

The Impact of Using Digital Electronic Accounting Tools on Enhancing the Internal Control System

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DOI: <https://doi.org/10.30651/blc.v23i2.31132>



ABSTRACT

Keywords:

Electronic accounting tools; digital accounting; Accounting information system; internal control system; Iraqi private companies

Article Info:

Submitted:

30/03/2026

Revised:

04/10/2026

Published:

05/10/2026

This research examines the importance of digital transformation in accounting and its impact on the effectiveness of internal control systems within organizations. It focuses on reviewing digital tools and technologies, such as electronic accounting systems, accounting software, and automated technologies, and how they contribute to improving data accuracy, reducing errors, and enhancing transparency and accountability. The research also discusses how the adoption of electronic accounting tools impacts internal control processes by strengthening preventative controls, increasing the speed of error and manipulation detection, and improving internal and external audit processes. The research highlights the challenges that may arise in implementing these tools, such as cybersecurity issues, employee training, and the need to update policies and procedures. The research concludes that the use of digital electronic accounting tools significantly contributes to strengthening the internal control system, enhancing the efficiency and effectiveness of risk management, and improving the level of control and governance within organizations, thus supporting the sustainability and transparency of organizational performance.

ABSTRAK

Penelitian ini mengkaji pentingnya transformasi digital dalam bidang akuntansi serta dampaknya terhadap efektivitas sistem pengendalian internal di dalam organisasi. Penelitian ini berfokus pada tinjauan terhadap alat dan teknologi digital, seperti sistem akuntansi elektronik, perangkat lunak akuntansi, dan teknologi otomatisasi, serta bagaimana hal-hal tersebut berkontribusi dalam meningkatkan akurasi data, mengurangi kesalahan, dan meningkatkan transparansi serta akuntabilitas. Penelitian ini juga membahas bagaimana penerapan alat akuntansi elektronik memengaruhi proses pengendalian internal dengan memperkuat pengendalian preventif, mempercepat deteksi kesalahan dan manipulasi, serta meningkatkan proses audit internal dan eksternal. Penelitian ini menyoroti tantangan yang mungkin muncul dalam penerapan alat-alat tersebut, seperti masalah keamanan siber, pelatihan karyawan, dan kebutuhan untuk memperbarui kebijakan serta prosedur. Penelitian ini menyimpulkan bahwa penggunaan alat akuntansi elektronik digital berkontribusi secara signifikan terhadap penguatan sistem pengendalian internal, peningkatan efisiensi dan efektivitas manajemen risiko, serta peningkatan tingkat pengendalian dan tata kelola di dalam organisasi, sehingga mendukung keberlanjutan dan transparansi kinerja organisasi.

INTRODUCTION

Internal control is one of the basic pillars of any organization, as it is the structure that provides a mechanism for management to closely control financial and operational actions, and also the efficient and effective achievement of its goals. Internal control consists in a comprehensive system of policies and procedures established by management for safeguarding assets, minimizing fraud and errors, ensuring accuracy in financial data and maintaining legal and regulatory requirements. By establishing a proper control system a company can create a trustworthy work environment for its staff. It increases investor confidence, enhances the quality of financial reporting and mitigates any operational risks involved. But by the end of the last decade, it was also very obvious that a real revolution was happening in digital accounting; electronic accounting software was playing a very important role in the automation of accounting, accurate and real-time data, as well as operational efficiency (Bhimani et al., 2026).

Tools and applications of different types such as ERP (Enterprise Resource Planning) software, AIS (Accounting Information Systems) and financial reporting and analytic software, have become fundamental to modern accounting practices in large, medium and small businesses (Aulia et al., 2024). Apart from the recording function of accounting, however, electronic accounting tools can also play role in decision-making, cost control, performance monitoring, efficient control and more. As these tools have evolved and become available to many, they are enabling real-time monitoring of accounting and financial operations and reducing the need of manual intervention, which can result in erroneous or fraudulent procedures.

In the Iraqi context, especially in private organizations, the demand has increased for solid internal control systems that can be relied to tackle the myriad problems that the intricate economic and managerial environment presents corruption, poor transparency, inadequate documentation, lack of qualified personnel. As more of these firms shift to digital, it is important to study how electronic accounting software affect the effectiveness of the internal control systems. The reason this topic is important is because of its direct implication on the basic administrative & financial activities of Iraqi private sector which can benefit the design and development of effective control systems that make such institutions sustainable, diminish risk factors and improve performance.

Despite the widespread use of digital electronic accounting tools in many Iraqi institutions, a gap remains in understanding the extent to which these tools impact the effectiveness of internal control systems. Some companies lack the proper utilization of technological capabilities within a control environment, while others rely on digital tools without an integrated control system capable of fully leveraging them.

Therefore, the research problem lies in seeking to answer the following central question: To what extent does the use of digital electronic accounting tools impact the

effectiveness of internal control systems in Iraqi private companies? This problem leads to a number of sub-questions, most notably: what is the level of reliance of Iraqi private companies on digital electronic accounting tools, Which elements of the internal control system are most affected by digital tools, Are there differences in this impact due to the nature of the company, its size, or the experience of its employees.

This topic was chosen in response to a number of academic and practical motivations. The increasing reliance on digital electronic solutions in Iraqi institutions, especially following rapid technological changes and regulatory pressures. The scarcity of local field studies that specifically address this topic within the context of Iraqi private companies. The desire to present reliable scientific findings that support financial and control decision-making within the Iraqi work environment.

The current study's goal aims to fulfill the following goals to analyze the current use of digital electronic accounting tools in Iraqi private companies, to determine the impact of these tools on internal control elements, to identify the challenges and limitations facing the use of digital electronic accounting tools in supporting the internal control system, to activate digital electronic accounting tools in supporting the control environment in private companies.

LITERATURE REVIEW

The Concept of Regulation and Internal Oversight

The Nature of Control: Control refers to the procedures through which the organization's results are compared with its established plans, identifying strengths and weaknesses in implementation. Control aims to make adjustments to ensure performance and operations align with pre-planned objectives, thereby achieving the organization's vision and core goals. It also oversees all activities to ensure compliance with established plans and directives that serve the organization's vision (Al-Sarhan & Salem, 2020) .

Definition of Internal Control: Internal control is defined as a system comprised of policies and procedures adopted by senior management to ensure the achievement of the organization's objectives in terms of operational efficiency, accuracy of financial information, and compliance with laws and regulations (Al-Sarhan & Salem, 2020) . The importance of this system lies in its role as a general framework through which all operational and accounting processes can be controlled, thus reducing opportunities for manipulation and corruption (Behnas et al., 2020; Boulhaga et al., 2022) .

Objectives of Internal Control: Internal control focuses on a set of core objectives, the most important of which are ensuring the efficiency of operational processes, Protecting the organization's assets from embezzlement or damage, ensuring the precision and dependability of financial statements oversight, promoting transparency and accountability (Committee of Sponsoring Organizations of the Treadway Commission, 2013).

Components of The System of Internal Controls: According to the COSO framework, the internal control system consists of five main interconnected elements. The Control Environment: This represents the values and culture created by management within the organization. Risk assessment: This includes analyzing and evaluating the risks facing the organization. Control activities: Policies aimed at reducing or preventing risks. Information and Communication: Refers to the exchange of relevant information between all levels of the organization. Monitoring and Evaluation: Continuous review of the effectiveness of the control system.

Digital Electronic Accounting Tools

Definition of Electronic Accounting Tools: Electronic accounting tools refer to software systems that rely on technology to perform accounting tasks, such as recording, analysis, and the preparation of financial statements (Behnas et al., 2020). This digital transformation is essential to keep pace with business developments and the speed of decision-making (Alfartoosi & Jusoh, 2023). They are defined as: "The application of all matters related to accounting and its learning through computers using electronic programs and the components of the international information network". They are also systems that rely on information and communication technology to record, classify, and process financial data for various economic transactions, which are primarily computer-based (Schiavi et al., 2024).

Among their most prominent objectives are: Ensuring the confidentiality of reports and protecting them from hackers. Confidence, efficiency, and flexibility in data entry. Access to required data anytime, anywhere. Creation of accounting studies necessary for the work and easy access to them (Malau, 2020). Types of Electronic Accounting Tools: Digital electronic accounting tools vary between integrated and specialized systems. Among the most prominent are: Enterprise Resource Planning (ERP) systems: such as SAP, Oracle, and Microsoft Dynamics, which are used to integrate accounting with other functions (Gelinas et al., 2018). Accounting Information Systems (AIS): Such as Odoo Accounting and Zoho Books, provide advanced capabilities for recording and analyzing transactions (Committee of Sponsoring Organizations of the Treadway Commission, 2013; Zaçe & Shuli, 2025). Cloud-based software: Such as QuickBooks, FreshBooks, and Online, which facilitate access to data anytime, anywhere (Gullkvist, 2002; Hussein & Hamd, 2024). Reporting and analysis software: Such as Power BI, Tableau, and Excel Advanced, which are tools for displaying and analyzing financial data through dashboards and charts.

Functions of Digital Electronic Accounting Tools: Automatic Drafting financial reports in compliance with International Financial Reporting Standards (IFRS). Automation of the revenue and expense cycle (invoices, payments, purchases). Inventory control and integration with financial data. Analysis of financial performance using Key

Performance Indicators (KPIs). Data security and protection using electronic access and audit systems.

Advantages of Transitioning to Digital Electronic Accounting Digital accounting technologies contribute to achieving the following advantages. Cost Reduction: Digital technologies eliminate the necessity for physical transaction records, allowing any authorized user to access them at any moment. Focus on Value-Added Activities: With the replacement of conventional record-keeping processes in place, resources can be allocated to other activities that add value to the organization. Fraud Reduction: Digital records ensure a high level of security, and any change in the record can be traced, making it much easier to tamper and steal (Sya'bania & Rahmadi, 2026) . Elimination of the Need for Reconciliation: Transactions are captured as soon as they become available and ledger entries updated in real time eliminates accounting reconciliations. Reduction in Error: Smart contracts automatically validate entry of data, reducing chances for human error.

The Relationship Between Digital Accounting Tools and Internal Control Systems: Digital accounting tools directly impact the effectiveness of internal control systems. They automate the processes where manual processing is a lesser method thus reducing the risks of errors and fraud (Behnas et al., 2020)

Field studies have indicated that the use of ERP systems in Iraqi institutions has contributed to raising the level of transparency and facilitating the monitoring of financial irregularities (Gelinis et al., 2018; Nanda Yusuf et al., 2025), the existence of specific access privileges for each user supports the application of the principle of separation of duties (Haddadi et al., 2020). Points of intersection between the two systems. Accounting tools and their impact on internal control, Automated recording of transactions: Reducing manual manipulation of financial data Specific user privileges: Supporting the principle of separation of duties Audit trails: Facilitating the detection of errors and irregularities. Dashboards: Supporting continuous monitoring by management

Mechanisms of Impact:

- Accuracy of accounting data: Leads to more reliable control reports.
- Real-time analysis of deviations: Enables management to intervene immediately.
- Alignment between systems (purchasing, inventory, accounting): Reduces fraud and manipulation.
- Automated access control: Restricts access to sensitive information.

Review of Previous Studies

Alfartoosi & Jusoh (2023): Conducted in Iraq on a sample of small and medium-sized enterprises (345 finance employees), the study concluded that electronic accounting tools have a significant positive impact on the effectiveness of internal controls, particularly in components such as risk assessment and continuous monitoring.

(Hussein & Hamd, 2024): Demonstrated that the use of digital tools enhances the quality of financial reports and reduces opportunities for accounting fraud, provided that employees receive adequate training.

(Gelinas et al., 2018): They pointed out that digital systems provide digital audit trails that enable auditors to efficiently track transactions, thus enhancing preventative control.

Study: (Romney & Steinbart, 2020) The book indicates that digital transformation in accounting not only enhances accuracy but also reshapes the control structure through digital evidence, process tracking, and continuous auditing.

Research Hypotheses

General Hypotheses (Main Hypothesis)

H0: There is no statistically significant effect of employing tools of digital accounting on the effectiveness of internal control systems in companies.

Sub-Hypotheses by Axis

1- Internal Control Environment and Organizational Culture

H0: The control environment and organizational culture are not positively correlated with the use of digital accounting tools.

2- Use of Digital Electronic Accounting Tools

H0: The use of digital accounting tools does not lead to improved performance of accounting processes.

3- Impact of Digital Accounting Tools on Internal Control Components

H0: Digital accounting tools do not have a statistically significant impact on Internal control components.

4- Challenges Related to the Use of Digital Electronic Accounting Tools

H0: Technical and human challenges do not affect the effectiveness of using digital accounting tools.

METHOD

Type of Research. Based on the research with a field study this study employs a descriptive-analytical method since it seeks to figure out the extent to which digital electronic accounting tools can strengthen internal control systems in Iraqi private companies. It is also an area of research that aims at determining the relationship between the adoption levels of these tools and the success in internal controls.

Population of Research. The research population is made up of Iraqi private companies operating in every aspect of the economy (such as industry, trade, and services), which are equipped with an Electronic E-Records System such as ERP or sophisticated accounting software, such as QuickBooks, SAP and Odoo.

Research Sample and How It Was Sourced. Stratified random selection was used for this study. The population was classified based on company size (small, medium,

large), and a random sample was drawn from each category. We sampled 60 companies, with emphasis on companies that have an independent finance department and electronic accounting tools.

Data Collection Tools. Tools used were the following a survey with close-ended (Likert scale) and open-ended questions for accountants, auditors and finance department managers. Semi structured interviews with key internal control officers and IT managers. Documentary examination of internal files and financial statements (if available).

Data Analysis Method descriptive and inferential statistical analysis were performed to interpret quantitative data, using software like SPSS or Excel. Frequencies, percentages, arithmetic means, standard deviations, and F-values were calculated.

RESULT AND DISCUSSION

Result

The following table shows the distribution of the sample's responses across the questionnaire items.

Table 1. Distribution of Responses from the Study Sample for Each Item

Standard deviation	Mean	distribution of answers (1, 2, 3, 4, 5),	Item number
1.05	2.17	(18,24,10,6,2)	1
1.07	2.25	(15,25,12,6,2)	2
1.13	2.42	(12,23,15,7,3)	3
1.09	2.33	(14,24,12,7,3)	4
1.11	2.38	(13,23,14,7,3)	5
1.17	2.58	(10,23,17,7,3)	6
1.11	2.3	(15,24,11,7,3)	7
0.91	1.77	(25,26,5,3,1)	8
0.96	1.9	(22,25,8,4,1)	9
0.91	1.82	(24,25,7,3,1)	10
0.92	1.85	(23,25,8,3,1)	11
1.01	1.98	(21,24,9,4,2)	12
1.06	2.13	(18,23,12,5,2)	13
1.02	2.05	(19,24,11,4,2)	14
1.15	2.42	(15,21,14,7,3)	15
1	2.03	(20,24,10,4,2)	16
1.09	2.2	(18,22,12,6,2)	17
1.07	2.18	(18,23,11,6,2)	18
1.11	2.27	(17,22,13,6,2)	19
1.01	2	(21,23,10,4,2)	20
0.98	1.95	(22,22,10,4,2)	21
1.04	2.08	(20,22,12,4,2)	22
1.06	2.13	(19,22,12,5,2)	23
0.99	1.97	(22,23,9,4,2)	24
1.01	2.02	(21,22,10,5,2)	25

Standard deviation	Mean	distribution of answers (1, 2, 3, 4, 5),	Item number
1.09	2.27	(18,22,13,5,2)	26
1.04	2.08	(20,22,12,4,2)	27
1.31	3.48	(6,12,18,15,9)	28
1.25	3.43	(5,13,20,14,8)	29
1.28	3.3	(7,14,19,13,7)	30
1.27	3.32	(8,13,18,14,7)	31
1.26	3.27	(7,14,20,12,7)	32

Source: Processed Data (2026).

General Hypotheses (Main Hypothesis)

H0: There is no statistically significant effect of using digital accounting tools on the effectiveness of internal control systems in companies.

We observe from Table (2) that the calculated F-value (7.21) is greater than the tabulated F-value (1.53). Therefore, we reject the null hypothesis H0 and accept H1, meaning: there is a statistically significant positive effect of using digital accounting tools on the effectiveness of internal control systems.

The findings are in line with the concept that digitalisation of accounting makes internal control more efficient and effective and is in line with a global shift toward the use of contemporary technology in financial information management. They also indicate that regulatory support and continuous training are important to make this transformation work, but many of the challenges are manageable and do not fundamentally constrain digital systems. This is consistent with (Romney & Steinbart, 2020) findings which showed that digital systems improve efficiency and reduce errors.

Sub-Hypotheses by Axis

Internal Control Environment and Organizational Culture

H0: The control environment and organizational culture are not positively correlated with the use of digital accounting tools.

We observe from Table (2) that the calculated F-value (1.92) is smaller than the tabulated F-value (2.18).

Table 2. Statistical values for the questionnaire axes

Axis	Number of items	Degrees of freedom	Mean Means	Mean deviations	Tabular F	Cal culated F
Internal Control Environment and Organizational Culture	7	6	2.31	1.09	2.18	1.92
Use of Digital Accounting Tools	8	7	1.96	0.98	2.09	9.47

Impact of Digital Accounting Tools on Internal Control	12	11	2.1	1.03	1.82	0.81
Challenges Related to the Use of Digital Accounting Tools	5	4	3.36	1.27	2.45	0.45
Full Table	32	31	2.43	1.09	1.53	7.21

Source: Processed Data (2026).

There is no strong statistical significance to support a clear positive correlation at the 95% level, but a positive trend can be observed. That is, H_0 cannot be definitively rejected, but there is a positive bias towards H_1 . Studies such as (Committee of Sponsoring Organizations of the Treadway Commission, 2013) and Al-Matari et al. (2014) confirm that a strong organizational culture is a crucial factor in effective control.

Despite the importance of the control environment and organizational culture in supporting work systems, the adoption of digital accounting tools may be influenced by other factors such as technical support, training, and employee awareness. The organizational environment alone may not be sufficient for the effective adoption of these tools; additional components such as continuous motivation and appropriate technical resources are needed. Therefore, it is not surprising that the role of the organizational environment in this study was not clearly influential, as technology and training often play the most significant roles.

Discussion

Use of Digital Accounting Tools

H_0 : The use of digital accounting tools does not lead to improved performance of accounting operations. We note from Table (2) that the calculated F-value (9.47) is greater than the tabulated F-value (2.09).

There is strong satisfaction and recognition of improved performance of accounting operations due to the use of digital tools. Therefore, we reject the null hypothesis (H_0) and affirm the alternative hypothesis (H_1), namely that the use of digital accounting tools leads to improved performance of accounting operations. This aligns with (Soudani, 2012), who demonstrated the strong relationship between the use of information technology and improved financial performance.

The use of digital accounting tools leads to improved effectiveness of internal control because these tools provide greater accuracy in recording financial transactions and accelerate audit processes, thus reducing human error and providing more reliable financial data. This, in turn, enhances management's ability to continuously monitor financial operations and make informed decisions, thereby strengthening the control system and making financial performance more transparent and accountable.

Impact of Digital Accounting Tools on Internal Control Components:

H0: Digital accounting tools do not have a statistically significant impact on internal control components. We observe from Table (2) that the calculated F-value (0.81) is smaller than the tabulated F-value (1.82).

The digital tools can have a significant positive influence on the internal control components (control environment, risk assessment, etc.). Hence, there is a positive trend towards H1 but H0 cannot be definitively rejected. In the end, digital tools can improve all internal control elements (i.e., the control environment, risk assessment, control activities, communication, and follow-up) as these tools can automate several processes and give regular and comprehensive reports, so they aid in early detection of risk and facilitate communication between disparate teams. Additionally, the digital control over financial data access leads to information security measures that reduce the scope for abuse or erroneous actions that may affect the reliability of the control system as a whole (Betti et al., 2021). This aligns with (Hunton et al., 2004), that digital system improves control effectiveness, e.g., verify and compartmentalize tasks, and (Gelinas et al., 2018) reported that integrated accounting controls help to reduce traditional controls.

Challenges Related to the Use of Digital Accounting Tools:

H0: There are no technical and human challenges which impact the effectiveness of the use of digital accounting tools. Based upon Table (2), we note that the calculated F-value (0.45) is less than the tabulated F-value (1.53).

The challenges are huge but there cannot be definitive proof of the statistically significant negative impact at the 95% level. We do not reject H0, but we do accept that challenges have occurred and must not be overlooked. Besides security issues, problems can arise on a technical and human level—training gaps, for example, or employee resistance to using the digital system (Wu et al., 2024). Nevertheless, in the present research these challenges did not significantly harm the effectiveness of the control and organizations may have successfully navigated these barriers to enable the operation of the digital system or they may not serve as a bottleneck for its functionality. This could be related to sufficient technical support, or an organizational culture friendly to adaptation to technological change. This is in line with (Gullkvist, 2002) who pointed out that technical and human problems such as staff resistance or lack of training are obstacles in some of the firms. Weak technological infrastructure also undermines effectiveness of digital oversight (Al-Sarhan & Salem, 2020).

CONCLUSION

Strengthen the oversight culture within the organization by implementing ongoing awareness programs to promote a culture of transparency and accountability at all administrative levels, and to further integrate oversight concepts into daily operations. Benefit from the experiences of oversight bodies within the scope of information technology oversight through partnerships and participation in oversight working groups. Continue supporting the digital transformation of accounting and expand its use in other areas such as financial planning and analysis. Relevant entities should conduct seminars, workshops, and specialized training courses to introduce digital accounting technologies, their components, and methods of use, and to maximize their benefits. This aims to increase awareness and understanding among accounting and auditing professionals, educate them, and prepare them to apply these technologies in performing their assigned tasks. Utilize digital tools to enhance effective oversight and develop policies for integrating internal control into every step of the accounting system, and automate the assignment of powers and responsibilities to reduce reliance on manual intervention.

Reducing technical and organizational challenges through (conducting periodic assessments of employee readiness, providing specialized and supportive training for each new system, and ensuring the availability of rapid and accessible technical support). Establishing a continuous performance evaluation system for control measures, including (the number of errors detected automatically, the speed of addressing violations, and the rate of policy compliance). Conducting further comparative research studies across different sectors.

In light of the findings obtained through the analysis of data collected from the study sample, it can be concluded that this study has contributed to highlighting the role of digital electronic accounting tools in supporting and strengthening the internal control system in organizations. The results revealed a number of important indicators.

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APPENDIX

Questionnaire Form

• Gender:

Male	Female
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Age (year)

Less than 25	25-35	36-45	More than 45
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• Educational qualification:

Diploma or lower	Bachelor's degree	Master's degree or higher
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• Years of work experience (years):

Less than 3	3-7	More than 7
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• Current job:

Accountant	Auditor	Finance Manager	Other Position
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Axis	Item Number	Item Text	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Internal control environment and organizational culture	1	The company places great importance on implementing an internal control system.					
	2	The company has clear policies to support the internal control system.					
	3	Employees receive adequate training on internal controls.					
	4	The organizational culture					

		encourages transparency and accountability.
	5	Management regularly monitors the effectiveness of the internal control system.
	6	The internal control system is updated to keep pace with changes in the work environment.
	7	Employees are fully aware of their roles within the internal control system.
Using digital electronic accounting tools	8	Our company relies on a fully integrated electronic accounting system.
	9	Digital accounting tools help expedite accounting processes.
	10	These digital tools ensure high accuracy in recording financial transactions.
	11	They provide detailed and reliable financial reports.
	12	The electronic system facilitates the auditing and review process.
	13	The accounting software used by

The impact of digital accounting tools on internal control components		the company is regularly updated.
	14	Employees are well-trained in using digital accounting tools.
	15	Technical support is available to address any technical issues.
	16	Digital tools support adherence to policies and control procedures.
	17	Digital systems facilitate the implementation of the principle of segregation of tasks among employees.
	18	Digital accounting tools help in the early detection of financial risks.
	19	Electronic systems provide reports that help in effectively assessing risks.
	20	Digital systems can be relied upon for continuous monitoring of operations.
	21	Digital systems contribute to reducing human error.
	22	Digital tools support better implementation of internal controls.
	23	Electronic tools provide better

		control over access to financial data.
	24	Digital accounting systems facilitate information sharing between different departments.
	25	Digital tools accelerate communication and coordination among work teams.
	26	Digital systems provide periodic reports that help evaluate the performance of internal controls.
	27	Digital tools enable highly accurate tracking of all financial transactions.
Challenges related to the use of digital electronic accounting tools	28	The company is facing technical difficulties in using digital accounting systems.
	29	Some employees are resisting the adoption of digital systems.
	30	Inadequate training is impacting the efficient use of digital tools.
	31	A lack of updates and technical support is hindering the digital workflow.

32	There are concerns regarding the security and protection of digital financial data.
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Open-ended questions

- 1) What are the most significant benefits you have noticed from using digital accounting tools in your business?
- 2) What are the main challenges you or your company face in implementing these tools?
- 3) Do you have any suggestions for improving the use of digital accounting tools to enhance internal control?



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