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How accounting systems and information quality affect financial performance in Iraqi banks: The role of financial information reliability

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Abstract

This investigation aims to understand the relationship between accounting information systems and financial performance in Iraqi banks, as well as exploring the indirect effects of effect of these systems on financial performance in Iraqi banks and the quality of their accounting information. The authors developed a new method of building called AIS-enabled SEM that has been previously experimented with by scholars and professionals. It is derived from a body of research regarding the accounting information system and quality. Iraqi banks that operated in the commercial sector collected data via convenience samples. Through personal relationships, the authors gained contact with participants in all of the Iraqi financial institutions. Additionally, the process of collecting data took 65 days, which began on January 1st and March 5th, 2024. 12 Iraqi banks participated in the final sample of 261 respondents, via the questionnaire, and were analyzed via structural equation modeling with partial least squares using SmartPLS 4 software. The results demonstrated that accounting information systems, the quality of accounting information systems, and the dependability of financial information have a positive and significant indirect effect on the financial performance of Iraqi banks. The results also demonstrated that the quality of the accounting information systems and the volume of the accounting information systems have an effect on the financial performance of Iraqi banks that rely on the reliability of financial information to conduct business.

Keywords: Accounting information systems (AIS), Quality of accounting information systems (QAIS), Financial performance (FP), Reliability of financial information (RFI), Iraqi commercial banks

1. Introduction

Modern organizations around the world depend on accounting information to support critical decision-making. This information assists internal managers in formulating strategies [1], [2] and guides external investors in evaluating opportunities [3], [4]. In addition, government agencies [5], [6] and financial institutions [7], [8] as well as other pertinent stakeholders [9], [10] rely on accounting information to attain organizational goals and make informed economic decisions.

In developed countries, information disclosure standards are typically aligned with key components of transparency [11], [12], prescribed publication durations [13], [14], and clear benefits for businesses, investors, and other stakeholders [15], [16]. However, these disclosure practices remain in nascent stages in emerging economies such as Iraq [17], [18]. Data from the State Securities Commission reveals that breaches in reporting and disclosure consistently exceed 50% among sanctioned counterparties, raising significant regulatory concerns [19], [20].

Moreover, numerous establishments exhibit practices that compromise the quality of financial reporting. Many organizations produce low-quality financial statements, delay communication, and reactively disclose information about operational conditions, capital use, and corporate governance matters [21], [22]. Large corporations, in particular, are often constrained by regulations that enforce basic compliance rather than encourage efforts to enhance the quality of their accounting information for optimal efficiency [23], [24]. Beyond these challenges, high-quality accounting information is essential for supporting investment-related decisions and efficiency evaluations [25], [26].

Modern information systems (IS) are designed to enhance decision-making by integrating comprehensive data, documented procedures, and detailed records [27], [28]. Organizations increasingly incorporate advanced IS technologies into their management processes to better synchronize operations with strategic objectives [29], [30]. The effectiveness of such systems, often measured as IS success, directly influences overall performance outcomes [31], [32].

Specifically, Accounting Information Systems (AIS) play a pivotal role in managing short-term operational complexities. They supply essential data that supports control functions and aids in monitoring cash flow, expenses, and costing [33], [34]. AIS not only streamlines daily financial management but also simplifies strategic long-term planning in highly competitive and dynamic industries. By design, AIS is a network of interconnected tasks, records, and technological tools that capture, process, and disseminate crucial financial information to decision-makers both within and outside the organization. Some major tasks of AIS are to keep records of transactions and use those records for evaluating performance [35], [36]. Also, they make it easier to collect all the necessary data and speed up reporting for tracking financial transactions through computerized help [37].

Over the last few years, digital transformation has made a big impact on accounting information systems. Many experts state that using cloud-based systems and real-time data analytics has transformed how managers decide on business actions [38], [39]. Digital systems make it easier and more accurate to use and access data [40], [41]. Because of these technological developments, financial governance can now respond to changes more effectively [42]. Also, new rules have pushed countries to use standard ways of accounting worldwide. Progressive governments have made sure that high disclosure standards are in place for investors [43], [44]. They make investments from other countries likely and help increase transparency [45], [46]. Emerging markets still struggle to match these international requirements [47].

Changes in accounting information systems are due to new technology as well as changes in the needs of the market. Automation is said to affect financial work in positive ways, reducing the possibility of manual errors and allowing for reliable reporting [48], [49]. What's more, such systems have supported organizations in dealing with economic unrest and keeping them stable [50].

When talking about how adequate accounting practices are, corporate governance is usually central. There is an increasing amount of evidence stating that strong governance leads to transparent reporting [51], [52]. It is widely suggested that supporting transparency in financials, plus more frequent audits, boost stakeholder trust [53], [54]. To maintain a stable market, such reforms are vital [55].

Factors related to the environment, society, and governance (ESG) are becoming more important in influencing current accounting practices. Most recent research suggests that firms that apply ESG standards perform better when it comes to sustainability operations and interact with stakeholders more effectively [56] and [57].

Growing ethics among investors means companies are being pushed to be more open and transparent [58], [59]. In addition, data shows that being straightforward in ESG reporting greatly improves a company's reputation [60].

Sharing account information with enterprise resource planning (ERP) systems has greatly simplified the way the company works. Experts say that ERP systems make it easy for information to move through departments, which results in better organizational adjustment and adaptability [61], [62]. Using these tools has made it possible to spot and handle financial risks [63].

Combining accounting data with measurement of business outcomes helps to get useful insights. According to data, organizations that apply advanced financial analytics are more prepared to predict future trends and improve how capital is used [64], [65]. Besides, using balanced scorecards and other performance measures provides a more detailed insight into how the business is doing financially [66].

Although these improvements have been made, it is still hard to achieve the same accounting practices worldwide. Equally, differences in what firms have to reveal and in regional regulatory rules frequently make it hard for international operations [67], [68]. It has been reported by the industry that such differences in data can result in confusion when dealing with finances in international business [69]. New research suggests that the gaps need to be closed using a uniform set of regulations [70].

Technology is used in accounting systems to make sensitive financial data safer and more protected. Many organizations are focusing on cybersecurity by adopting strong ways to protect their data [71], [72]. They prevent assaults on the system and build more faith among stakeholders in financial reports [73]. It has also been shown through research that ongoing training and development help people make better use of accounting information systems. Personnel keep their knowledge current and learn to use new technology to manage the company's IS tools [74], [75]. Furthermore, a number of studies from different fields show that properly designed training significantly boosts efficiency in businesses [76].

Over recent decades, how accounting information systems are used together has changed a great deal. The move from manual bookkeeping to modern, computerized bookkeeping marks changes in the way economies operate and advance with technology [77], [78]. A major reason for this evolution is the government's constant focus on transparency and accountability [79].

Because the business world is constantly evolving, it is crucial to keep developing accounting methods. Technologies such as artificial intelligence (AI) and blockchain are being considered to improve data integrity even more [80], [81]. Since these modern techniques play a key role in facing new issues, financial statements continue to be significant [82].

Accounting information systems are expected to develop positively moving forward. More and more, organizations are relying on modern technologies, and strong agreements between tech and financial companies push these innovations [83], [84]. The more these partnerships advance, the more global accounting standards are being redefined [85], [86].

Accounting practices have changed greatly because of globalization. The international acceptance of certain trade deals and rules has greatly affected accounting standards [87], [88]. The world's interconnectedness requires nations to cooperate and oversee operations beyond regional borders [89]. Multinational corporations are now adjusting their information systems to suit international standards [90].

Emerging market organizational problems are aggravated by changing economic developments with the accompanying changing regulatory environments. Specialists propose that bespoke regulatory regimes in conjunction with localized ICT solutions are required in addressing such markets' respective requirements [91], [92]. Recent economic research suggests that anticipatory changes in accounting systems lie at the center of determining overall market stability [93]. The strength of an organization's internal controls goes a long way in deciding the success of its accounting systems. The strict internal checks and audits of compliance guarantee

that financial information is strong and in line with ground realities [94], [95]. Internal control systems are constantly streamlining and have hence led to better performance measures [96]. In addition to periodic reporting, accounting information systems are at the core of strategic risk management systems. They facilitate real-time tracking of financial indicators, allowing organizations to manage market movements on a timely basis [97], [98]. Risk managers also benefit from the use of predictive analytical tools and scenario planning as part of existing IS platforms [99]. Technological refresh and periodic upsizing make sound risk management practice [100].

2. Literature study and hypothesis development

The academic discourse surrounding accounting information systems is expanding as researchers increasingly focus on the interplay between technology, regulation, and market performance. Key studies have documented the positive correlation between advanced IS implementation and improved financial outcomes for firms in competitive environments [101], [102]. Both quantitative and qualitative analyses confirm that technology-driven improvements in accounting practices yield significant gains in operational performance [103].

Accounting information systems are widely recognized as the backbone of modern financial management. Their role in tracking—and increasingly forecasting—business outcomes underscores the transformative power of technological integration within the financial domain [104], [105]. Continued evolution and integration of these systems are essential for sustaining economic progress and ensuring that organizations remain agile in the face of emerging challenges [106].

Contemporary challenges such as digital currencies and fintech innovations further underscore the necessity for robust accounting systems. These systems are increasingly required to integrate emerging financial instruments and ensure that novel transactions are accurately recorded [107], [108]. Industry experts forecast that emerging technologies will blur the traditional boundaries between classical accounting and modern, technology-driven financial management [109].

A comprehensive review of recent literature reinforces that improved accounting information systems are directly linked to enhanced corporate performance and long-term sustainability. Empirical studies have demonstrated that advanced IS implementation is associated with increased organizational agility and more effective capital allocation [110], [111]. Case studies from diverse industries confirm that investing in cutting-edge information systems leads to measurable improvements in profitability and resource efficiency [112].

Policy interventions aimed at ensuring transparency and standardization are gaining momentum worldwide. Regulatory bodies continue to refine frameworks governing financial reporting, striving to ensure greater consistency and comparability of financial data [113], [114]. These evolving regulations have significant implications for both multinational corporations and small-to-medium enterprises, driving them to adjust their reporting practices to remain compliant and competitive [115].

As organizations move forward, the continuous investment in more robust and interconnected accounting information systems remains critical. Emerging trends in artificial intelligence, machine learning, and blockchain technologies promise to revolutionize traditional financial paradigms by facilitating improved governance, operational efficiency, and financial resilience [116], [117]. Industry leaders advocate for the closer alignment of technological innovation with rigorous accounting protocols as the global financial ecosystem evolves [118]. The drive toward more interconnected accounting information systems also reflects a collective effort by industries, academic institutions, and regulatory bodies to foster a transparent and efficient financial ecosystem. This synergy is expected to pave the way for more innovative, responsive, and sustainable financial management practices [119]. Ultimately, such collaborative approaches will ensure that organizations not only meet current challenges but also thrive in the face of future economic uncertainties [120].

The authors of [111] studied the effect of accounting information systems adoption on the performance of 216 firms in selected developing economies and found a weak positive relationship. The literature on computerized

accounting information systems and financial performance is extensive, but very few studies have focused on LG. According to the study, the majority of Yemeni businesses have not yet adopted a modern accounting information system because there are insufficient internal controls and operational guidelines for employees to follow. As a result, although the system is in place, businesses have not yet benefited from it. The study concluded that there was little correlation between financial success and the implementation of an accounting information system. Once more, [80] investigate how the implementation of accounting information systems affects the productivity, profitability, and efficiency of SMEs in Iran. They discovered that the financial performance, productivity, and profitability of SMEs are all positively correlated with the efficient and profitable use of accounting information systems in SMEs. The authors of [118] conducted an empirical investigation to examine how information technology affects financial performance and accounting systems. The study's findings demonstrated a statistically significant, positive correlation between financial success and the adoption of information technology. Likewise, [8] also looked at how accounting information systems affected financial, organizational, and administrative performance. The study found that an organization's accounting information systems are heavily influenced by senior management's support and the knowledge of accounting managers. Additionally, accounting information systems have a major impact on performance management, organizational performance, and financial performance of the organization.

Lastly, [5] looked into how adopting an accounting information system affected the financial performance of a few chosen real estate businesses in Jordan. They discovered that the adoption of an accounting information system was most beneficial to Jordanian investment companies, which was a sign of a strong positive correlation between different real estate businesses. CAIS metrics in conjunction with financial outcomes. In a different context, research has shown that there is a negative relationship between financial performance and the adoption of accounting information systems. Researchers [107] found a negative relationship between the performance of Ghanaian SMEs and their use of AIS. They believed that keeping the amount spent on setting up and operating the AIS under control helps allocate funds to other projects undertaken by the organization, which yield higher returns and enhance its financial performance. The effects of accounting information systems on the financial performance of banks in the Nigerian banking industry were also studied by [3], who found that these systems only improve the profitability of banks in the long run, not in the near term. The paper in [24] also studies the relationship between the financial performance of specific real estate institutions in Jordan and the deployment of accounting information systems; they discovered an unfavorable association that validates the initial findings of [107].

In a similar line, [66] evaluated the impact of accounting information systems on the financial performance of specific Indian enterprises. The results of the study showed that investment in accounting information systems had a significant negative impact on the financial performance of a subset of Indian companies. Research [59] investigated how computerized accounting information systems impact the financial performance of the public sector in Nigeria. The research draws attention to a few issues that arise during AIS adoption, including high implementation and maintenance costs for hardware and software, as well as the need for specialized skills. The study reached the conclusion that the perceptions of government agency executives on the impacts of computerized accounting information systems only take into account the accounting framework and operational processes of the public sectors in Nigeria, ignoring their financial performance.

Based on the above, the following hypothesis was formulated:

H1: Accounting information systems positively and directly affect the financial performance of banks.
H2: Accounting information systems positively and directly affect the reliability of financial information.

3. Quality of accounting information systems and financial performance

The degree to which the accounting system's operations can suitably and successfully satisfy client needs is known as accounting information systems quality, or SYQ [95]. This concept is what makes information

systems that produce information what they are: an indispensable component of success in a variety of contexts, including AIS-based sectors [74], [119]. A system with poor technical performance or incomplete technical functionality (consistency of user interface, ease of use, optimal fulfillment of customer needs, response rates, program management) would reduce financial reliability, financial performance, and daily tasks, according to this study's findings on the reliability of accounting system quality in assessing the success of AIS [95], [74]. A desired information system attribute is high accounting information system quality [7]. Prior research indicates that system usage in system diversity, such as simplicity of use, was positively impacted by assessing the quality of accounting information [9]. Nindiya [34] found no system, despite the fact that a high-quality, implementable system can boost the usage of accounting information systems.

The suggested model is shown in Figure 1. Lutf [121] identified a correlation between the quality of accounting information and its use. Users' happiness is greatly impacted by system quality when they find the website easy to navigate [4], [5], and when they meet their expectations for better system usage attempts [6]. Remarkably, if users exhibit high levels of self-efficacy and familiarity with the Internet, the impact of accounting information systems quality on satisfaction is likely to diminish [4]. The adaptability, distribution, processing, and responsiveness of accounting information systems also have an impact on their quality [7], [8]. Prior studies have demonstrated a positive correlation between the caliber of accounting information systems and banks' financial performance [9], [43], [93]. However, other studies have produced inconsistent findings in which the caliber of accounting information systems was found to be deficient in having an impact on the bottom line [60].

The characteristics of IS outputs are relevant to the usage of accounting systems and the quality of accounting information systems [95]. In particular, in organizational contexts, the quality of accounting information is critical [55]. This component is a legitimate concept in the present AIS success model, since accounting information quality may properly measure IS effectiveness in different scenarios, including AIS-oriented domains [39]. Since the usage of AIS depends on user views on information quality, the quality of the information supplied by AIS is crucial to the management level and financial performance of banks [112]. The capacity of AIS to produce information, record, and depict calls for ideal oversight and management outside formal organizational boundaries [105]. According to Alrubaiee, AIS is successful in gathering fast, reliable information that satisfies regulatory standards and supports bank operations and financial performance [53]. Accuracy, speed, completeness, and consistency were found to be model predictors by Idris and Mohamed, who also underlined that the quality of accounting information is a legitimate source of knowledge [57]. The current study's premise is that the application of financial dependability would be favorably stimulated by high information quality in AIS. Based on the common causes of users reaching their objectives, information quality has a major impact on financial performance [95]. As a result, the following theories were created:

H3: The quality of accounting information positively and directly affects the financial performance of banks.

H4: The quality of accounting information systems positively and directly affects the reliability of financial information.

4. Reliability of financial information, accounting information systems, and financial performance

The legitimacy and stability of capital markets depend heavily on the reliability of financial information. The primary objective of this paper is to evaluate the degree to which publicly traded companies' implementation of IFRS has improved the reliability of financial information, before and after the change. International investors find the capital market, which serves as the main entry point for foreign direct investments, more attractive [62]. This makes the study that verifies the reliability of financial information crucial in the provision of banking services. It is recommended to apply Benford's Law, an old method introduced in 1938 [22], which had not been widely applied for nearly 20 years until it was revived by Meier and Osels [83]. This method is known as the “Sleeping Beauty.” Benford's Law, which measures the quality of accounting information systems and their ability to verify the reliability of financial information, has gained increasing importance over the past two

decades. Accounting has changed continuously over time to improve the relevance and accuracy of the information provided to investors in balance sheets, income statements, and cash flow statements—the three most important financial statements produced by listed companies [87], [22], [18]. Many sectors, including insurance [76], databases [58], [63], economics [48], [82], education [110], elections and public administration [30], and real estate, have demonstrated the effectiveness of Benford's Law. Statistical research in fields such as religion [33], real estate [97], [40], and fraud detection [114], [39], [41], [40], as well as tax evasion [32], has employed Benford's Law effectively. Capital markets in several countries—including Hungary [79], India [35], Indonesia [115], Korea [73], Poland [62], Romania [61], Russia [37], Taiwan [50], Turkey [19], the United Kingdom [88], and the United States [13], [89]—have certified the accuracy of the financial information disclosed in company financial statements. The importance and reliability of financial information are basic qualitative features that directly influence the investment process in capital markets, as well as the assessment of companies' liquidity and solvency by creditors. This study will investigate the reliability of financial information provided by companies listed on the Bucharest Stock Exchange (BSE) and examine whether previous research supports the idea that this information is valuable to investors.

H5: The reliability of financial information positively and directly affects financial performance.

H6: The reliability of financial information mediates the relationship between accounting information systems and financial performance.

H7: The reliability of financial information mediates the relationship between the quality of accounting information systems and financial performance.

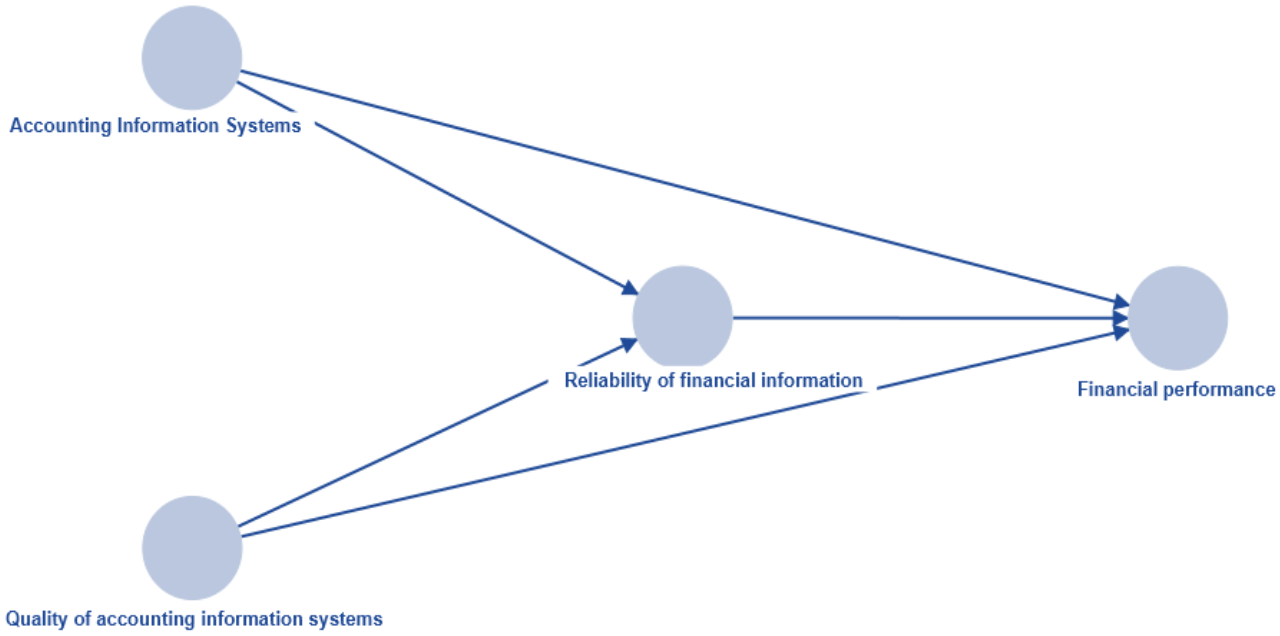

Figure 1. Study model

5. Methodology

Iraqi commercial banks provided the data, which were gathered using convenience sampling. Through personal ties, the researchers made contact with practitioners in all Iraqi commercial banks. The data collection process in 2024 spanned approximately two months (65 days). A total of 12 Iraqi commercial banks were included in the final sample of 261 instances, satisfying the PLS-PM sample size criteria [54]. According to Hair et al. [52], the sample size should be approximately ten times the greater of (a) the number of formative indicators measuring a single construct and (b) the maximum number of arrows pointing at a dependent variable. Therefore, for this study, a minimum sample size of 60 was required; the sample size of 261 exceeds this by a factor of 4.35.

6. Results and discussion

The analytical tool SmartPLS 4 was used to perform SEM based on the partial least squares method (PLS-SEM). The assumptions proposed by Hair et al. [52] include: (i) tolerance for non-normal data distributions; (ii) applicability to small sample sizes and complex models; (iii) compatibility with both formative and reflective measurement models; (iv) capability to assess both direct and indirect effects; and (v) practical applicability for enhancing predictive accuracy in theory testing. The characteristics of the sample—by respondent age, bank size, and sector—are displayed in Table 1, showing that the Iraqi sample includes a diverse and representative range of commercial banks.

To control for common method bias (CMB), the survey was designed with clear and concise items, ensured anonymity of responses, grouped questions by construct, and was made easily accessible to respondents. Statistical techniques suggested by MacKenzie and Podsakoff [75], Fuller et al. [45], and Chin et al. [31] were applied to detect and control for CMB. The measured latent marker variable (MLMV) method was implemented using formative items on the dependent variables IS-SEM, DMP, and SFI, following prior work [7], [122], [29]. The model, including MLMV variables, demonstrated improved fit (by less than 1%) compared to the original, indicating that CMB was not a significant issue, as shown in Table 2.

Before conducting the structural model analysis, reliability and validity (convergent and discriminant) were evaluated. Reliability was confirmed using Cronbach's alpha, with a threshold value of 0.70 [44]. Indicator-level reliability was confirmed with item loadings exceeding 0.70, consistent with Hair et al. [52]. The lowest Average Variance Extracted (AVE) value was 0.65, above the minimum acceptable level of 0.50.

Discriminant validity was assessed using three methods: (1) the Fornell–Larcker criterion, where each construct's AVE square root exceeded its correlation with other constructs [44]; (2) cross-loadings to confirm each indicator's higher loading on its own construct; and (3) the heterotrait–monotrait ratio (HTMT), which was below the 0.85 threshold [52], [54], [38]. These analyses (Table 2 and Appendix 1) demonstrated strong construct validity and reliability.

Table 1. Demographic characteristics of the respondents

Demographics	Frequency	Percentage (%)
Gender		
Male	179	68.6
Female	82	31.2
Total	261	100/100
Age		
21 to 30 years	34	13.2
31 to 40 years	74	28.3
41 to 50 years	102	39.0
51 years and above	51	19.5
Total	261	100/100
Experience		
Less than 1 year	17	6.5
1 to 3 years	39	14.9
4 to 6 years	66	25.3
7 to 9 years	59	22.7
10 years and above	80	30.6
Total	361	100/100

Table 2. Study sample

The study sample	Respondents
Economy Bank	19
Al-Mansour Bank	18
Bank of Baghdad	19
Investment Bank	18
Middle East Bank	26
Islamic Bank	22
Commercial Bank	19
National Commercial Bank	20
Credit Bank	28
Nour Iraq Islamic Bank	24
International Islamic Bank	23
Babylon Commercial Bank	25
12 Banks	261

Internal consistency reliability, according to Hair et al., is the degree to which all (sub)scale indicators are focused on evaluating the same notion.

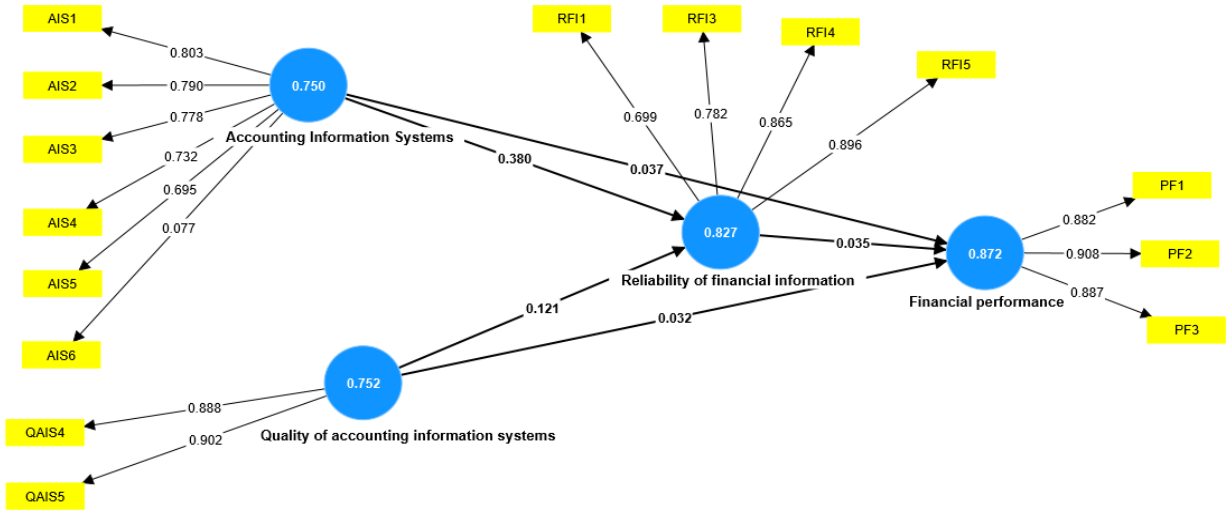

Figure 2. The PLS algorithm of the measurement model - internal consistency reliability

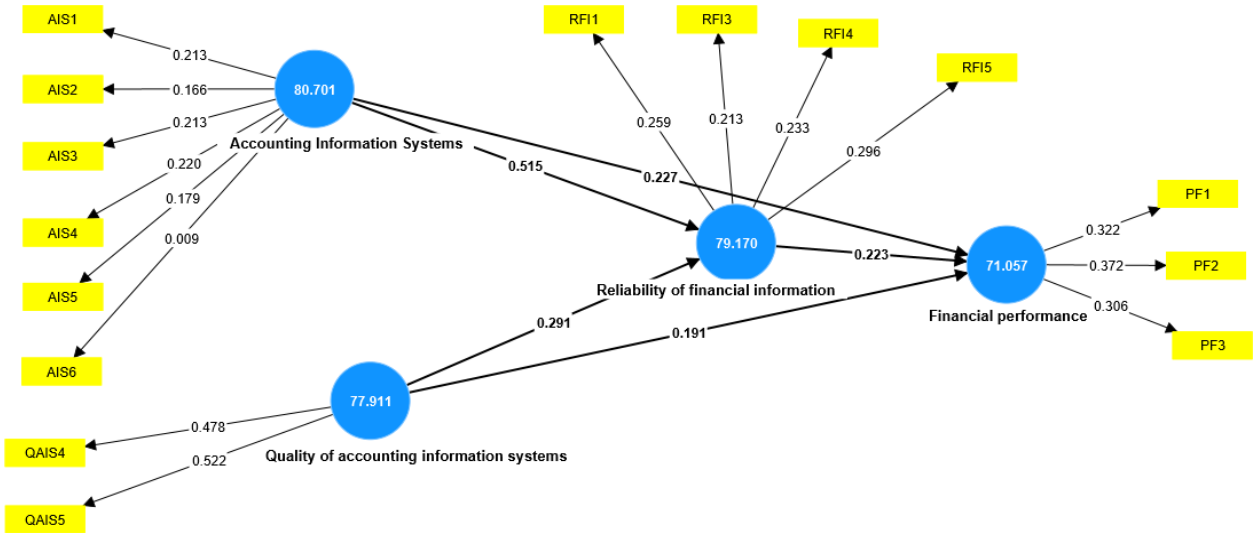

Figure 3. The PLS algorithm of the measurement model - % of variance explained by a factor of unidimensionality

Table 3. Results of the factor analysis (EFA) and the confirmatory factor analysis (CFA) of the examined model

Variables	Items	loadings			VIF	% of variance explained by a factor of unidimensionality	Construct reliability and validity			
		loadings	Outer weights	Factor loading			Cronbach's alpha > 0.7	Composite reliability (rho_a) > 0.7	Composite reliability (rho_c) > 0.7	(AVE) > 0.5
Accounting Information Systems	AIS1	0.803	0.285	0.801	1.938	80.701	0.750	0.826	0.829	0.483
	AIS2	0.790	0.262	0.787	1.886					
	AIS3	0.778	0.299	0.775	1.682					
	AIS4	0.732	0.249	0.732	1.761					
	AIS5	0.795	0.213	0.695	1.696					
	AIS6	0.777	0.006	0.072	1.009					
Quality of accounting information systems	QAIS4	0.888	0.541	0.887	1.570	77.911	0.752	0.754	0.890	0.801
	QAIS5	0.902	0.576	0.902	1.570					
Reliability of financial information	RFI1	0.699	0.308	0.695	1.308	79.170	0.872	0.876	0.921	0.796
	RFI3	0.782	0.247	0.783	1.785					
	RFI4	0.865	0.313	0.864	2.656					
	RFI5	0.896	0.358	0.896	2.838					
Financial performance	PF1	0.882	0.359	0.881	2.237	71.057	0.827	0.841	0.886	0.663
	PF2	0.908	0.403	0.906	2.453					
	PF3	0.887	0.358	0.885	2.309					

Constructs were reduced and components were identified through exploratory factor analysis (EFA) based on an eigenvalue threshold of 1 or higher [25]. The eigenvalue represents the proportion of shared variance among observed variables explained by each component. This method resulted in dimensions accounting for 88% of the total variance. Descriptive statistics, including composite reliability (ρ_rho c_rho) and reliability (ρ_rho a_rho), are presented in Table 1 [52]. The dimensions demonstrated strong reliability, with Cronbach's alpha values exceeding the recommended threshold of 0.70 [26]. Construct validity was evaluated using both convergent and discriminant validity tests. Convergent validity was confirmed through composite reliability (CR) and average variance extracted (AVE), with CR and AVE values exceeding 0.70 and 0.50, respectively. Additional evidence for the model's validity and reliability—such as discriminant validity, cross-loadings, and collinearity (VIF) statistics—is provided in Table 3.

Table 4. Fornell-Larcker criterion

Study variables	Accounting Information Systems	Financial performance	Quality of accounting information systems	Reliability of financial information
Accounting Information Systems	**0.695**			
Financial performance	0.484	**0.892**		
Quality of accounting information systems	0.556	0.446	**0.895**	
Reliability of financial information	0.677	0.487	0.577	**0.814**

To determine the extent to which each construct is truly distinct from other constructs, discriminant validity was assessed. This evaluation was based on the correlations between constructs within the domain of validity differentiation. According to Kline [68], the model's estimates did not exceed the threshold of 0.95, indicating acceptable discriminant validity. The square root of the average variance extracted (AVE) for each construct and the inter-construct correlations were measured to evaluate model validity, following the Fornell–Larcker criterion [44]. As a result, Table 3 presents the outcomes of this criterion and confirms that none of the correlation values exceed the recommended cutoff value of 0.95 [44] (Table 4).

Table 5. Heterotrait-monotrait ratio (HTMT)

Study variables	Accounting Information Systems	Financial performance	Quality of accounting information systems	Reliability of financial information
Accounting Information Systems				
Financial performance	0.577			
Quality of accounting information systems	0.700	0.550		
Reliability of financial information	0.817	0.562	0.727	

Furthermore, when two constructs are adequately evaluated and reliably measured, the Heterotrait–Monotrait ratio (HTMT) serves as an effective method to assess their true correlation [51], [47]. According to Hair Jr. [51] and Gold et al. [47], an HTMT value below the threshold of 0.90 is indicative of acceptable discriminant validity. HTMT is calculated as the ratio between the average correlations of indicators across constructs (i.e., heterotrait correlations) and the geometric mean of the average correlations within the same construct (i.e., monotrait correlations). As shown in Table 7, all HTMT values fall below the acceptable threshold of 0.90, confirming discriminant validity (Table 5).

Table 6. Cross loadings

Items	**Accounting Information Systems**	**Financial performance**	**Quality of accounting information systems**	**Reliability of financial information**
AIS1	**0.803**	0.334	0.472	0.603
AIS2	**0.790**	0.306	0.345	0.554
AIS3	**0.778**	0.456	0.476	0.555

Items	Accounting Information Systems	Financial performance	Quality of accounting information systems	Reliability of financial information
AIS4	**0.732**	0.418	0.464	0.434
AIS5	**0.695**	0.321	0.340	0.400
AIS6	**0.077**	0.003	0.002	0.015
PF1	0.395	**0.882**	0.406	0.417
PF2	0.494	**0.908**	0.431	0.436
PF3	0.401	**0.887**	0.353	0.452
QAIS4	0.459	0.417	**0.888**	0.476
QAIS5	0.534	0.383	**0.902**	0.555
RFI1	0.508	0.412	0.502	0.699
RFI3	0.458	0.267	0.419	**0.782**
RFI4	0.594	0.389	0.419	**0.865**
RFI5	0.619	0.481	0.525	**0.896**

A high level of unidimensional dependability for all constructs is indicated by the cross-loading indicators, which reveal that the latent constructs had more cross-loading than the other constructs through column and row [109] (Table 6).

Table 7. R-square

	R-square	R-square adjusted
Financial performance	0.304	0.294
Reliability of financial information	0.517	0.512

The table shows the R-square value for the dependent variable represented by financial performance, which was obtained at 0.304. These results indicate that the variables of accounting information systems, the quality of accounting information systems, and the reliability of financial information have a significant impact on financial performance. The table also showed that accounting information systems and the quality of accounting information systems on the reliability of financial information, is 0.517.

Table 9. Model fit

	Saturated model	Estimated model
Saturated model	0.073	0.073
0.073	0.638	0.638
0.638	0.274	0.274
0.274	345.912	345.912
345.912	0.780	0.780

Before testing the proposed relationships through a structural model, the model fit is evaluated in SEM-PLS using the “standardised root mean square residual (SRMR)” and tehresult are shown in Table 9. As recommended by Henseler et al., the SRMR value should be below 0.08 to ensure an accurate model fit. The results demonstrate that the SRMR value was 0.06, which reflects a satisfactory level of goodness of fit [54].

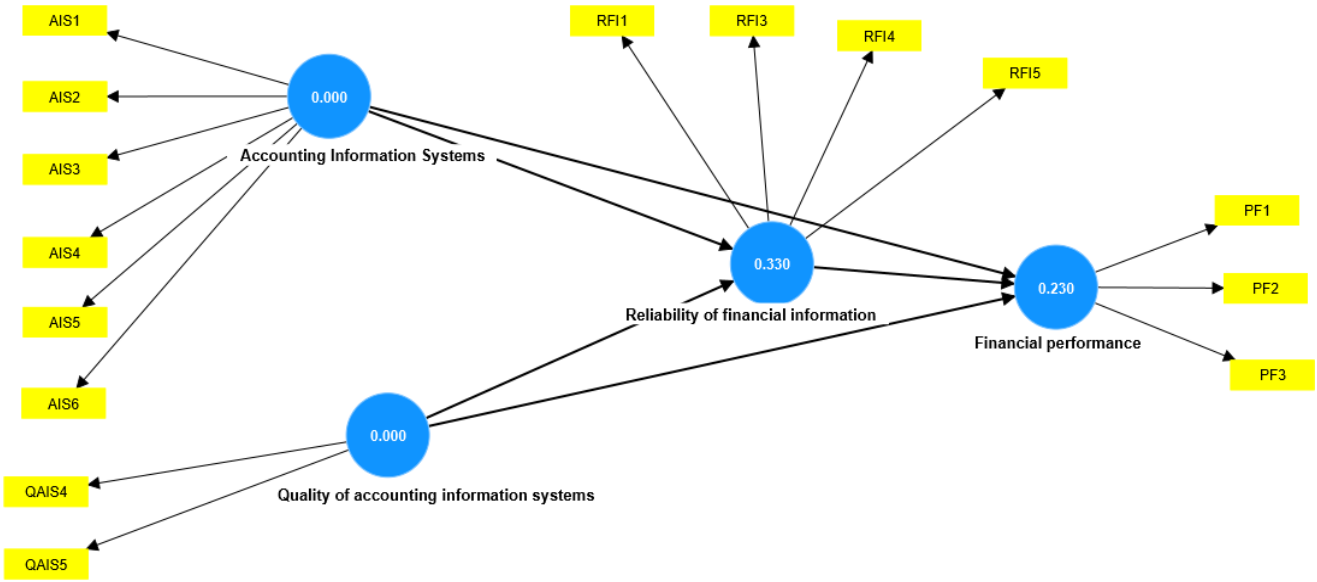

Figure 4. The PLS algorithm of the measurement model (Q2)

Table 10. Q2

	SSO	SSE	Q² (=1-SSE/SSO)
Reliability of financial information	848.000	567.833	0.330
Financial performance	636.000	489.830	0.230

These numbers show how one model relates to the others. It states that (Q2) is a measure of predictive importance that assesses the degree to which all internal thought indicators generated by the model are predictive. It uses numerical technology [123-125]. Verified replication and community-validated methods can be used to calculate the Q2 value [109]. Prioritize optimal decision-making. The path model provides a reasonable level of prediction accuracy for this construct if the Q2 values of any endogenous latent variable are greater than zero [109]. The dependent variable "financial performance" in Table 10 has a second-quartile value of 0.230, indicating a prediction accuracy of 47.8% for this construct in the model. This indicates that the path model provides a reasonable level of prediction accuracy for the concept of "business performance". Table 10 shows that the mediating variable "reliability of financial information" has a second-quartile value of 0.330, indicating a predictive accuracy of 47.8% for this model component. The average forecast accuracy of the path model for the concept "financial performance" is shown in Figure 5.

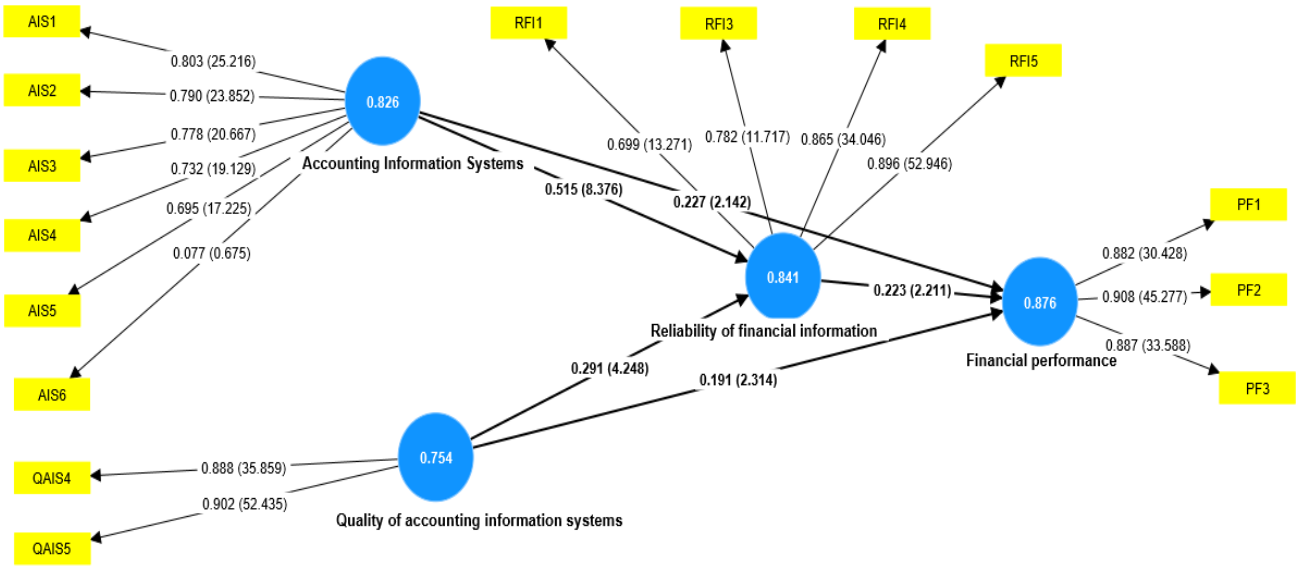

Figure 5. Average forecast accuracy of the path model – financial performance

Table 11. Total indirect effects

Effects	Beta	Sample mean (M)	S. d	Bias	2.5%	97.5%	T	P values
Accounting Information Systems -> Financial performance	0.115	0.120	0.056	0.005	0.008	0.228	2.042	0.041
Quality of accounting information systems -> Financial performance	0.065	0.065	0.032	0.001	0.011	0.138	2.003	0.045

The first hypothesis: “Accounting information systems positively and directly affect financial performance.” The study proved that accounting information systems have a positive and direct impact on financial performance, and that the relationship between accounting information systems and financial performance is positive where (beta value = 0.115; T = 2.042; P = 0.041) where (T > 2, P < 0.05), Therefore, the indirect hypothesis was accepted, and it is an accepted and supported hypothesis.

The second indirect hypothesis: “The quality of accounting information systems positively and directly affects financial performance.” The study proved that the quality of accounting information systems directly and positively affects financial performance, and that the relationship between the quality of accounting information systems and financial performance is positive, where (beta value = 0.065; T = 2.003; P = 0.045) where (T > 2, P < 0.05) Thus, the second indirect hypothesis was accepted.

Table 12. Hypothesis testing

Effects	beta	Sample mean (M)	S. d	Bias	2.5%	97.5%	T	P values	Result
Accounting Information Systems -> Financial performance	0.342	0.344	0.082	-0.003	0.025	0.434	4.178	0.000	Supported
Accounting Information Systems -> Reliability of financial information	0.515	0.519	0.062	0.003	0.381	0.630	8.376	0.000	Supported
Quality of accounting information systems -> Financial performance	0.256	0.255	0.086	-0.001	0.028	0.352	2.971	0.003	Supported
Quality of accounting information systems -> Reliability of financial information	0.291	0.290	0.068	-0.001	0.156	0.423	4.248	0.000	Supported
Reliability of financial information -> Financial performance	0.223	0.229	0.101	0.006	0.012	0.407	2.211	0.027	Supported
Quality of accounting information systems -> Reliability of financial information -> Financial performance	0.065	0.065	0.032	0.001	0.011	0.138	2.003	0.045	Supported
Accounting Information Systems -> Reliability of financial information -> Financial performance	0.115	0.120	0.056	0.005	0.008	0.228	2.042	0.041	Supported

Evaluation of the structural model in Table 8 clearly shows the direct and indirect relationships between the study variables. The hypotheses supported by the study have a t-value greater than 2. Therefore, all theories have been validated and approved. The first hypothesis: “Accounting information systems positively and directly affect financial performance.” The study proved that accounting information systems have a positive and direct impact on financial performance, and that the relationship between accounting information systems and financial performance is positive, as (Beta value = 0.342; T = 4.178; P = 0.000) since (T > 2, P < 0.05), and therefore the first hypothesis was accepted, and it is an acceptable and supported hypothesis.

The second hypothesis: “Accounting information systems positively and directly affect the reliability of financial information.” The study proved that accounting information systems directly and positively affect the reliability of financial information, and that the relationship between accounting information systems and the reliability of financial information is positive, where (beta value = 0.515; T = 8.376; P = 0.000) where (T > 2, P < 0.05).), and thus the second hypothesis was accepted, which is an acceptable and supported hypothesis.

The third hypothesis: “The quality of accounting information systems positively and directly affects financial performance.” The study proved that the quality of accounting information systems positively and directly affects financial performance, and that the relationship between the quality of accounting information systems and financial performance is positive, as (Beta value = 0.256; T = 2.971; P = 0.003) since (T > 2, P < 0.05), and therefore the third hypothesis was accepted, which is an acceptable and supported hypothesis.

Fourth hypothesis: “The quality of accounting information systems positively and directly affects the reliability of financial information.” The study proved that the quality of accounting information systems positively and directly affects the reliability of financial information, and that the relationship between the quality of accounting information systems and the reliability of financial information is positive, where (beta value = 0.291; T = 4.248; P = 0.000) where (T > 2, P < 0.05), and thus the fourth hypothesis was accepted, which is an acceptable and supported hypothesis.

The fifth hypothesis: “The reliability of financial information positively and directly affects financial performance.” The study proved that the reliability of financial information positively and directly affects financial performance, and that the relationship between the reliability of financial information and financial performance is positive, where (beta value = 0.223; T = 2.211; P = 0.027) where (T > 2, P < 0.05), Therefore, the fifth hypothesis was accepted, and it is an accepted and supported hypothesis.

Sixth hypothesis: “The quality of accounting information systems positively and indirectly affects financial performance when using the reliability of financial information as an intermediary variable.” The study demonstrated that the quality of accounting information systems positively and indirectly affects financial performance when using the reliability of financial information as an intermediary variable, and that the indirect relationship between the quality of accounting information systems and financial performance is positive, as (Beta value = 0.065; T = 2.003; P = 0.045) since (T > 2, P < 0.05), and therefore the sixth hypothesis was accepted, and it is an accepted and supported hypothesis.

Seventh hypothesis: “Accounting information systems affect financial performance positively and indirectly when using the reliability of financial information as an intermediary variable.” The study demonstrated that accounting information systems positively and indirectly affect financial performance when using the reliability of financial information as an intermediary variable, and that the indirect relationship between accounting information systems and financial performance is positive, as (Beta value = 0.115; T = 2.042; P = 0.041) since (T > 2, P < 0.05), and therefore the seventh hypothesis was accepted, and it is an accepted and supported hypothesis.

The results revealed that the accounting information system had a positive and significant impact on financial performance, supporting H1. This result is consistent with [60] and the findings of [60], [114]. This result may reflect that employees working in accounting information systems, financial managers, and owners believe in the reliability of the financial information generated by the accounting information system. Hence, there is less chance of information being subject to error. In addition, they rely on the AIS system to provide timely information to make sound decisions regarding the reliability of financial information and financial reports, as these results are also consistent with the results of Hypothesis 7 of the current study.

This study aims to provide a conceptual framework that links the financial performance of Iraqi commercial banks with the elements of accounting information systems, the quality of accounting information systems, and the reliability of financial information. The framework consists of the following variables: the reliability of financial information as an intermediary variable, the financial performance of commercial banks as a dependent

variable, accounting information systems as well, and the quality of accounting information systems as independent variables. Using Smart PLS4 for statistical data analysis, all constructs were found to have composite reliabilities and Cronbach's alpha values in excess of 0.7 for each data set beyond the suggested cutoff, according to [52]. Furthermore, each fitting in the initial run resulted in loadings of less than 0.700 for each batch of data, necessitating model modification. Furthermore, 6 items were scored as having modest factor loadings (RFI2, QAIS1, QAIS2, QAIS3, PF3, PF). Moreover, AVE obtained a score of 0.483, which is lower than the threshold of 0.5 obtained by [126], who recommend that in order to obtain adequate levels of AVE and factor loadings, the above components should be removed. Moreover, the HTMT criterion also achieved an adequate level of less than 0.90 as recommended; however, the Fornell and Larcker criterion did not display any value beyond the suggested cut-off point of 0.95 as suggested by [44], [47], [127]. The study results agreed with the body of published research.

In order to ensure the reliability of the accounting information system, [128] studied the effects on financial performance of using the accounting information systems framework (availability, security, integrity treatment, confidentiality, and privacy) as an approach to internal control of financial and non-financial indicators. The results of the study confirm the hypothesis that there is a positive relationship between financial performance and the availability of accounting information systems requirements and the quality of these systems as an internal means to ensure the availability of reliable financial information. Therefore, a deeper understanding of how accounting information systems and the quality of accounting information systems affect financial performance and the quality of financial reporting should be addressed holistically rather than piecemeal. The magnitude and importance of the loading estimate indicate that the quality of accounting information systems and all their guidelines are closely related to the accuracy and reliability of financial information, as well as the prediction of financial performance [128].

In addition, the aim was to improve knowledge of how accounting information systems affect financial performance in relation to customer data privacy. The results showed that data privacy has a negative impact, leading to unfavorable outlier stock returns and harmful consumer behavior. Nonetheless, and in line with the researcher's conclusions, attempted to determine how Jordanian industrial companies in Amman’s financial performance is affected by the dependability of accounting information systems (security, confidentiality, privacy, process integrity, and readiness). The financial performance of Jordanian industrial companies listed on the Amman Stock Exchange was found to be significantly impacted by the reliability of accounting information systems in terms of security, confidentiality, privacy, process safety, and readiness, as demonstrated by the results of multiple regression analysis. Additionally, they used the DeLone and McLean Information System (IS) success model to investigate the effects of accounting information system (AIS) success or effectiveness factors—namely accounting information system quality, information quality, service quality, and training quality—on the financial performance of listed Jordanian companies. The present study's findings demonstrated a discrepancy with those of a previous investigation that found no discernible relationship between the financial performance in the setting of this research and the quality of the accounting information system.

7. Conclusions

This study used the reliability of financial information as an intermediary variable in terms of operating support to study the effects of accounting information systems and their quality on the financial performance of Iraqi commercial banks. The current investigation was motivated by the average financial performance found in previous studies. It was also found that good financial performance in Iraqi commercial banks can be explained by low levels of use of the accounting information system and high-quality accounting information systems [65]. By demonstrating the beneficial and important impact of accounting information systems, as well as the quality of these systems, in increasing the financial performance and reliability of financial information in Iraqi commercial banks, this empirical study makes a noteworthy contribution. The results of this study show the real need to support accounting information systems, improve the quality of accounting information systems, and make the most of the reliability of financial information in order to improve the financial performance of Iraqi

commercial banks. Iraqi commercial banks can reduce the risks of competitive pressures in the country's financial industry by taking these considerations into account. In addition, this study shows how the quality and capabilities of accounting information systems have a positive and significant impact on enhancing the financial performance of Iraqi commercial banks. As a result, commercial bank managers and staff responsible for accounting information systems need to explore more effective techniques to ensure the reliability of financial information when using advanced accounting information systems.

The study contributes to the body of knowledge by examining the direct and indirect benefits of accounting information systems, their quality, and the reliability of financial information in enhancing and developing the financial performance of Iraqi commercial banks. Managers and owners of Iraqi commercial banks can successfully implement accounting information systems, adding value to banks and enhancing their financial performance, if they have a comprehensive understanding of the systems and their quality and reliability of financial information. The study was distinguished from other studies of a similar nature because, so far, no other study has used accounting information systems and their quality as independent variables, and the reliability of financial information as an intermediary variable for developing and improving financial performance in Iraqi commercial banks as a variable. The study distinguishes itself from others by urging Iraqi commercial bank owners and stakeholders to better communicate the banks' growth goals to both managers and owners. Iraqi commercial banks should encourage the participation of all department employees and automate financial and commercial transactions across the various administrative divisions of commercial banks. Because Iraqi commercial banks operate in one financial market - the stock market and the country's financial market - studying and automating financial and administrative tasks between them is also important. The study also highlights the need to give the utmost importance to accounting information systems, their quality and reliability of financial information, their use and transfer through feedback and regular hosting of workshops to exchange experiences regarding the reliability of financial information, the quality of financial information and accounting systems in order to attract and enable participation from all managers and owners in the work. High quality. Enhancing the quality and standards of accounting information systems and the reliability of financial statements, as well as the financial performance of Iraqi commercial banks, would all contribute to increasing confidence and good financial performance of Iraqi commercial banks.

The limitations imposed on this study were that the study was limited to Iraqi commercial banks, which are part of the Iraqi financial market, and therefore the results of the study may not be generalized to the rest of the Iraqi banks outside the framework of the study or to Iraqi companies of various types, sizes and activities. It is also not permissible to generalize the results of the current study to commercial banks or companies in other countries surrounding Iraq or elsewhere. This study was conducted within a limited time frame from the period November 2023 to March 2024. This study examined the impact of accounting information systems and the quality of accounting information systems on financial performance using the reliability of financial information as an intermediary variable. As a result, generalizability may be limited due to differences in other geographic settings. Future researchers could investigate Iraqi companies of various types, sizes, and activities, or other governmental or mixed banks, which would add a greater understanding of the impact of accounting information systems and the quality of accounting information systems on financial performance, using the reliability of financial information as a mediating variable.

Conflict of interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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Author contribution

Abdulkarim Abdulghani Oudah: Conceptualization of the study, methodology design, data collection, analysis, and interpretation of results. He also contributed to the writing and revision of the manuscript.

Yusra Hadi Ibrahim: Contributed to the literature review, data analysis, and interpretation of findings. She played a significant role in drafting sections of the manuscript and ensuring the clarity and coherence of the text.

Abdulhasan Rahim Hamadi: Assisted in the development of the research framework and methodology. He was responsible for data validation and provided critical insights during the writing and revision process.

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Appendix. Study questionnaire

Item	accounting information systems	Reference
AIS1	Our bank is skilled in collecting and analyzing financial information through accounting information systems.	[53]
AIS2	We use accounting information systems to access market information from them.	
AIS3	Our bank has established systems to collect information from online sources.	
AIS4	Our bank uses computer-based accounting systems to analyze financial performance.	[116]
AIS5	Our bank uses accounting information systems to support financial decisions.	
AIS6	We rely on computer-based accounting systems to obtain, store, and process information	
Item	**quality of accounting information systems**	**Reference**
QAIS4	Our bank uses the quality of accounting information systems to improve financial performance.	[24]
QAIS5	In our bank, the quality of accounting information systems improves forecasting of the future performance of economic and financial units.	
Item	**Reliability of financial information**	**Reference**
RFI1	Our bank provides reliable electronic and automated accounting information that explains the preparation of financial statements.	[5]
RFI3	Our bank has illustrative financial information about the estimates contained in the financial statements.	
RFI4	Our bank depends on the reliability, accuracy and transparency of financial information for banking transactions.	[62]
RFI5	Our bank relies on reliable financial information in preparing budgets and financial plans.	
Item	**Financial performance**	**Reference**
PF1	The use of financial performance measurements enhances the savings of money for our bank.	[66]
PF2	In our bank, financial performance is an important factor in achieving the bank’s goals and profitability.	
PF3	Our bank's financial performance enhances the confidence of customers, the public and stakeholders.	[59]