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The Influence of Information Technology on Enhancing the Efficiency and Effectiveness of Accounting Data

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Abstract

Purpose: This paper investigates information technology's (IT) effect on accounting practices, specifically focusing on how IT improves the quality and performance of accounting transactions transparently and securely.

Design/methodology/approach: A quantitative analysis approach was employed, drawing on a diverse range of scholarly literature and prior research. The study utilized a sample of industrial companies in Palestine, collecting data via questionnaires distributed among 194 experts and users of accounting information. Statistical analysis, including structural equation modeling (SEM-PLS), was used to analyze the data and test the study hypotheses.

Findings: The results indicate significant positive relationships between IT adoption, accounting data efficiency, and effectiveness.

Research limitations/implications: The study identifies several limitations, including sample size constraints and potential self-reporting bias, which warrant consideration in interpreting the findings.

Practical implications: The study recommends investing in accountant training and human resources to use essential accounting software effectively. By overcoming implementation drawbacks, companies can maximize the benefits of IT in their accounting information systems (AIS).

Originality/value: This paper contributes to the growing body of literature on the intersection of IT and accounting, providing insights into the role of technology in enhancing organizational accounting processes and performance.

Keyword: Accounting data, Financial Reporting, Accounting Software, E-system, Information Technology, Financial Management.

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1. Introduction

The development of information technology systems and tools has revolutionized traditional accounting processes, in addition to significantly enhancing the efficiency and effectiveness of accounting data management. This has streamlined its financial operations, improved decision-making processes, and adapted to the evolving requirements of the global market. However, the role of accounting within businesses is indispensable, serving as a linchpin for organizational efficiency and financial health. Properly executed accounting practices contribute significantly to enhancing a company's economic efficacy by trimming unnecessary costs and mitigating various risks (Kanaparthi, 2024). Essentially, accounting acts as the bedrock of financial management, offering a framework for informed decision-making and ensuring transparency (Joshi and India, 2023). Over time, the evolution of accounting methods has closely paralleled advancements in business management practices (Alawattage and Wickramasinghe, 2022). Notably, the advent and rapid expansion of information technologies have left an indelible mark on accounting systems, revolutionizing their operations and efficiency. Despite the vast potential offered by information technology, accounting systems encounter several challenges. These hurdles often stem from accountants' reluctance to adopt or fully utilize new technologies, leading to inefficiencies and missed opportunities. Consequently, there's a compelling need to deepen the integration between Information Technology (IT) and accounting systems to maximize productivity and effectiveness.

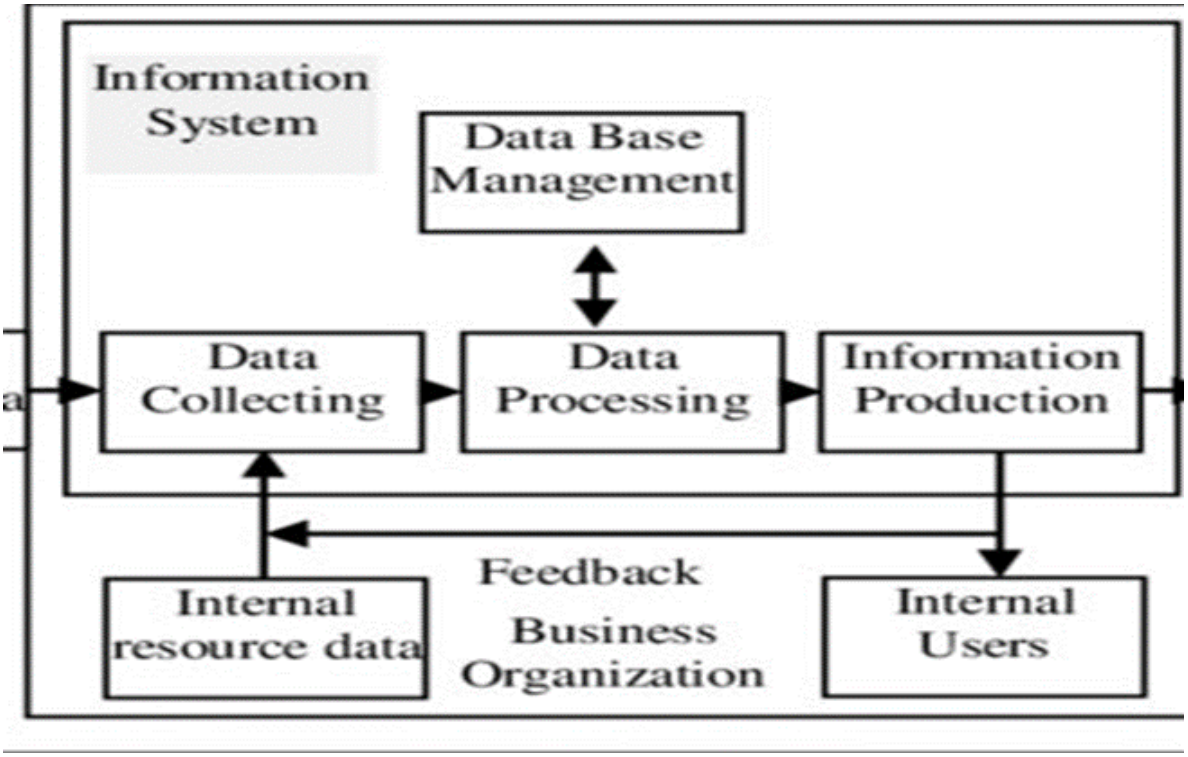
The integration of IT in accounting practices has become indispensable for organizations seeking to enhance the efficiency and effectiveness of their financial operations. Information technology encompasses a wide array of hardware, software, and processes designed to streamline data management, analysis, and reporting tasks within accounting departments (Imene and Imhanzenobe, 2020). However, this study aims to explore the influence of information technology on the efficiency and effectiveness of accounting data, with a specific focus on its impact on cost management and security measures. Moreover, effective cost management is crucial for organizations to optimize resources and improve operational efficiency. Information technology plays a pivotal role in reducing the costs associated with traditional accounting practices by automating routine tasks, minimizing manual errors, and enhancing overall workflow efficiency. This study hypothesizes that organizations leveraging cost-effective IT solutions will experience higher levels of efficiency in accounting data processing. In addition, maintaining the security and integrity of financial data is paramount in modern accounting practices. Information technology provides advanced security measures such as encryption, access controls, and intrusion detection systems to safeguard sensitive information from unauthorized access, data breaches, and cyber threats. It is anticipated that organizations with robust IT security protocols will demonstrate greater efficiency in managing accounting data due to reduced risks of data loss or manipulation. Moreover, beyond cost savings, the adoption of information technology can also enhance the effectiveness of accounting data by improving the accuracy, timeliness, and relevance of financial information. Investments in IT infrastructure and software applications enable organizations to streamline data analysis, generate real-time insights, and support informed decision-making processes. This study postulates that organizations willing to invest in IT solutions will experience higher

levels of effectiveness in utilizing accounting data to drive strategic initiatives and operational improvements. Effective data security measures are essential for ensuring the reliability and trustworthiness of accounting information. By mitigating the risks of data breaches and fraud, IT security measures instill confidence in the integrity of financial reports and regulatory compliance efforts. It is hypothesized that organizations with robust IT security frameworks will achieve greater effectiveness in utilizing accounting data for managerial decision-making, stakeholder communication, and regulatory reporting requirements. The rapid advancement of IT has revolutionized the way businesses manage their financial information. However, despite the widespread adoption of IT in accounting practices, there remains a need to empirically understand its impact on the efficiency and effectiveness of accounting data. Specifically, there is a gap in research regarding the influence of IT, particularly its cost management and security aspects, on the performance of accounting processes.

2 Literature Review

The integration of IT in accounting practices has garnered significant attention in recent years, driven by the continuous evolution of digital innovations and their potential to reshape traditional business processes. Kanaparthi (2024) underscores the transformative impact of blockchain, AI, and machine learning on financial accounting efficiency and transformation. Furthermore, AI's role in automating repetitive financial accounting tasks contributes to cost minimization by circumventing the need for additional staff. Consequently, businesses are increasingly embracing these technologies to bolster efficiency and effectiveness in their financial accounting operations. Complementing the technological advancements, Joshi and India (2023) emphasize the role of financial reporting standards in enhancing transparency and accountability within organizations. Comprehensive reporting standards facilitate the provision of intricate and precise financial information, enabling stakeholders to make astute decisions and fostering public trust in capital markets.

The model of the general accounting system, as illustrated in Figure 1, serves as a comprehensive framework applicable across many information systems, regardless of technological differences. This notion is emphasised by Hall (2018). The model incorporates various fundamental elements, such as terminals, data sources, data collection, data processing, database management, data production, and input. The process of data collecting is the fundamental initial stage within the Accounting Information System (AIS). The primary aim of this system is to guarantee the validity, comprehensiveness, and absence of substantial errors in the entered data. This technique promotes the establishment of relevance and efficiency within accounting processes. The importance of data collection resides in the fact that it enables the collection and storage of pertinent data in a singular instance, hence minimising redundancy. Xu (2015) highlights that data sources might encompass internal and external origins.



Source: Hall, J. A. (2018).

Figure 1: Accounting Information System.

After the process of data collecting, the gathered data is subsequently saved and subjected to analysis within the database control component. According to Thabit (2013), the analysis functions encompassed in this phase span from fundamental processes to advanced techniques, such as algorithms, statistical methods, revenue allocation, and accounting summary procedures. The utilisation of this analytical procedure is of utmost importance in the extraction of significant insights and the generation of valuable financial data. The findings obtained from this investigation are then disseminated to both external stakeholders and internal recipients. According to Thabit and Jasim (2017), external stakeholders encompass a range of entities such as creditors, shareholders, investors, regulatory agencies, suppliers, and customers. On the contrary, the primary source of this information is within the organisational administration, which includes individuals in various hierarchical positions, such as management and decision-makers within the corporation. Moreover, it should be noted that the model is not a unidirectional process. The system integrates a feedback loop to guarantee that insights and information produced are utilised for organisational learning. Implementing this feedback mechanism facilitates the identification of maintenance needs and areas requiring alteration inside the firm. Consequently, it enables the organisation to engage in a process of continuous improvement in its accounting and decision-making processes.

To be considered successful, an accounting system must conform to a set of essential characteristics, as emphasised by Amidu et al. (2011). The parameters mentioned above serve as guiding principles to guarantee the efficacy and efficiency of the system. First and foremost, it is imperative to incorporate the cost-benefit analysis, recognising that acquiring financial information incurs expenses and should not overshadow the benefits it provides to its

consumers. Additionally, the system must prioritise the safeguarding of the company's assets while simultaneously minimising potential dangers and guaranteeing the integrity of data. The third imperative entails harmonising operational and human components, also known as consistency, which underscores the importance of achieving synergy between procedures and persons. Finally, the system must possess versatility and adaptability to handle higher transaction volumes effectively and respond to any organisational changes. These principles jointly establish the fundamental basis for an adequate accounting system, guaranteeing its alignment with the requirements of the organisation and its users while upholding the integrity and confidentiality of data.

The mean velocity of the accounting process, as seen in Figure 2, encompasses four essential phases crucial for upholding an equitable approach wherein procedures can be carried out through both human means and technological assistance. These stages are designed to facilitate the effective and precise processing of financial data.

Source: Hall, J. A. (2018).

Figure 2: Process of accounting.

The initial step involves the assessment of transactions to comprehend their financial ramifications and differentiate between those that warrant recording and those that do not. The current stage, as highlighted by Hall (2018), is a meticulous examination of transactions to evaluate their influence on account balances. During this phase, source papers such as invoices, instructions, and controls play a crucial role. The subsequent stage is the documentation of transactions, a process facilitated by utilising journal entries. According to Al-Delawi (2015), accountants employ these entries to record the impacts of uncomplicated and intricate operations. The recording of transactions follows a chronological order, providing comprehensive information on the dates, amounts, and specific accounts impacted. Occasionally, transactions are expounded upon more comprehensively, and these documented accounts are commonly denoted as primary sourcebooks.

According to Emeka-Nwokeji (2012), the third step of the process entails consolidating the impacts of transactions and transcribing the corresponding journal entries into the ledger. Additionally, this stage involves the preparation of a trial balance. Upon assessing and documenting acquisitions in the diary, it is essential to enumerate and classify all associated

objects. Subsequently, the journal entries are incorporated into the relevant accounts within the bookkeeping system. Typically, the arrangements are managed within a ledger, wherein the aggregate balance of each performance is computed. After the computation of the account balances, it is customary to construct a trial balance. According to Grabski et al. (2011), the final stage involves a comprehensive examination of the accounts, which includes rectifying any errors in the records, conducting a thorough review, and ultimately finalising the financial statements. Modifications about the period can be duly documented and published, followed by a comprehensive reconciliation of the account balance. Subsequently, the trial balance data is utilised to construct the financial statements, encompassing the balance sheet, income statement, cash flow statement, and supplementary notes. The conclusion of the financial records signifies the ultimate stage in the accounting procedure.

According to Jameel and Ahmed (2018), contemporary business practices have witnessed widespread adoption of computerised accounting systems, which utilise electronic technology to process large quantities of transactions at impressive rates efficiently. The efficiency and accuracy of automated systems surpass the time necessary to execute things manually. Although the four core processes remain consistent, a notable differentiation is that manual processes involve accountants manually evaluating and documenting transactions, whereas computerised systems automatically analyse and compute balances. It is imperative to acknowledge that robots lack cognitive capabilities, necessitating accountants to assume the responsibility of assessing and comprehending transactions, as emphasised by Li (2013). The primary duties of an accountant are the initial two tasks in the computerised accounting process, which are the assessment of transactions and the subsequent reporting of their outcomes. The computer systems are responsible for executing the computationally intensive tasks.

According to Thabit and Raewf (2017), using computer-based communication systems enables the rapid and effective transmission of both regular and vital business information. Moreover, the utilisation of information technology infrastructure can be used to deliver comprehensive corporate status reports to top-level management, disseminate knowledge among staff regarding crucial company objectives, and facilitate efficient communication with both clients and consumers. The incorporation of technology and communication tools plays a pivotal role in enhancing efficiency and transparency within accounting and business operations.

Advancements in information technology have significantly reshaped the way businesses operate, introducing changes through computers, the internet, various applications, and personal digital devices. These changes have had a profound impact on the accounting system, bringing about numerous benefits and improvements in the way financial data is managed and processed. Information technology has provided businesses with a competitive edge by enabling product differentiation, reducing costs, and enhancing productivity. Economic efficiencies have been achieved through the consolidation of multiple activities, reducing accounting costs and streamlining communication. Improved tools and software applications have empowered accountants to work more efficiently, while enhanced security measures protect sensitive financial data. The internet has facilitated document sharing and online tax filing, and cloud technology offers cost savings and improved accessibility. Efficiency, velocity, accuracy, and strengthened reporting have further solidified the role of information

technology in accounting, while flexibility and reduced paper usage contribute to sustainable and environmentally responsible practices.

Egiyi (2023) highlights the accounting complexities faced by startups, including limited resources, cash flow volatility, historical data gaps, valuation intricacies, and equity-based compensation reporting. Egiyi (2023) underscores the importance of agile financial planning, technology integration, and transparent investor relations in effectively navigating these challenges. Moreover, Rahman et al. (2023) used a quantitative descriptive approach. In addition, Fahlevi et al. (2023) found that transformative potential in enhancing transparency and auditing practices, the opportunities offered by AI in augmenting decision-making capabilities, and the challenges posed by Big Data concerning data privacy and security.

Adeyelu et al. (2024) emphasized the importance of developing robust ethical frameworks and regulatory standards to ensure the ethical integration of AI in finance, advocating for collaboration among stakeholders to align AI technologies with societal values and ethical principles. Alawattage and Wickramasinghe (2022) delineates four interrelated directions in which management accounting is strategized, reflecting shifts in market dynamics and governmental imperatives. This expansion of management accounting's scope reflects a growing recognition of the interconnectedness between organizational performance and broader societal and environmental impacts. However, studies related to the variables of this study are clear; It is explained in the subsequent sections below.

2.1 Information Technology

From the advent of the internet to the proliferation of advanced computing systems, IT has revolutionized virtually every aspect of human endeavour, ushering in an era of unprecedented innovation, efficiency, and connectivity. For example, cloud computing has emerged as a transformative force, revolutionizing traditional practices within the accounting domain. For example, Atadoga et al. (2024) present a comprehensive review of the impact of cloud computing on accounting firms, exploring dimensions such as efficiency, scalability, and data security. Furthermore, Alrabei (2023) reveals significant relationships between auditing processes, cloud computing, and accounting information reliability, emphasizing the importance of adequate auditing methods and technological infrastructure in ensuring the accuracy and reliability of financial information. Moreover, Thaer et al. (2023) reveals a significant mediating effect of information technology on the relationship between internal control system costs and confidence in accounting information quality. Elessa (2023) found a significant positive relationship between e-accounting and information security, particularly in terms of integrity, control, and confidentiality. While some inverse relationships were observed, the overall impact of e-accounting on information security was found to be strong and positive.

Kitsantas and Chytis (2022) explore the emergence of blockchain as an ecosystem platform, proposing a conceptual model of Triple Entry Accounting to transform current accounting practices. In addition, Muravskyi et al. (2022) address the pressing need for protecting information generated in accounting systems against unauthorized access and cyber threats. Their study emphasizes the importance of effective communication and joint strategies between management, accountants, and auditors to mitigate emerging threats. Moreover,

Thottoli and Ahmed (2022) confirm the importance of addressing these determinants to facilitate the adoption and effective utilization of IT-driven accounting solutions among SMEs, thereby enhancing operational efficiency and competitiveness in the digital age. Wali et al. (2022) underscores the growing preference for cloud-based accounting solutions due to their efficiency, cost-effectiveness, and enhanced security features, providing valuable insights for organizations seeking to leverage IT advancements in their accounting practices.

In an era characterized by rapid technological advancements and increasing cyber threats, organizations face a critical imperative to align their accounting practices with robust cybersecurity measures. Abrahams et al. (2023) delve into the symbiotic relationship between accounting and cybersecurity, emphasizing the strategic alignment necessary to safeguard data confidentiality and ensure financial security. This underscoring the need for comprehensive strategic approaches that integrate accounting practices with cybersecurity protocols. Al Khasawneh (2023) investigates the importance of electronic accounting information systems in enhancing financial information security in Jordanian electronic payment and money transfer companies. his results reveal factors facilitating penetration of accounting information systems, such as network communication, alongside the role of electronic accounting information in enhancing financial information security.

2.1.1 Information Technology Security

Efficiency and scalability are brought about by the use of cloud computing in accounting organisations, along with important considerations for data security. Examining encryption, safe data transfer, data backup, and disaster recovery are the main topics covered in this section on data security in cloud-based accounting. Using strong encryption techniques to protect data while it is being transmitted is one of the fundamental components of cloud-based accounting data security (He and He, 2020). As a safeguard, encryption makes private information unintelligible to outsiders or possible dangers. Encryption protects data security during transmission between the user's device and cloud servers, reducing the possibility of hostile actors intercepting information.

Cloud service providers strengthen data security by utilising cutting-edge encryption technologies. Both data at rest and data in transit are covered by these protocols. To provide secure communication channels in transit, Secure Sockets Layer (SSL) or Transport Layer Security (TLS) protocols are frequently used. Furthermore, information kept in the cloud is encrypted when at rest, which means that even while it is kept on servers, it is safe from unwanted access. Robust encryption both at rest and during data transmission bolsters the secrecy of financial data stored in the cloud by forming a comprehensive security architecture.

Data backup is a key element of cloud-based accounting systems' security protocols (Parast et al., 2022). Regular and automated data backups reduce the possibility of data loss due to unplanned events, device malfunctions, and inadvertent deletion. Accounting companies can set retention guidelines and backup plans to make sure that historical financial data is safe and recoverable in case of an unanticipated data loss. In cloud-based accounting, disaster recovery capabilities are essential to data protection (Akindote et al., 2023). Strong disaster recovery procedures are put in place by cloud service providers to guarantee company continuity in the

event of calamities like server breakdowns, natural catastrophes, or cyberattacks. By utilising redundant data storage across geographically distributed sites, these techniques provide smooth recovery and uninterrupted operations.

Accounting companies may protect the integrity of their services and customer relationships by promptly restoring their systems and gaining access to vital financial data in the case of a catastrophe, without enduring extended downtime. In conclusion, the introduction of cloud computing in accounting businesses must take data security very seriously. A safe foundation for financial information in the cloud is established by the diligent application of encryption algorithms during data transfer and storage, in conjunction with proactive data backup and disaster recovery mechanisms (Babarinde et al., 2023).

The accounting industry is becoming more and more dependent on digital infrastructure, therefore maintaining the uninterrupted provision of accounting services, fostering confidence, and safeguarding sensitive data all depend on these security measures. Accounting companies may easily navigate the digital world while maintaining the confidentiality and integrity of financial information by utilising cloud-based solutions with an emphasis on data security (Asikpo, 2024). Moreover, Muravskyi et al. (2022) found that comprehensive risk assessment and control measures, including access policies, encryption, and digital signatures, are essential for safeguarding sensitive financial data. Additionally, the study underscores the necessity of integrating IT security measures into accounting practices and fostering collaboration among stakeholders to ensure the integrity and security of accounting information in an increasingly digital landscape.

2.1.2 Information Technology Cost

Information technology investments are recognized as crucial drivers of organizational efficiency and effectiveness, particularly in the realm of accounting data management. A substantial body of literature has investigated the impact of IT costs on the effectiveness of accounting data management systems, Dehghanzade et al. (2011) conducted a study to explore the effects of human factors, including IT costs, on the effectiveness of accounting information systems. Their findings suggested that personal characteristics of users, such as job satisfaction and experience with financial software, significantly influence the effectiveness of accounting information systems. He and He (2020) proposed a novel method to enhance sustainable systems security in cloud computing by combining encryption and data mining techniques. Similarly, Parast et al. (2022) conducted a survey of service-based models in cloud computing security, highlighting the significance of investing in cloud security services to safeguard sensitive accounting information. The findings suggest that while implementing cloud-based accounting systems can offer numerous benefits, such as scalability and flexibility, organizations must allocate resources to ensure data security. Atadoga et al. (2024) evaluated the impact of cloud computing on accounting firms, emphasizing the importance of efficiency, scalability, and data security. The study suggests that while cloud computing offers opportunities for cost savings and enhanced collaboration, ensuring data security remains a critical concern that necessitates financial investments. Moreover, Wang et al. (2023)

conducted research on information security in network accounting systems, demonstrating the importance of investing in advanced algorithms to detect and prevent security breaches.

2.2 Accounting Data Efficiency

Accounting data efficiency has emerged as a critical factor influencing organizational performance, decision-making, and regulatory compliance. This efficiency encompasses various aspects, including the timely collection, accurate recording, systematic organization, and effective analysis of financial information. Efficient accounting data management facilitates the generation of accurate financial reports, which serve as crucial tools for stakeholders, including investors, creditors, and regulatory authorities, in assessing an organization's financial health and performance. Moreover, efficient accounting data systems enable businesses to streamline internal processes, optimize resource allocation, and identify areas for cost reduction or revenue enhancement. Igbekoyi et al. (2023) conducted a comprehensive assessment of big data's influence on accounting practice efficacy in Nigeria. They found significant correlations between various aspects of big data, such as data validity, volatility, and visualization, and the efficacy of accounting practices. Particularly, data visualization emerged as a potent tool for enhancing accounting practice efficacy, providing practitioners with simplified representations of complex information for improved insights and decision-making. On a related note, Lee (2023) found revealed that efficient accounting firms prioritized investments in human resources. By harnessing the potential of big data and optimizing human resource structures, accounting firms can enhance operational efficiency.
In the realm of accounting, the efficiency of accounting information systems (AIS) has been a topic of significant interest and investigation. for example, Saputri and Siregar (2019) revealed that the computerized payroll accounting system. The study's conclusion was based on the absence of errors in testing, indicating the effectiveness of the payroll accounting system in place. Similarly, Hla and Teru (2015) underscored the significance of AIS in facilitating management decision-making, internal controls, and the quality of financial reporting. It emphasized the role of AIS in providing relevant, true, and adequate information for effective planning and control activities within organizations. Moreover, Abdelraheem et al. (2021) found that IT dimensions significantly impacted the quality dimensions of accounting information, including relevance, reliability, understandability, consistency, and comparability. In addition, Banker et al. (2002) found significant productivity gains following IT implementation, particularly in audit software and knowledge-sharing applications. Utami and Yulianto (2019) found that IT significantly influences company performance by improving accuracy, functionality, and efficiency in financial statement preparation and presentation.

2.3 Accounting Data Effectiveness

Accounting data effectiveness is crucial for organizations to accurately reflect their financial position, performance, and operations. In complex business landscape with rapid technological changes, globalization, and evolving regulations, leveraging accounting data effectively has become increasingly important. Key dimensions of accounting data effectiveness include accuracy, timeliness, relevance,

reliability, and accessibility. Accurate data faithfully represents transactions and events. In recent years, the advent of digital transformation has significantly impacted various facets of accounting practices, leading to a revaluation of the effectiveness of accounting data across different domains.

Abhishek et al. (2024) underscores the significance of digitalized accounting applications in enhancing the accuracy and transparency of accounting systems. By reducing errors and improving efficiency, digitalization emerges as a pivotal factor in elevating the effectiveness of accounting data management. In a similar vein, Murthy et al. (2023) investigated the impact of client accounting system homogeneity on audit efficiency and effectiveness. They confirm that a higher proportion of clients within an audit office using the same enterprise-resource planning system is associated with improved audit efficiency and effectiveness. Pudjianto et al. (2023) found that village financial management aligns with regulatory provisions and demonstrates effectiveness and efficiency in budget realization. Kadawi and Halioui (2023) found a positive and statistically significant differences in the use of information technology techniques on AIS efficiency and effectiveness, they also highlighted the positive impact of information technology on investment decision-making processes.

Digitalization of processes has emerged as a transformative force, promising increased efficiency and enhanced reliability in managing financial information. For example, Gnatiuk et al. (2023) confirm the role of automated accounting data processing, robotic process automation, artificial intelligence, and blockchain in streamlining accounting processes and improving data reliability. By integrating software robots and artificial intelligence, accounting systems can accelerate the generation and exchange of information, thereby enhancing efficiency and reliability. On a broader scale, Gandolph et al. (2023) highlighted the increasing need for comprehensive financial performance scores derived from accounting-based variables. Ricca et al. (2023) echo similar sentiments, emphasizing the importance of finding effective accounting-based scores of firm performances, they conclude that TOPSIS stands out as the most effective methodology for synthesizing comprehensive financial performance scores. Salam (2022) found that accounting information systems emerge as essential tools for driving business growth and success.

3. Theoretical Framework and Hypothesis Development

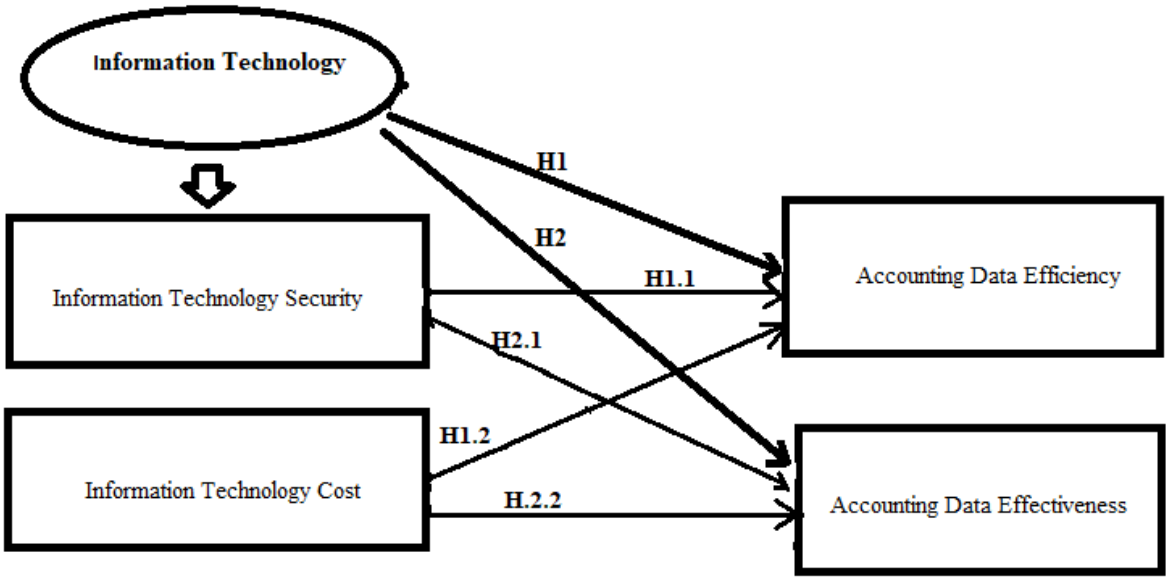


Figure 3: Theoretical Framework

Technology involves advanced practical methods and scientific developments for various activities, such as electronic computers and communication tools like optical fibres and satellites, aiding in information management (Bamforth & Bleed, 1997; Lee et al., 2015). Information technology (IT) includes technologies for creating, exchanging, and using information, influencing data storage, processing, and knowledge creation (Tariq et al., 2022), and significantly impacting organizational and administrative decision-making (Chege et al., 2022). IT drives business activities and impacts societies and economies (Heeks, 2017), achieving efficiency by saving time and money, storing and retrieving data, and ensuring accuracy and reliability (Brynjolfsson & McAfee, 2011; Thuan et al., 2022). IT supports internal control systems, adapts to environmental needs, and enhances decision-making (Vahdat, 2022), and organizations must adopt it to stay competitive (Ghobakhloo et al., 2023). IT aims to reduce routine tasks and improve planning, control, coordination, and decision-making, enabling faster and more accurate management (Shobande et al., 2024). It enhances communication among human resources, reduces administrative staff and expenses, and boosts management's strategy implementation and market responsiveness. High-quality accounting information must be complete, current, credible, and relevant for internal control, operational analysis, and strategic planning (Abdelraheem et al., 2021; Al Natour, 2021; Ali et al., 2020). Superior data aids decision-making (Shibly et al., 2021; Shniekat et al., 2021; Alrabei et al., 2022; Nawaiseh et al., 2022; Meiryani & Susanto, 2018). Efficient electronic accounting information systems maximize resource use and maintain system quality, usability, and security (Jawabreh et al., 2022; Ali et al., 2021; Thuneibat et al., 2022; DeLone & McLean, 2016). Effective systems enhance performance by providing timely, accurate financial information, reducing costs, increasing productivity and profitability, and ensuring competitive advantage (Hariyati et al., 2019; Salameh et al., 2020; Ali & Oudat, 2021; Ali & Ali, 2022). The theoretical framework in Figure 3 illustrates that IT factors, such as cost and security, positively impact the efficiency and effectiveness of accounting data. This is supported by He and He (2020) Parast et al. (2022), who stress the importance of security measures, and Atadoga et al. (2024), who highlight the necessity of implementing efficiency measures alongside data security.

3.1 Hypothesis Development

This paper hypothesizes a positive correlation between IT cost and security and the efficiency and effectiveness of managing accounting data. Lower IT costs and increased security are expected to improve data management (Odonkor et al., 2024). The adoption of modern IT solutions, such as Blockchain, IoT, Cloud Accounting, and Big Data, has revolutionized accounting practices, replacing traditional paper-based methods with automated systems that enhance the quality of accounting information (Amir et al., 2022). In addition, the effectiveness of accounting information systems (AIS) is crucial, as it mediates the relationship between IT sophistication and user competence, ultimately influencing the quality of accounting information (Nada et al., 2023). Empirical studies have shown that IT advancements

significantly impact accounting information systems (AIS) performance, aligning with the Resource-Based View theory (RBV) perspective, which posits that unique resources and capabilities, such as advanced IT systems and skilled personnel, provide a competitive advantage (Arjang et al., 2024). Top management support and user training programs are also critical in leveraging IT advancements to improve AIS performance, further supporting the RBV theory that emphasizes the strategic value of internal resources and capabilities (Arjang et al., 2024). Finally, The Resource-Based View (RBV) sees IT as a strategic asset for competitive advantage, contingent on cost-effective deployment and cybersecurity (Dionysus and Arifin, 2020).

3.1.1 Information Technology (Cost and Security) and Accounting Data Efficiency

The literature suggests that the adoption of IT in accounting processes offers numerous benefits, including increased efficiency and reduced errors in data management (Abhishek et al., 2024; Gandolph et al., 2023; Ricca et al., 2023). In addition, previous studies have highlighted the importance of IT investments in improving accounting processes and overall organizational performance (Abdelraheem et al., 2021; Banker et al., 2002; Utami & Yulianto, 2019). Specifically, cost considerations associated with IT investments may impact the efficiency of accounting data management systems. Moreover, security concerns are paramount in accounting information systems, with IT security measures playing a crucial role in safeguarding sensitive financial data (Dehghanzade et al., 2011; Gnatiuk et al., 2023). Enhanced IT security measures contribute to the reliability and integrity of accounting data, thereby potentially increasing efficiency. However, based on the insights gleaned from prior research, we posit that both IT cost and security exert a positive influence on accounting data efficiency. Thus, this paper hypothesizes the following hypothesis:

H1: Information Technology (Cost and Security) significantly and positively affect Accounting Data Efficiency

H1.1: Information Technology Security significantly and positively affect Accounting Data Efficiency

H1.2: Information Technology Cost significantly and positively affect Accounting Data Efficiency

3.1.2 Information Technology (Cost and Security) and Accounting Data Effectiveness

Building upon the insights garnered from the literature, this paper formulates hypotheses to investigate the relationship between IT, comprising both cost and security dimensions, and accounting data effectiveness. However, the literature underscores the pivotal role of IT in enhancing accounting data management and overall organizational performance (Abdelraheem et al., 2021; Banker et al., 2002; Utami & Yulianto, 2019). Given the significant impact of IT on various aspects of accounting operations, including data accuracy and timeliness (Gnatiuk et al., 2023), we hypothesize that IT, encompassing both cost and security considerations, significantly and positively influences accounting data effectiveness. Previous studies have emphasized the importance of IT investments in improving accounting processes and organizational performance (Abdelraheem et al., 2021; Banker et al., 2002; Utami & Yulianto,

2019). The cost associated with IT investments may impact the effectiveness of accounting data management systems. Security concerns are paramount in accounting information systems, with robust IT security measures playing a crucial role in safeguarding sensitive financial data (Dehghanzade et al., 2011; Gnatiuk et al., 2023). Enhanced IT security measures contribute to the reliability and integrity of accounting data, thereby potentially increasing effectiveness.

Thus, drawing from prior research, this paper posits that both IT cost and security exert a positive influence on accounting data effectiveness. Hence, this paper hypothesizes the following hypothesis:

H2: Information Technology (Cost and Security) significantly and positively affect Accounting Data Effectiveness

H2.1: Information Technology Security significantly and positively affect Accounting Data Effectiveness

H2.2: Information Technology Cost significantly and positively affect Accounting Data Effectiveness

4. Method

This paper uses a quantitative survey design and analyses the data acquired using Structural Equation Modelling Partial Least Squares (SEM-PLS-4) using Smart PLS 4.0 software. A 194-point Likert scale was used in the distribution of questionnaires used to collect data. The study sample was selected using random sampling technique, a 194 users of accounting data from Palestinian industrial enterprises made up the responses. In this paper, there are several stages to the data analysis process, including reliability, validity, and hypothesis testing.

5. Findings

The results indicate that the percentage of males in the sample was (67.5%) of the respondents, while the percentage of females was (32.5%). The results also indicated that the highest percentage of the distribution of sample members according to the variable of experience was (36.1%), and it was for those whose experience was between (11-15) years, and it can be said about them that they are middle-aged and cadres who have good experience and it is necessary to pay attention to their training in order to benefit from them for a longer period and to benefit from them. Their expertise to the new cadres to add to them their accumulated experience from that period that preceded them in their job work. The lowest percentage reached (8.3%) and was for those who had less than (5) years of experience. However, to show how much the independent variable influences the dependent variable, the path coefficient is calculated. The determination coefficient (R-Square) indicates how much an exogenous variable will affect an endogenous variable. Figure No. (4) describes the route coefficients on the accomplishment motivation study framework and indicates a favourable association between research elements.

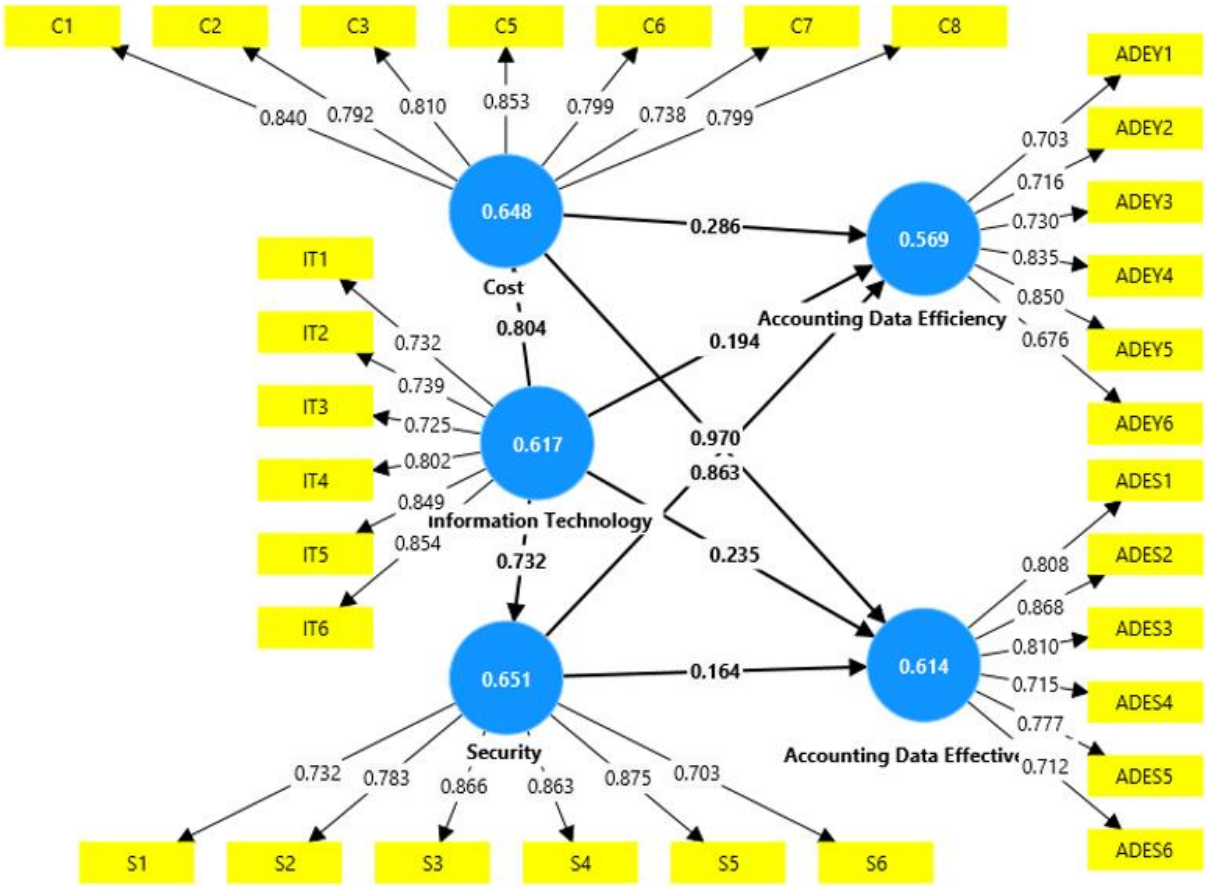


Figure (4): Measurement Model

Each of the several study variable indications had an outer loading value larger than 0.7. However, Alshehadeh et al. (2024) a lot of indicators appear to have an outside loading value that is less than 0.7. an outer loading value between 0.5 and 0.6 is thought to satisfy the convergent validity requirements. The data above suggests that all of the variable indicators are suitable for use in research and might be the subject of further investigations, as none of them have outer loading values lower than 0.5. Nevertheless, Table 1 uses three widely-used metrics Cronbach's Alpha, composite reliability, and AVE to evaluate variable dependability. These metrics assess the constructs in SEM-PLS analysis for convergent validity, internal consistency, and general dependability. Table 1's constructs for the SEM-PLS inquiry have strong Cronbach's Alpha coefficients, composite reliability values more than 0.70, and extracted average variance values that demonstrate their dependability and credibility. These steps guarantee the accuracy, consistency, and dependability of the intended conceptions.

Table 1. Reliability Testing

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Accounting Data Effectiveness	0.876	0.895	0.905	0.614
Accounting Data Efficiency	0.847	0.859	0.887	0.569
Cost	0.909	0.910	0.928	0.648
Information Technology	0.875	0.887	0.906	0.617
Security	0.891	0.900	0.917	0.651

For the constructs in Table 1, all measures indicate high reliability and trustworthiness. The high Cronbach's Alpha coefficients, composite reliability values exceeding 0.70, and AVE values above 0.50 demonstrate the constructs' correctness, consistency, and reliability. This suggests that the variables accurately represent the intended concepts and are internally consistent, providing a solid foundation for further analysis in the SEM-PLS investigation. In addition, the primary focus of regression analysis is to understand how changes in the independent variables affect the dependent variable. The R-square (R^2) statistic, also known as the coefficient of determination, measures the proportion of the variance in the dependent variable that is explained by the independent variables. It ranges from 0 to 1, where 1 indicates a perfect fit of the model to the data. The adjusted R-square adjusts the R-square value for the number of predictors in the model, providing a more accurate reflection of the model's explanatory power. However, Table (2) presents the results of regression analysis as follows.

Table 2. R-square Results

	R-square	R-square adjusted
Accounting Data Effectiveness	0.838	0.836
Accounting Data Efficiency	0.898	0.897
Cost	0.647	0.645
Security	0.536	0.533

Based on Table (2) above, R-square (R^2) represents the proportion of the variance in the dependent variable (in this case, Accounting Data Effectiveness, Accounting Data Efficiency, Cost, and Security) that is explained by the independent variables included in the regression model. It ranges from 0 to 1, with higher values indicating that a larger proportion of the variance in the dependent variable is explained by the independent variables. For example, an R-square value of 0.838 for Accounting Data Effectiveness means that approximately 83.8% of the variance in Accounting Data Effectiveness can be explained by the independent variables in the regression model.

For Hypothesis testing, this paper evaluates hypotheses in statistical analysis, However, researchers use a variety of indicators. A t-statistic greater than 1.96, for example, suggests a significant link between the variables under investigation at a 95% confidence level. The p-value (P), which shows a statistically significant link between variables when its value is less

than the selected threshold (usually 0.05), is another important measure for assessing significance. Based on the original sample estimates (O), researchers can utilise t-statistics (T) and p-values (P) to evaluate these indicators in order to ascertain the significance level and the direction (positive or negative) of the correlation. The results obtained from the hypothesis testing method are displayed in Figure (5) and Table (3) below for these indicators.

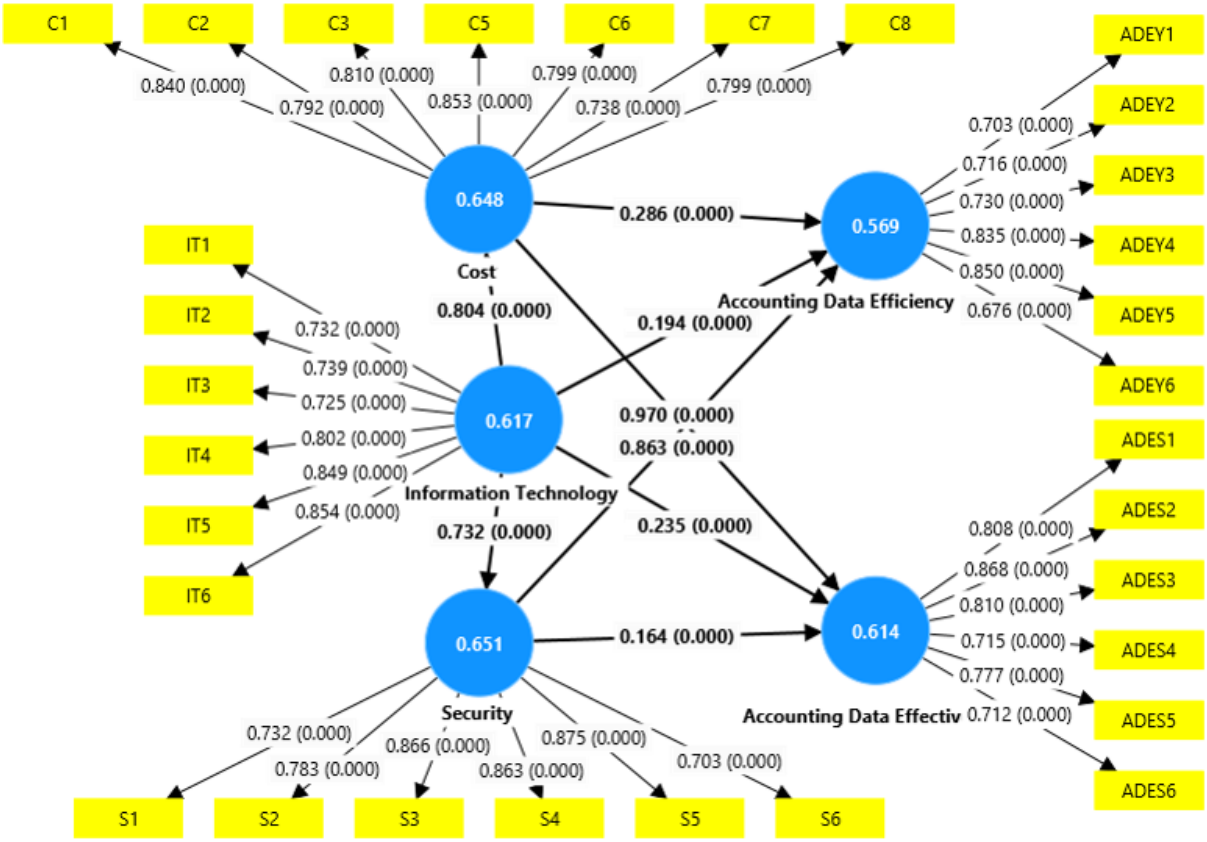


Figure 5: Hypotheses Testing Results

The process of testing hypotheses, which includes evaluating the research hypotheses, is depicted in Figure 5. The route coefficients that were previously discussed offer crucial details for this testing. The findings of the hypothesis testing for direct impacts are shown in Table 3 below. Based on the observed direct effects between variables, this table examines whether study hypotheses have been accepted or denied.

Table 3. Results of Hypothesis Testing for Total effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Direct Effect					
Cost -> Accounting Data Effectiveness	0.970	0.973	0.048	20.292	0.000
Cost -> Accounting Data Efficiency	0.286	0.284	0.045	6.347	0.000
Information Technology -> Accounting Data Effectiveness	0.235	0.237	0.052	4.500	0.000
Information Technology -> Accounting Data Efficiency	0.194	0.195	0.037	5.198	0.000

Information Technology -> Cost	0.804	0.806	0.023	35.546	0.000
Information Technology -> Security	0.732	0.733	0.031	23.740	0.000
Security -> Accounting Data Effectiveness	0.164	0.164	0.044	3.695	0.000
Security -> Accounting Data Efficiency	0.863	0.866	0.037	23.536	0.000
Indirect Effect					
Information Technology -> Accounting Data Effectiveness	0.900	0.905	0.048	18.792	0.000
Information Technology -> Accounting Data Efficiency	0.862	0.864	0.048	18.039	0.000
Specific Indirect Effect					
Information Technology -> Cost -> Accounting Data Effectiveness	0.780	0.785	0.048	16.129	0.000
Information Technology -> Cost -> Accounting Data Efficiency	0.230	0.229	0.038	6.041	0.000
Information Technology -> Security -> Accounting Data Effectiveness	0.120	0.120	0.033	3.599	0.000
Information Technology -> Security -> Accounting Data Efficiency	0.631	0.635	0.042	14.952	0.000

Table (3) above presents the results of hypothesis testing. In terms of direct effects, the analysis reveals significant relationships between several factors and accounting data effectiveness and efficiency. For instance, the direct effect of cost on accounting data effectiveness is found to be highly significant (T statistics = 20.292, $p < 0.001$), indicating that variations in cost have a substantial impact on the effectiveness of accounting data. Similarly, the direct effects of information technology on both accounting data effectiveness and efficiency are statistically significant, with T statistics values of 4.500 and 5.198 respectively ($p < 0.001$). These findings suggest that investments in information technology positively influence the quality and efficiency of accounting data management processes. Moreover, the indirect effects, which represent the influence of one variable on another through an intermediary, also demonstrate significant associations. Specifically, the indirect effects of information technology on both accounting data effectiveness and efficiency are found to be highly significant (T statistics > 18, $p < 0.001$), indicating that information technology indirectly contributes to improving accounting data outcomes through other pathways. Furthermore, the specific indirect effects highlight the role of intermediary variables, such as cost and security, in mediating the relationship between information technology and accounting data effectiveness and efficiency. For instance, the specific indirect effect of information technology on accounting data effectiveness through cost is statistically significant (T statistics = 16.129, $p < 0.001$), indicating that cost serves as a mediator in enhancing the effectiveness of accounting data management practices. Thus, these findings highlight the multifaceted nature of the factors that influence the effectiveness and efficiency of accounting data management. All hypotheses for this study were accepted.

6. Discussion and Conclusion

6.1 Discussion

The results of hypothesis testing reveal significant relationships between IT, cost, security, and accounting data efficiency and effectiveness, aligning with previous research findings in this lecture. The direct effects of IT cost and security on both accounting data efficiency and effectiveness are notably substantial, echoing the importance of IT investments in enhancing accounting processes. This corroborates studies such as Banker et al. (2002) and He and He (2020), which emphasized the pivotal role of IT investments in improving productivity and security in accounting systems. Moreover, the mediating role of IT cost and security in the relationship between information technology and accounting data efficiency and effectiveness underscores the intricate interplay between these variables. Previous research, such as Atadoga et al. (2024) and Gandolph et al. (2023), has also highlighted the mediating effects of IT-related factors in various contexts, emphasizing their significance in shaping organizational outcomes. By demonstrating the indirect effects and specific indirect effects of IT through cost and security pathways, the current study contributes to the understanding of the mechanisms through which IT investments influence accounting data management practices. These findings hold implications for both theory and practice in accounting and information systems management. The significant direct and mediating effects underscore the need for organizations to strategically allocate resources towards IT infrastructure, considering both cost and security aspects. This is consistent with the recommendations of studies such as Parast et al. (2022) and Wali et al. (2022), which advocate for comprehensive approaches to cloud computing security and the adoption of secure IT systems in accounting firms. However, while the results highlight the importance of IT investments, they also underscore the complexity of managing IT-related factors in accounting contexts. Factors such as the implementation features of digitalization, as discussed by Gnatiuk et al. (2023), and the impact of information technology governance on financial performance, as examined by Talab and Flayyih (2023), further emphasize the multifaceted nature of IT management in accounting practices. Therefore, organizations need to adopt holistic strategies that not only focus on enhancing efficiency and effectiveness but also address the challenges and risks associated with IT adoption and management.

6.2 Conclusion

The findings of this paper shed light on the relationship between IT), cost, security, and accounting data management outcomes. Through hypothesis testing, significant relationships were identified, indicating the substantial impact of IT investments on both accounting data efficiency and effectiveness. Specifically, the direct effects of IT cost and security on accounting data outcomes underscored the importance of strategic resource allocation in enhancing accounting processes. Moreover, the mediating role of IT cost and security further elucidated the mechanisms through which IT influences accounting data management practices. By highlighting the indirect effects and specific indirect effects of IT through cost

and security pathways, the study provided valuable insights into the nuanced relationships between these variables. These findings have important implications for both theory and practice in accounting and information systems management. They emphasize the need for organizations to adopt comprehensive approaches to IT management, considering not only the technological aspects but also the associated costs and security considerations. By strategically investing in IT infrastructure and implementing robust security measures, organizations can enhance their accounting data efficiency and effectiveness, thus improving overall organizational performance. However, it is crucial to recognize the complexities and challenges associated with IT adoption and management in accounting contexts. Factors such as the implementation features of digitalization and the impact of information technology governance on financial performance warrant careful consideration. Therefore, organizations should adopt holistic strategies that address both the opportunities and risks associated with IT adoption. Thus, this study contributes to advancing our understanding of the relationships between IT, cost, security, and accounting data management outcomes. By integrating insights from previous research, the study provides valuable guidance for researchers, practitioners, and policymakers seeking to optimize IT investments and improve accounting practices in the digital age.

7. Limitations

IT has become indispensable in streamlining accounting procedures and easing the workload for accountants. Organizations heavily rely on IT to effectively manage their commercial operations and maintain well-organized accounts. The evolution of IT has sparked innovation in corporate accounting systems, leading to improved business performance and the emergence of cloud-based accounting solutions. The incorporation of technology into accounting processes has boosted operational efficiency, in addition to expanded opportunities for firms and bolstered public trust. The integration of IT into accounting information systems has led to a reduction in errors and propelled advancements in auditing practices. Furthermore, the effective use of IT has optimized information transmission, facilitating informed managerial decisions and the achievement of strategic objectives. It's important to note that while IT enhances accounting systems, it doesn't make them flawless; rather, it equips them for continuous improvement and updates. However, a significant challenge remains in the lack of standardized technologies across different systems. Organizations often adopt technologies selectively, based on their specific operations, which may hinder the interoperability of accounting information outputs. Despite this challenge, the overall impact of IT on accounting has been overwhelmingly positive, driving efficiency, innovation, and reliability in financial reporting. However, the limitations of this study merit careful consideration in interpreting the findings. Firstly, the sample size presents a notable constraint, despite attempts to gather data from a diverse array of organizations. The relatively limited sample may restrict the generalizability of the study's conclusions to the broader population. Moreover, the study's focus on a specific geographical region or industry sector may further limit its generalizability to other contexts. Variations in regional or industry-specific characteristics could influence the relationship between information technology and accounting practices differently across

different settings. Another limitation arises from the reliance on self-reported data through questionnaires, which introduces the potential for self-reporting bias. Respondents may provide socially desirable answers or exhibit biases, leading to inaccuracies in the data. Additionally, the cross-sectional design employed in this study captures data at a single point in time, potentially overlooking changes in the relationship between information technology and accounting practices over time. Lastly, despite efforts to ensure the reliability and validity of measurement instruments, the presence of measurement errors in the collected data may impact the accuracy of the findings and the robustness of the conclusions drawn. Furthermore, the study is subject to certain limitations that warrant acknowledgment. Time constraints may have curtailed the depth and breadth of the research, potentially limiting the scope of investigation into the relationship between information technology and accounting practices. Similarly, resource constraints, including limited funding and access to specialized tools or databases, may have restricted the types of analyses that could be conducted, thereby influencing the comprehensiveness of the study. Additionally, the availability of relevant data may have posed challenges, with access to certain datasets or proprietary information potentially being restricted, hindering a more thorough examination of the research questions.

8. Future Research

The proficient utilisation of information technologies has optimised the transmission of information, thereby enabling well-informed managerial choices and the attainment of strategic goals. It is imperative to acknowledge that although information technology augments accounting systems, it does not render them impervious to imperfections; instead, it equips them for ongoing refinement and enhancements. Nevertheless, a notable obstacle persists in the absence of standardised technologies across various systems, as organisations tend to selectively embrace technologies that align with their particular operations, which might undermine the openness of accounting information outputs. Moreover, future studies tracking changes in the relationship between information technology and accounting practices over time could provide valuable insights into the causal relationships and dynamics between these variables. Comparative studies across different industries, regions, or organizational sizes could further enhance understanding by revealing how information technology impacts accounting practices in diverse contexts. Qualitative research methods, such as interviews or case studies, could complement quantitative findings by offering deeper insights into the experiences and perceptions of accounting professionals regarding information technology adoption. Moreover, exploring the impact of emerging technologies, such as artificial intelligence and blockchain, on accounting practices could be a fruitful area of inquiry. Finally, investigating potential mediating and moderating factors that influence the relationship between information technology and accounting practices, such as organizational culture and regulatory environment, could shed light on additional dimensions of this complex relationship.

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