlof (2017), Kharuddin et al. (2010), Ashif et al. (2013), van Bertalanffy (2008), Bodnar and Hopwood (2014), Budiarto et al. (2018), Chong (1996), Esmeray (2016), Galbraith (1973), Perren and Grant (2000), Kaplan and Roll (1972), Kareem et al. (2019), Manurung and Manurung (2019), Mulyani and Arum (2016), Prasad and Green (2015), Romney et al. (2012), Mitchell et al. (2000), Trabulsi (2018), Romney et al. (2012), Rama and Jones (2006), Mitchell et al. (2000), the theoretical content is shown on Table 2.

Table 1: Theoretical digitalization of information technology

Cause factor	Main factors	Sub-factors
DIT: DIT1 (ROA-Return on assets) DIT2 (ROE-Return on equity) DIT3 (ROI-Return on investment) DIT4 (ROS-Return on sales) DIT5 (EBIT-Earnings before interest and tax)	IT1: Saving business production costs	IT1.1. Reducing production cost IT1.2. Product sales discount IT1.3. Reduce management costs IT1.4. Reduce shipping costs IT1.5. Reducing marketing costs
	IT2: Improving administration capacity	IT2.1. Increase cognitive capacity IT2.2. Increase application capacity IT2.3. Increase synthesis capacity IT2.4. Increasing Analytical capacity IT2.5. Increase assessment capacity
	IT3: Improving business finance capacity	IT3.1. Increase assets IT3.2. Capital increase IT3.3. Increase production IT3.4. Increase power IT3.5. Increased competition

Table 2: Theoretical basis of standardized AIS

Result factor	Main factors	Sub-factors
Standardized AIS: AIS1 (Commodity market) AIS2 (Production market) AIS3 (Financial market) AIS4 (Technology market)	IS1: Level of technological development	IS1.1. Past technology IS1.2. Current technology IS3.3. Future technology
	IS2: Level of information management	IS2.1. Computer application IS2.2. Information extraction IS2.3. Information analysis IS2.4. Information control
	IS3: Size of business production	IS3.1. Labor IS3.2. Properties IS3.3. Funds

The established theoretical framework for AIS standardization and digital transformation consists of eight main factors, collectively measured through 34 sub-factors:

- Cause Factor: DIT

  - Directly measured by five sub-factors
  - Influenced by three main factors with 15 sub-factors

- Outcome Factor: Standardized AIS

  - Directly measured by four sub-factors
  - Indirectly evaluated through three main factors with ten sub-factors

3.2. Research model

Building on the research questions, objectives, and the established theoretical framework, this study proposes a research model to investigate the impact of DIT on the standardization of AIS. The model is illustrated in Fig. 1. The proposed model consists of three main groups of factors and seven research hypotheses that explore the relationships between technological digitalization and AIS standardization.

3.2.1. Reflective hypotheses for information technology digitalization

The first group of hypotheses examines how the digitalization of information technology affects key factors of business efficiency:

H1: Cost savings in production and business operations are positively associated with information technology digitalization.
H2: Improvements in management capacity are positively associated with information technology digitalization.
H3: Enhancements in business financial capacity are positively associated with information technology digitalization.

These elements are incorporated into the theoretical model to provide a structured approach for analyzing how technological digitalization contributes to AIS standardization and overall organizational efficiency.

3.2.2. Structural hypotheses for standardized AIS

The second group of hypotheses investigates how a standardized AIS is structured:

H4: The level of technological settings is a key measurement factor of a standardized AIS.
H5: The degree of information establishment is a key measurement factor of a standardized AIS.
H6: The scale of business production is a key measurement factor of a standardized AIS.

3.2.3. Causal hypothesis on the digitalization of AIS standardization

The final hypothesis proposes a causal relationship between technology digitalization and AIS standardization:

H7: Digitalization of technology has a positive relationship with the standardization of AIS.

3.3. Sample size and data collection

This research framework identifies 34 auxiliary factors, representing 34 observed variables. The sample size was determined using the following formula: N = (34×5) + 50 = 220.

3.3.1. Sampling method and data collection process

- A non-probability sampling method was used, focusing on production, business, trade, and service enterprises in Ba Ria - Vung Tau (BR-VT) Province.
- Data collection took place from January 1, 2023, to February 1, 2023.
- A total of 250 questionnaires were distributed, and 240 responses were received after validation.
- 20 responses were excluded due to incompleteness or failure to meet research criteria, resulting in 220 valid responses for analysis.

3.4. Data analysis techniques

Two statistical techniques were applied to test the proposed theoretical model:

- Exploratory Factor Analysis (EFA) using SPSS to examine factor structures.
- Confirmatory Factor Analysis (CFA) using Structural Equation Modeling (SEM) in AMOS to test the relationships within the saturated model.

4. Results

4.1. Reliability statistics – Cronbach's alpha

A crucial step in the research analysis is evaluating the reliability of the observed variables used to measure each factor. The most widely used reliability measure is Cronbach's Alpha coefficient, which assesses the internal consistency of observed variables within each construct. Cronbach's Alpha Criteria:

- The acceptable threshold for Cronbach's Alpha is ≥ 0.60, indicating an acceptable level of reliability.

- Observed variables with item-total correlations < 0.30 will be excluded to ensure only meaningful variables are retained.
- If Cronbach's Alpha is too high (above 0.90), it may indicate redundancy among observed variables, meaning some variables might be excessively similar (collinear). In such cases, redundant variables should be eliminated.
- Extracted Variance as a Measure of Reliability
- Extracted variance for each factor should be greater than 0.50 to confirm that the latent variable adequately explains the variation in observed variables.
- Extracted variance reflects the proportion of variance accounted for by the latent construct, reinforcing its reliability as a measurement tool.

By applying Cronbach's Alpha testing in the study, the research ensures that the observed variables and measurement scales are statistically reliable, thus strengthening the validity of the model. The results of the test are shown in Table 3.

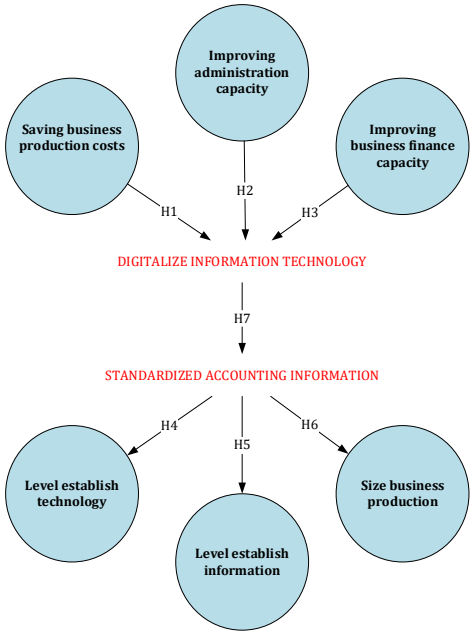

Fig. 1: Digitalization of information technology and its role in standardizing AIS

Table 3: Statistical reliability digitalizes information technology to standardized AIS

	Scale means if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
IT1.1	131.45	375.344	.624	.959
IT1.2	131.56	370.814	.640	.958
IT1.3	131.86	367.619	.613	.959
IT1.4	131.79	369.803	.666	.958
IT1.5	131.53	369.583	.669	.958
IT2.1	131.65	367.250	.712	.958
IT2.2	131.53	373.109	.637	.958
IT2.3	131.51	370.607	.722	.958
IT2.4	131.77	371.839	.644	.958
IT2.5	131.60	379.337	.471	.959
IT3.1	131.52	374.406	.610	.959
IT3.2	131.66	373.128	.608	.959
IT3.3	131.61	367.115	.732	.958
IT3.4	131.53	368.698	.738	.958
IT3.5	131.55	370.413	.734	.958
DIT1	131.60	370.890	.699	.958
DIT2	131.59	371.266	.667	.958
DIT3	131.71	370.132	.737	.958
DIT4	131.68	369.003	.735	.958
DIT5	131.83	370.278	.690	.958
IS1.1	131.64	369.446	.730	.958
IS1.2	131.62	369.004	.741	.958
IS1.3	131.60	373.446	.630	.958
IS2.1	131.35	374.191	.651	.958
IS2.2	131.35	374.475	.638	.958
IS2.3	131.43	376.676	.544	.959
IS2.4	132.06	381.608	.331	.961
IS3.1	132.10	380.359	.387	.960
IS3.2	131.68	374.528	.609	.959
IS3.3	131.68	381.661	.353	.960
AIS1	131.41	374.993	.639	.958
AIS2	131.67	373.509	.672	.958
AIS3	131.60	372.770	.673	.958
AIS4	131.35	380.230	.514	.959

Cronbach's alpha: .960; Cronbach's alpha based on standardized items: .960; Number of items: 34

4.2. Exploratory factor analysis (EFA)

To assess the factor structure of the dataset, EFA was conducted using KMO and Bartlett's Test, Total Variance Explained, and the Rotated Component Matrix.

1. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

- KMO ≥ 0.50, confirming that the sample size is adequate for factor analysis.
- Bartlett's Test of Sphericity is significant (Sig < 0.05), indicating that observed variables are correlated and suitable for factor extraction.
- Total variance extracted ≥ 50%, ensuring that the factors explain a substantial portion of the variance in the dataset.

2. Extraction and Rotation Method

- Principal Axis Factoring (PAF) with Promax Rotation (Oblique) was used instead of Principal

Component Analysis (PCA) with Varimax Rotation, as Promax rotation provides a more accurate reflection of data structure when factors are correlated.

- A critical standard was maintained: The largest difference between factor loadings and any other loadings on a given item must be ≥ 0.30.

3. Factor Loading Criteria

- The absolute factor loading of each item must be ≥ 0.50, ensuring practical significance in EFA.
- Interpretation based on sample size:

  - Factor loading > 0.30 (minimum requirement) requires N ≥ 350.
  - Factor loading > 0.55 is appropriate for N ≈ 100.
  - Factor loading > 0.75 is required for N ≈ 50.

Since the study sample consists of N = 220, a factor loading threshold of ≥ 0.55 is considered appropriate.

The results of EFA confirm that the identified factors adequately represent the underlying constructions, validating the theoretical framework.

Based on the results of EFA (Table 4), we accept the findings regarding the digitization of information technology and the standardization of the AIS. The analysis involved 34 sub-factors across 8 main factors, and the following statistical results confirm the robustness and validity of the model:

- KMO (Kaiser-Meyer-Olkin) Test: The value meets the threshold of ≥ 0.50, indicating that the sample size is adequate for factor analysis.
- Bartlett's Test of Sphericity: The test yielded significant results (Sig < 0.05), confirming that the correlation matrix of the observed variables is not an identity matrix and is suitable for factor extraction.
- Total Variance Explained: The factors collectively explain a substantial portion of the variance, satisfying the requirement of ≥ 50%.
- Rotated Component Matrix: The results show that the factors for all items meet the practical significance threshold of ≥ 0.50.

The factor loadings, extraction method, and rotation support the validity of the model, confirming that the digitization of information technology and standardization of AIS are measured accurately and reliably by the identified sub-factors.

For detailed results, please refer to Table 4, which provides the full matrix of these findings.

Table 4: Exploratory factor analysis of digital information technology and standardized AIS

EFA for digitalized information technology (KMO and Bartlett's test)

KMO measure of sampling adequacy		.799
Bartlett's test of sphericity	Approx. Chi-square	1084.410
	DF	45
	Sig.	.000

Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	4.394	43.939	43.939	4.394	43.939	43.939	2.683	26.833	26.833
2	1.797	17.974	61.913	1.797	17.974	61.913	2.319	23.185	50.018
3	.935	9.349	71.262	.935	9.349	71.262	2.124	21.244	71.262

Rotated component matrix

	Component 1	Component 2	Component 3
IS1.1			.799
IS1.2			.802
IS1.3			.550
IS2.1	.722		
IS2.2	.890		
IS2.3	.872		
IS2.4	.786		
IS3.1		.746	
IS3.2		.632	
IS3.3		.730	

EFA for standardized AIS (KMO and Bartlett's test)

KMO measure of sampling adequacy		.918
Bartlett's test of sphericity	Approx. Chi-square	1943.301
	DF	105
	Sig.	.000

Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	%Variance	Cumulative %	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	7.788	51.921	51.921	7.788	51.921	51.921	4.123	27.486	27.486
2	1.138	7.585	59.506	1.138	7.585	59.506	3.483	23.219	50.706
3	.945	6.298	65.804	.945	6.298	65.804	2.265	15.098	65.804

Rotated component matrix

	Component 1	Component 2	Component 3
IT1.1	.711		
IT1.2	.797		
IT1.3	.569		
IT1.4	.606		
IT1.5	.778		
IT2.1		.654	
IT2.2		.765	
IT2.3		.649	
IT2.4		.597	
IT2.5		.871	
IT3.1			.737
IT3.2			.599
IT3.3			.583
IT3.4			.636
IT3.5			.629

4.3. Confirmatory factor analysis blended with SEM

The measurement model constructed for the concepts in this study is now subjected to CFA to verify whether the model fits the data and whether the scales used are reliable. CFA tests the adequacy of the model and the quality of the measurement scales in terms of their validity.

In CFA, several statistical indices are used to evaluate the fit of the measurement model, including:

- CMIN (Chi-square): Indicates the model fit.
- CMIN/DF (Chi-square/degree of freedom): A ratio for assessing model fit, with values between 1 and 5 typically considered good.
- CFI (Comparative Fit Index): Values closer to 1 suggest good fit, with values above 0.90 generally acceptable.
- TLI (Tucker and Lewis Index): Like CFI, values near or above 0.90 indicate a good fit.
- RMSEA (Root Mean Square Error of Approximation): A value below 0.08 suggests a reasonable fit.

The results of the CFA analysis provide strong support for the research hypotheses, validating the measurement model as well as the structural relationships between the variables. The research hypotheses are accepted as follows:

1. Reflective Hypotheses for Information Technology Digitization

The regression coefficients for the reflective hypotheses are all positive and significant, confirming the relationships between the factors and the digitization of technology:

- H1: Saving business production cost is related to information technology digitization (β1 = +.02), supported.
- H2: Improving business financial capacity is related to information technology digitization (β2 = +.20), supported.
- H3: Improving management capacity is related to information technology digitization (β3 = +.88), strongly supported.

2. Structural Hypotheses for Standardized AIS

- The structural hypotheses, measuring the impact of various factors on the standardized AIS, are all supported by positive regression weights:
- H4: The standardized AIS is measured by the level of technology setting (β4 = +.68), supported.
- H5: The standardized AIS is measured by the level of information establishment (β5 = +.86), supported.
- H6: The standardized AIS is measured by the scale of business production (β6 = +1.32), supported.

3. Causal Hypothesis for Digitization of Technology to Standardize the AIS

- The causal hypothesis, which suggests that digitization of technology positively impacts the standardization of AIS, is also accepted:
- H7: The digitization of technology has a positive impact on the standardization of AIS (β7 = +.74), as supported.

The CFA results provide strong evidence that the proposed model for the digitization of information technology to standardize the AIS is statistically valid and meets the necessary criteria for a good fit. The model's paths and relationships support the theoretical framework, and the hypotheses are confirmed as valid based on the regression coefficients (Fig. 2).

5. Discussion

In addition, we can analyze the partial linear structure model for digitizing technology and standardizing accounting information so that it can be replicated to other fields in the future in combination with Web 1.0, Web 2.0, Web 3.0, Web 4.0, Technology 4.0, AI, ChatGPT, Chatbot, etc. The model and its results are shown in Figs. 3 and 4.

6. Conclusions

Based on the synthesis, analysis, and scientific systematization of the theoretical models and practical situations, this study has developed a theoretical model for information technology (IT) digitization to standardize AIS. The study successfully solved the research problem and answered the research questions, achieving the following objectives.

6.1. Impact of technology digitization

The findings show that IT digitization significantly enhances business operations in several ways:

- Cost reduction: Digitization resulted in a 0.4% decrease in production costs. This was achieved through reduced production expenses, lower product prices, decreased transportation and marketing costs, and improved management efficiency.
- Improved management capacity: Management performance increased by 4.3%, attributed to enhanced abilities in perceiving, applying, analyzing, and evaluating business activities.
- Enhanced financial capacity: Businesses experienced an 18.7% improvement in financial capacity. This was driven by growth in assets, capital, production, market position, and competitiveness, leading to higher revenues and profits.

Chi-square=1576.543; df=517; P=.000; Chi-square/df=3.049; GFI=.649; TLI=.773; CFI= 790; RMSEA=.097

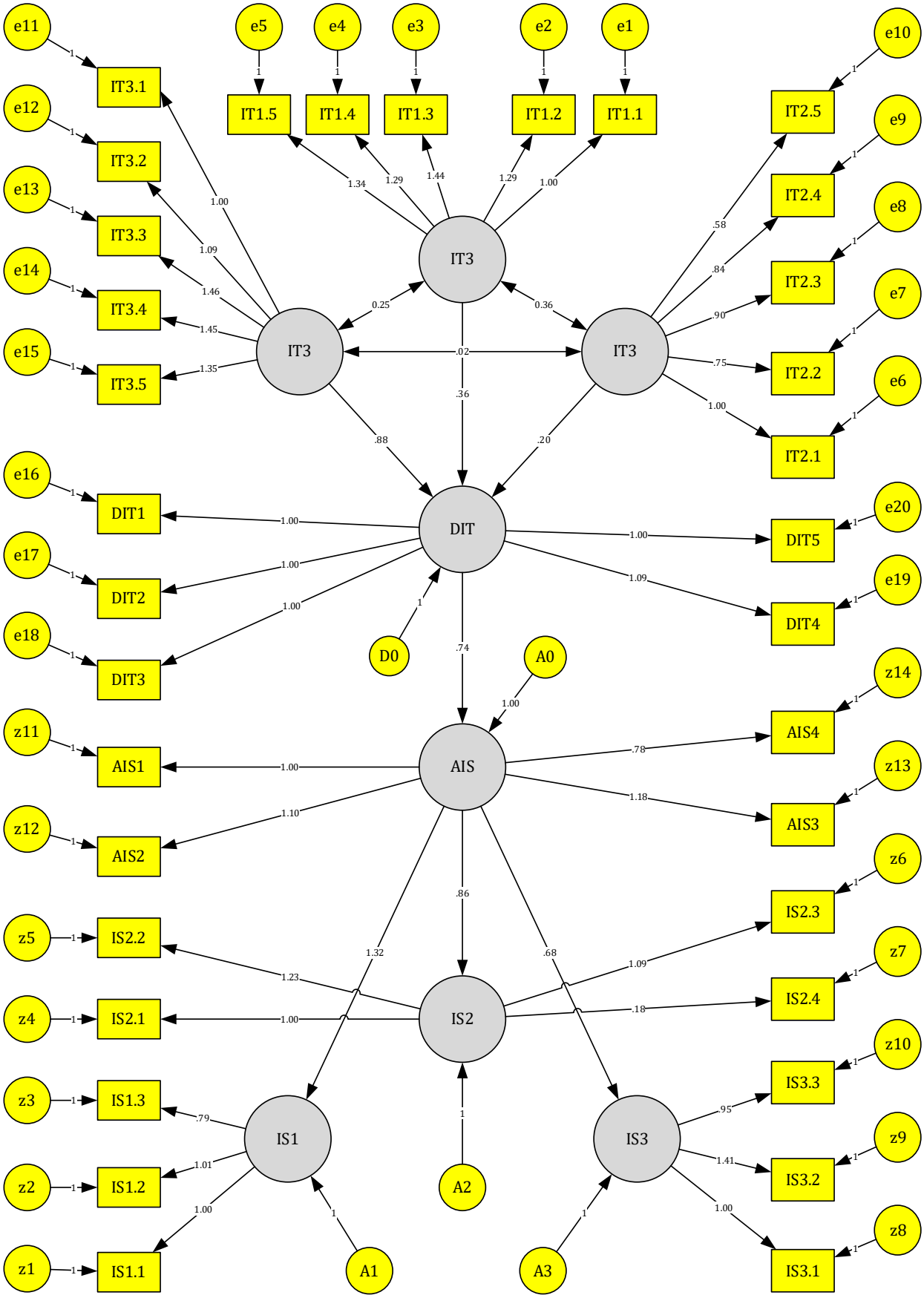

Fig. 2: The saturated model blended standardized structural equation modeling

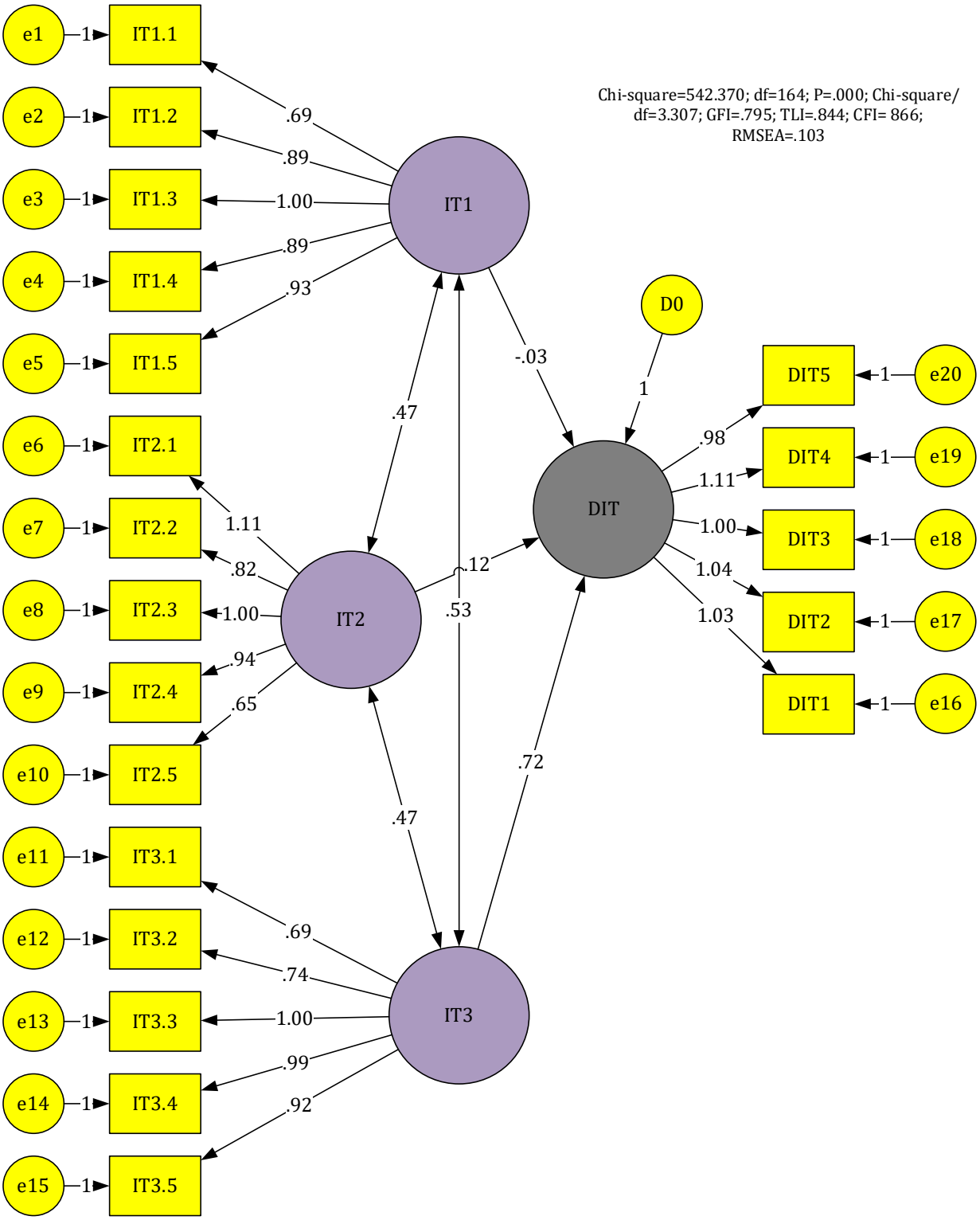

Fig. 3: CFA and SEM results for DIT with factor loadings and model fit indices

6.2. Impact on standardized AIS

The study examined the influence of various factors on the standardization of AIS:

- The effectiveness of AIS was assessed based on its ability to provide reliable information across key markets: commodity, factor, financial, and technology markets.
- Production and business scale contributed 28.1% to AIS performance, reflecting growth in labor size, assets, and capital.
- Level of information development accounted for 18.3%, supported by improved computer applications for extracting, analyzing, and controlling information.
- Technology development contributed 14.5%, enabled by the effective use of past, current, and emerging technologies.

These factors together led to a 15.7% improvement in the quality of accounting information, validated through SEM.

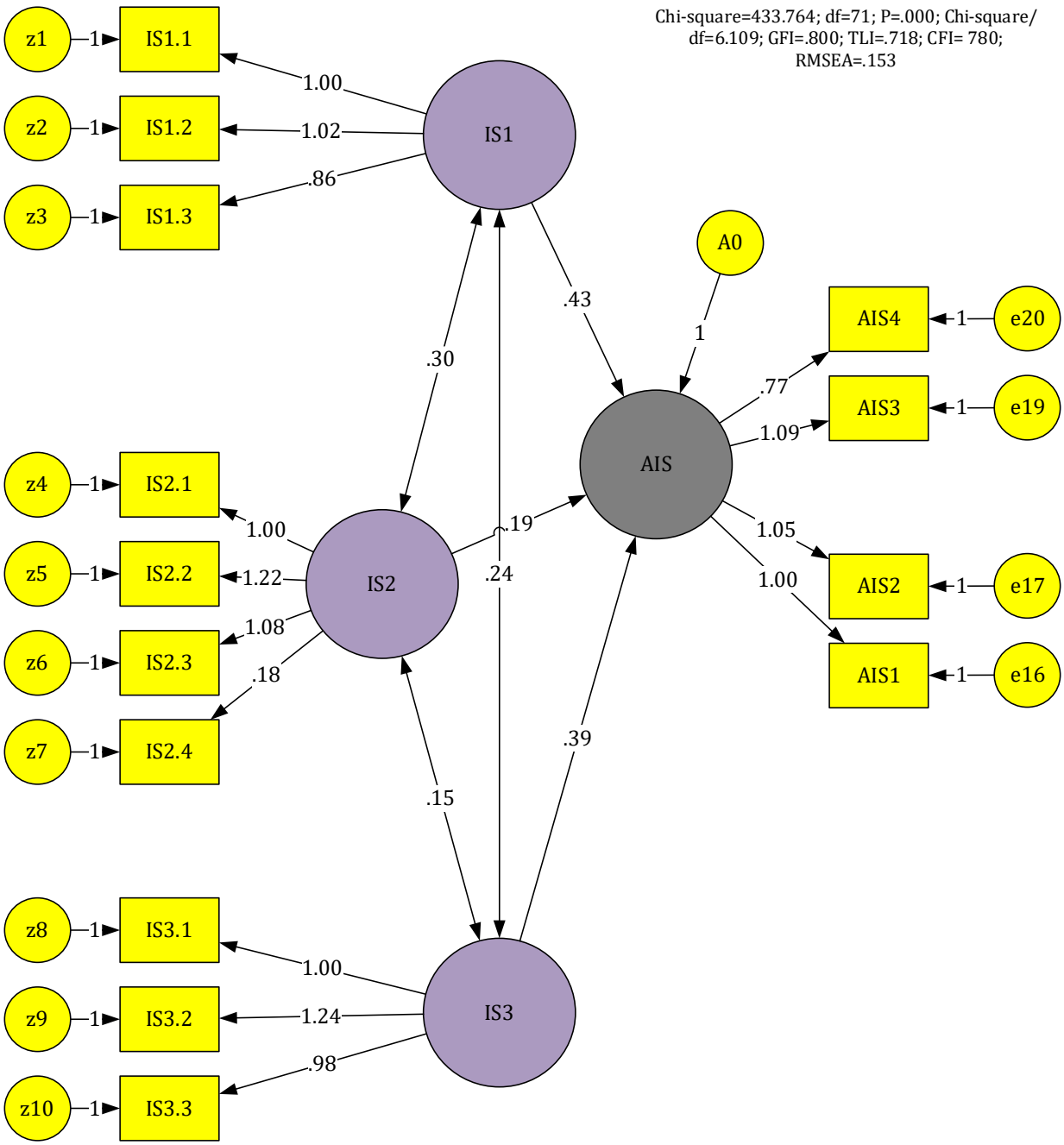

Fig. 4: CFA and SEM results for standardized accounting information system showing key factor relationships

6.3. Impact of IT digitization on AIS standardization

The digitization of IT, measured using financial and performance indicators (such as return on assets, return on equity, return on investment, return on sales, and earnings before interest and tax), showed a strong positive effect on AIS standardization.

- The SEM regression coefficient was +0.74, corresponding to a 15.7% influence of IT digitization on AIS standardization.
- Although IT digitization accounts for 15.7% of the observed impact, the findings suggest that further investments in digital technologies are essential to achieve greater advancements.
- The SEM model's relevance index was 0.75%, while the saturated model scored 0.76%, demonstrating alignment with market information and predictive accuracy exceeding 1–2%.
- The standardized AIS data followed a normal distribution, as indicated by Kurtosis and Skewness values within the range (-1, +1), and a standard deviation between 0 and 1. This adherence to statistical norms suggests the model is robust, and with larger sample sizes, the standard error is expected to approach zero, confirming the reliability of the findings.

6.4. Implementation

The study offers practical recommendations for applying these findings.

- Firstly, through a rigorous methodological approach, including EFA and CFA, the study

ensured the reliability and validity of measurement scales, paving the way for enterprises to effectively apply AIS in operation. These findings suggest enterprises address AIS effectiveness across diverse industry sectors, recognizing the unique challenges and opportunities each sector presents (Hoang et al., 2024).

- Secondly, develop high-quality human resources who can proficiently use IT at work and respond to changes in the accounting field. Research results show that the ability of accountants to use technology has a positive impact on the implementation of digital transformation in accounting work. This poses a requirement for training institutions to change their human resource training programs in the field of accounting towards enhancing practice on technology platforms (Nguyen et al., 2023).
- Lastly, build a corporate culture based on civilized and effective behavior and working processes. Research results have shown that corporate cultural factors have an impact on the implementation of equity in accounting work. Changing the traditional way of working, mainly based on direct interaction, needs to change towards the effective use of digital technology to store, exploit, and use accounting information (Nguyen et al., 2023).

The study highlights the importance of investing in technology digitization as a strategic tool for improving business operations and enhancing the standardization of AIS. By increasing investments in digital technologies, organizations can improve efficiency, reduce costs, and remain competitive in a rapidly changing market.

List of abbreviations

AIS	Accounting information system
DIT	Digitalization of information technology
IT	Information technology
TAM	Technology acceptance model
UTAUT	Unified theory of acceptance and use of technology
EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
SEM	Structural equation modeling
KMO	Kaiser-Meyer-Olkin
PAF	Principal axis factoring
PCA	Principal component analysis
ROA	Return on assets
ROE	Return on equity
ROI	Return on investment
ROS	Return on sales
EBIT	Earnings before interest and tax
CSR	Corporate social responsibility
MIS	Management information system
PU	Perceived usefulness
PEU	Perceived ease of use
SPSS	Statistical package for the social sciences
AMOS	Analysis of moment structures
CMIN	Chi-square
DF	Degrees of freedom
CFI	Comparative fit index
TLI	Tucker and Lewis index
RMSEA	Root mean square error of approximation

Compliance with ethical standards

Ethical considerations

All participants provided informed consent prior to participating in the survey. Participation was voluntary, and responses were kept confidential.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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