QUALITY OF ACCOUNTING INFORMATION SYSTEMS IN THE CONSTRUCTION AND REAL ESTATE ENTERPRISES

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Abstract

This paper aims to analyze the influence of factors on the quality of accounting information systems (AIS) in construction and real estate enterprises listed on the Vietnamese stock market. The study uses structural equation modelling (SEM) to analyze data collected from 250 listed construction and real estate enterprises in Vietnam as of April 1, 2023. Research results show that information technology (IT), internal control, managers' support, organizational structure, and corporate culture have a positive influence on the quality of AIS. Employee training and coaching do not impact the quality of the AIS. The study also shows the positive impact of the quality of AIS on enterprise performance. These findings have important implications for enterprises, managers and investors in the construction and real estate sectors in Vietnam. Research results have given research implications and management implications for the future of listed companies in Vietnam.

Keywords: Accounting Information Systems, Construction, Enterprise Performance, Real Estate, Vietnam

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1. INTRODUCTION

An accounting information system (AIS) is a system for collecting, processing, recording and providing information that supports an organization's decision-making process (Romney et al., 2012). Gelinas et al. (2017) argue that the AIS has the function of improving efficiency and supporting management activities. The AIS must have high quality according to the qualitative characteristics of accounting information so that the stakeholders can use it and make different decisions according to the needs of each person. AIS provides information to businesses inside and outside the unit, helping organizational managers implement and evaluate other departments, especially when making business decisions. Every business has an AIS, but its quality depends on many factors such as the level of information technology (IT) application, enterprise size, the knowledge of the manager, etc. Therefore,

the quality of AIS in enterprises is affected by many different factors. Research on the quality of AIS and the factors affecting the quality of AIS in enterprises is urgent in both theory and practice.

The construction and real estate sectors play an important role in the national economy, having close relations with many other industries (Anaman & Osei-Amponsah, 2007; Han et al., 2004; Mera & Renaud, 2000; Oladinrin et al., 2012; Ren et al., 2014; Wang, 2014). Therefore, the quality of AIS and the enterprise performance of construction and real estate enterprises have always been the object of interest of researchers and policy enforcers (Bassioni et al., 2005; Krivka & Stonkutė, 2015; Tatari et al., 2008; Xiong et al., 2016)

Regarding studies on factors affecting the quality of AIS, there is a diversity of factors in both breadth and depth (Ernawatiningsih & Arizona, 2023; Handoko et al., 2023; Kepramareni et al., 2022; Yusuf, 2021). However, previous studies were limited in the scale of variables used and research methods. Some studies only focus and go into depth on a specific factor, while there are also studies that evaluate a combination of many different factors. A comprehensive study with a combination of variable groups appropriate to conditions in Vietnam is necessary.

The research conducts empirical research with the case of construction and real estate enterprises listed on the Vietnamese stock market. The study aims to identify factors that affect the quality of AIS. Besides, determine the impact of AIS quality on business performance. This article answers the following research questions about construction and real estate companies listed on the Vietnamese stock market:

RQ1: What factors affect the quality of accounting information systems?

RQ2: Does the quality of accounting information systems affect the enterprise performance?

RQ3: Does the firm size moderate the degree of influence of factors on the quality of accounting information systems, and the degree of influence of the quality of accounting information systems on the enterprise performance?

This study is divided into six main sections as follows. Section 2 is a literature review, which summarizes previous studies, identifies research gaps, and develops research hypotheses. Section 3 is a methodology, which presents the methods of sample selection, data collection and analysis. Sections 4 and 5 are results and discussion, which outline the analysis process and discuss the results. Section 6 is the conclusion, which combines the implications and limitations of the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Literature review

2.1.1. Factors affecting the quality of accounting information systems

Ismail and King (2007) studied the factors affecting the connectivity of the AIS in Malaysian medium and small manufacturing enterprises. The study used a quantitative research method with survey data from 721 enterprises. However, only 214 enterprises responded (29%). Then analyzed by method cluster to test six hypotheses. Research results showed that factors of IT, AIS alignment, external expertise, owner/manager commitment, internal expertise, and firm size positively affected the connectivity of the AIS.

Salehi's (2011) study examines barriers to implementation by proposing six hypotheses about middle management with respect to AIS, organizational structure, human resources (HR), and other factors. environment, corporate culture and financial issues in companies listed on the Tehran Stock Exchange (TSE). Results from data collection of 100 listed companies show that if barriers in HR, middle management, environmental factors, organizational structure, organizational culture and financial issues, Iranian companies do not benefit from AIS. So, in the near future, it will cause big problems.

The study of Anggadini (2015) empirically examined the influence of senior management support and internal control on the quality of AIS. To collect data, the study surveyed 47 financial institutions in Indonesia, where an AIS is applied. This study used the path analysis method. The test results showed that the support of senior management and internal control had a significant influence on the quality of AIS.

Wisna (2015) examined the influence of corporate culture on the quality of AIS. The study collected primary data from subjects who are accountants and directors of 75 Indonesian colleges. Wisna (2015) analyzed the data using linear regression analysis to test the research hypotheses. The results showed that corporate culture influences the quality of AIS. The study has proposed future research directions that can expand the scope of research in different units and locations.

In order to examine the impact relationship between IT and internal control systems on the quality of AIS, Nguyen (2016) surveyed 193 accountants, managers, and operators of information systems in enterprises in Ho Chi Minh City. The study used Cronbach's alpha coefficient, exploratory factor analysis (EFA), and linear regression analysis method to test the research hypotheses. The results show that the quality of AIS is influenced by the level of IT application in accounting as well as the effectiveness of the internal control system. The results have helped managers have a basis to build the quality AIS, ensuring the provision of quality accounting information. However, the scope of the study was limited to Ho Chi Minh City.

This article by Kuraesin (2016) aimed to determine the influence of organizational structure on the quality of AIS. The author collected a survey of people using AIS at 50 schools in Bandung. Survey subjects include the chief accountant and head of the finance department. The number of votes issued was 150, and the number of votes received was 136. Then the author used structural equation modeling (SEM) to show that the organizational structure affects the quality of the AIS.

Research by Mokodompit and Wuriasih (2017) examined the influence of user participation, employee training and coaching, and manager's support on the quality of AIS. The study used a quantitative research method. Research data was collected by interviewing 35 users of AIS at Manokwari Public Hospital. Then, the data were

analyzed by F-test, t-test, and coefficient-test to retest the hypotheses. The research results showed that user participation and employee training and coaching did not affect the quality of AIS. The manager's support had a positive relationship with the quality of AIS. The study recommended that the quality of AIS can be improved by involving users in the development of the system.

Yusuf (2021) examined the factors affecting the implementation of the AIS including user involvement, user ability, user education, top management support, internal control system, organizational structure and organizational culture. Kepramareni et al. (2022) examined the internal factors affecting AIS including information system development formalization, internal control system, organization size, and personal engineering ability. Ernawatiningsih and Arizona (2023) examined the factors that influence the use of AIS including individual skills, user involvement, internal control, and organizational culture. Individual skills, user involvement, internal control, and organizational culture have a positive effect on the use of AIS. Handoko et al. (2023) examined factors affecting AIS performance. Top management support, user participation, technical proficiency, and training improve system performance.

2.1.2. The quality of accounting information systems affects enterprise performance

Research by Ismail and King (2005) focused on measuring the relationship between the alignment of AIS and the capabilities of AIS. Then the study examined whether this AIS alignment was related to company performance. The author sent 310 questionnaires to general managers of small and medium-sized enterprises (SMEs) in Malaysia (with a response rate of 25% — considered a good response rate). Research shows that SMEs in Malaysia that have high levels of AIS alignment are more likely to perform better than those with low levels of AIS alignment. Although this study cannot infer a cause-and-effect relationship, the results suggest that AIS alignment has a positive relationship with organizational performance.

Soudani (2012) researched the usefulness of AIS for the effective performance of organizations. The results of this study showed that AIS were useful and had an impact on organizational performance for companies listed on the Dubai Financial Market (DFM). Data were collected through questionnaires from 74 companies according to companies listed on the DFM. The study showed that: first, AIS was considered the variable that has the greatest influence on financial performance. Second, financial performance and management effectiveness had an impact on organizational performance. Third, AIS were an important factor in building organizational performance through data collection, storage and processing.

Al-Ibbini (2017) used a quantitative research method. Data were collected through a survey among different companies in Jordan in May 2015 for the research process. The number of questionnaires distributed analysis was 104. Data were collected and analyzed using the statistical program Smart PLS. Research results showed that the top factors of management support, education and training, user involvement, risk management, and continuous improvement influence the quality of

accounting information. Besides, the quality of AIS also had an impact on the enterprise's performance.

To evaluate the impact of computerized AIS on the economic performance of construction companies in Iraq, the study by Al-Hashimy et al. (2022) surveyed 208 companies. The study used partial least squares SEM (PLS-SEM) to test 3 research hypotheses. The results showed that the technological context and organization of computerized AIS had a positive impact on the economic performance of construction companies. On the other hand, research indicates that the environmental context had a negative impact on the economic performance of construction companies. In addition to the strengths, the study also had certain limitations such as the research method collected from the survey will limit respondents within the range of answers presented in the survey. Additionally, this study was conducted in Iraq (a developing country in the western part of the Asian continent), so its findings may be relevant to the research context here but not to other countries.

The review of studies revealed a diversity of factors both in breadth and depth. Some studies focused and delved into a specific factor, while others evaluated many different factors. In fact, studies on the quality of AIS in enterprises were often limited in scope and research methods. Therefore, there is a need for a more comprehensive study on the influence of factors on the quality of AIS and the impact of the quality of AIS on enterprise performance.

2.2. Hypotheses development

Empirical studies showed the influence of factors including hardware and software systems on the quality of AIS (Ismail & King, 2007). Besides, the application of IT helped to improve the competitive advantage of enterprises, make it easier for users to use and improve the level of user satisfaction (Sačer & Oluić, 2013). The widespread use of IT in the AIS will give accurate reporting results, serving many financial transactions (Fitrios et al., 2022). According to experts, IT plays an important role in the AIS. When businesses have not used IT, all accounting processes are done manually. Therefore, it requires large HR and is costly. In addition, the recording between accountants can be duplicated leading to errors. The stored data is too large, leading to difficulties in checking, comparing and adjusting data. Performing accounting work on accounting software will overcome the limitations of manual accounting and improve enterprise performance.

Hardware, software, communication technology or network systems are all elements of IT. The characteristics of these components vary according to the level of IT application. The results of the review and discussion from the experts show that there is a high consensus on the positive influence of IT on the quality of AIS. So, the study proposes the first hypothesis:

H1: Information technology has a positive impact on the quality of accounting information systems.

The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2013) defined internal control as a process, exercised by management and other employees, designed to provide reasonable assurance about the achievement

of operational objectives, reporting and compliance. Internal control includes the control environment, risk assessment, control activities, information and communication, and monitoring. The internal control system helps to ensure the safety of the assets of the enterprise, reduce financial fraud and improve the ability to prevent risks (Nguyen et al., 2023). In a manual accounting system or a machine accounting system, to prevent or detect errors, it is necessary to design and operate an internal control system (Henry, 1997). Especially, in the context of the current explosive IT, the application of IT in management and accounting is increasing. This makes the accounting system more complicated. In other words, the quality of AIS depends on the existence and quality of established control procedures (Sačer & Oluić, 2013; Anggadini, 2015; Yusuf, 2021; Kepramareni et al., 2022; Ernawatiningsih & Arizona, 2023). So, the study proposes the second hypothesis:

H2: Internal control has a positive impact on the quality of accounting information systems.

An AIS is a complex system that provides integrated accounting processing within an organization. The organization needs to train and coach employees in the operation and use of the system. Training and coaching employees will help them better understand AIS. Barney and Wright (1998) pointed out the importance of HR because HR is the sustainable competitive advantage of the organization. To acquire HR with sufficient knowledge and experience, training and education are necessary. Ernawatiningsih and Arizona (2023), Handoko et al. (2023), and Nah et al. (2003) to have positive confidence in the system in use, training and coaching of employees is important. That HR, when well and fully trained, will improve the quality of AIS to achieve the organization's goals. So, the study proposes the third hypothesis:

H3: Employee training and coaching have a positive impact on the quality of accounting information systems.

Functionally, senior managers are decision-makers, policymakers, and resource allocators, and monitor and evaluate the performance of AIS. Their support and commitment will have more influence on the design and implementation of AIS (Young & Jordan, 2008). Mkonya et al. (2018) argued that the support of senior management is policymaking, resource allocation and monitoring of the implementation of the AIS. Research by Mokodompit and Wuriasih (2017), Yusuf (2021), and Handoko et al. (2023) suggested that leadership's support is the leadership's participation in planning and controlling the AIS. Leaders have an important role in the ideation, planning, and implementation of AIS in an organization. Their lack of support means that there are no financial, human and time resources to implement AIS in the organization. From the point of view of the above research, the study proposes a fourth hypothesis as follows:

H4: Manager's support has a positive impact on the quality of accounting information systems.

According to Salehi (2011), organizational structure is a connection tool between units or between departments, determining the success of the implementation of the AIS. Meanwhile, Kuraesin (2016) argued that organizational structure is a hierarchy in the distribution of information used in the development of information systems. The larger the organization, the more complex

the hierarchical structure, the AIS is built, so it affects the control of the information system. The AIS cannot function properly if it is not supported by organizational structure (Salehi, 2011; Yusuf, 2021; Handoko et al., 2023). From the point of view of the above research, the study proposes a fifth hypothesis as follows:

H5: Organizational structure has a positive impact on the quality of accounting information systems.

Due to the specific nature, characteristics of production and business activities, scale and ownership of different enterprises, the requirements for management and control between enterprises are also different. This affects the corporate culture, the selection and construction of a management model. The construction of an accounting system in an enterprise needs to change and be suitable for the respective management model of each enterprise. Research by Al-Eqab (2009) confirmed that there is a connection between corporate culture, business strategy and AIS. The empirical research by Salehi (2011) and Wisna (2015) tested the relationship between corporate culture and the quality of AIS. Research by Binh et al. (2022) and Yusuf (2021) identified organizational culture as an essential factor in improving the quality of AIS of Vietnamese enterprises. Therefore, the study proposes a sixth hypothesis as follows:

H6: Corporate culture has a positive impact on the quality of accounting information systems.

To evaluate the performance of enterprises, the study has made observations based on previous studies by Al-Ibbini (2017) and Ismail and King (2005). Four indicators measure organizational performance based on the studies by Cragg et al. (2002), Miller (1987), and Raymond et al. (1995). The above studies were seen in the context of SMEs in the study by Ernawatiningsih and Arizona (2023), Ismail and King (2005), and Yusuf (2021). The study used the following metrics: long-term profitability, sales growth, financial resources, and image/client loyalty to other countries and industry competitors. Besides, the factors affecting the quality of AIS do not have a direct relationship with the performance. However, the quality of AIS has a direct impact on enterprise performance. Through the review of studies and opinions of experts, the seventh hypothesis is proposed as follows:

H7: The quality of accounting information systems has a positive impact on enterprise performance.

In this study, enterprise size is determined based on the criterion of the number of employees (Government of Vietnam, 2018), in which enterprise size is a qualitative variable with three values: small, medium, and big. Most small businesses have relatively little funding to invest in AIS systems (Ismail & King, 2007; Sunarta & Astuti, 2023). As a result, larger companies are more likely to achieve high-quality AIS than smaller firms. Therefore, the study proposes an eighth hypothesis as follows:

H8a: The influence of information technology, internal control, employee training and coaching, manager's support, organizational structure, and corporate culture on the quality of accounting information systems is moderated by enterprise size.

H8b: The influence of the quality of accounting information systems on the enterprise performance is moderated by enterprise size.

Figure 1. Model and hypotheses
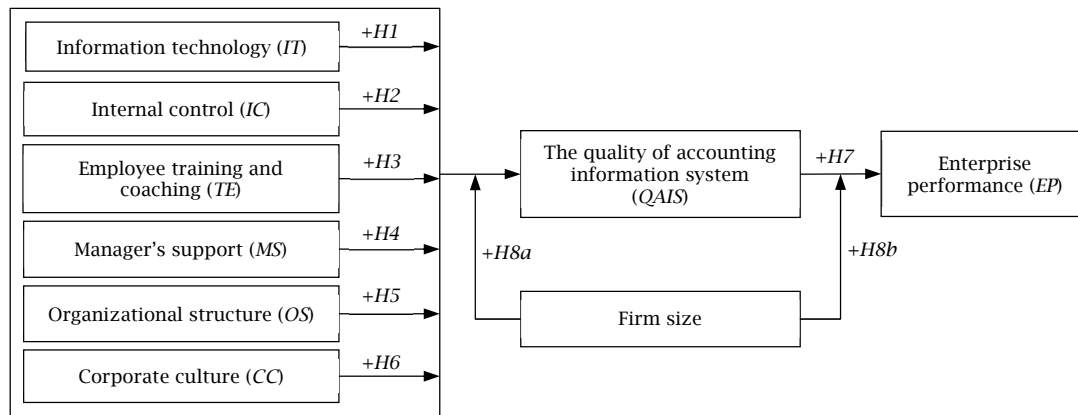
3. METHODOLOGY

The study conducts a survey to examine the influence of factors on the *QAIS* in construction and real estate enterprises listed on Vietnam's stock market. The study combined the scale in the qualitative research phase to build the survey questionnaire. Then, the study conducted data collection, and preliminary analysis, and adjusted the research scale and model before the official study. The data is analyzed by SPSS 26 and AMOS 24 software.

The total number of construction and real estate enterprises listed on Vietnam's stock market is relatively large[1]. However, it is not possible to survey all companies listed on the Vietnamese stock market due to resource and cost constraints. Therefore, sampling research is necessary (Brewerton & Millward, 2001), as the study limits the scope of research on the Hanoi Stock Exchange (HNX). Thus, the total number of remaining enterprises is 341 enterprises.

The sample size depends on many factors such as the processing techniques and the experience of the researchers. The study uses analysis tools EFA, confirmatory factor analysis (CFA), and SEM, so the sample selection needs to meet the sampling criteria. The sample size for EFA analysis was based on the following criteria: 1) minimum size, and 2) number of measurement variables included in the analysis. The sample size should be at least 50, preferably 100. The observation-to-measure ratio (N/p) is 5:1 which means that one measure needs a minimum of 5 observations, preferably 10:1 or more (Hair et al., 2017; Nguyen, 2011). According to Hair et al. (2017), the minimum sample size is 150 from 7 groups of factors or less, each group has more than 3 observed variables with commonalities value when analyzing EFA from 0.5 or more. Therefore, the study chooses the approach with a minimum sample size of 100 and the N/p ratio varying from 2:1 to 20:1 according to the observed variable, in order to reconcile the above views. A total of 44 observed variables, including 31 measuring 6 independent variables, 9 measuring 1 intermediate variable, and 4 measuring dependent variables. In the research model, the study intends to use as many questions as there are samples (Bollen, 1989). So, the minimum sample size for this study should be 44 * 5 = 220 samples. To ensure

that the number of observations collected was sufficient for analysis and representative of the whole population, the authors sent 341 questionnaires to construction and real estate enterprises listed on Vietnam's stock market. Each enterprise represents one person answering the survey.

The specific research process was carried out by direct interview technique combined with sending questionnaires by post, email or via Google Docs. The study used a non-probability convenience sampling method and a sprout development method (Nguyen, 2011). Survey subjects of the study: chief financial officer (CFO), managing director, chief accountant, accountant, internal control, internal audit. Each business represents one survey respondent.

In order to implement the survey, all items in this study are designed with a 5-point Likert-type scale (1 — completely disagree to 5 — completely agree).

After sending letters to 341 businesses, the total number of questionnaire responses was 266 (> 220), a response rate of 78%. However, out of 266 responses received, 16 were incomplete and the remaining 250 responses were valuable for analysis (accounting for 73.32% of the total). Such a response rate is sufficient for statistical analysis and inference (Baines & Langfield-Smith, 2003). Therefore, in this study, the study selected 250 observations.

The study checks the validity of the data by testing the reliability of Cronbach's alpha through the SPSS 26 software. Evaluate the scale by Cronbach's alpha coefficient to eliminate inappropriate observed variables. Inappropriate variables are eliminated if the total correlation coefficient is small (< 0.3), and the scale will be accepted when Cronbach's alpha coefficient is ≥ 0.6 (Nunnally & Burnstein, 1994). The scale has good reliability when Cronbach's alpha is ≥ 0.8. After testing the reliability of the scale was found that the *IC* factor has Cronbach's alpha coefficient reaching the largest value of 0.924; factor *TE* has the lowest Cronbach's alpha coefficient of 0.862. Cronbach's alpha coefficients of all factors are > 0.8. The scales in Table 1 achieve reliability based on the principle of evaluating the total Cronbach's alpha coefficient; the total correlation coefficient and the coefficient "Cronbach's alpha if item deleted" meet the requirements (Nguyen, 2011) showing that the variables are closely correlated with each other (Table 1). Thus, 38 variables (8 factors) ensure the requirements for analyzing the next step.

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[1] According to Enterprise Data, there are 2,376 company as of April 1, 2023.

Table 1. Cronbach's alpha analysis results

Factor	Cronbach's alpha	Number of observations
IT	0.884	5
TE	0.862	4
CC	0.909	6
IC	0.924	4
OS	0.918	5
MS	0.915	4
QAIS	0.909	6
EP	0.876	4

The results of EFA for the variables showed that Kaiser-Meyer-Olkin measure of sampling adequacy — KMO = 0.882 (satisfying the condition $0.5 < 0.882 < 1$) (Trong & Ngoc, 2008). Bartlett's test results have shown that the variables are related and that the EFA analysis is consistent with the sample data in Table 2 (p-value = $0.000 < 0.05$).

As for the total variance extracted (TVE), we see that the sum of the factors is 50% or more, so the EFA model is appropriate (Table 3).

Table 2. Exploratory factor analysis result

Test		Value
Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy		0.882
Bartlett's test of sphericity	Approx. Chi-square	6972.342
	df	703
	Sig.	0.000

Table 3. Pattern matrix

Factor	Variable	Component							
		1	2	3	4	5	6	7	8
1	CC2	0.885							
	CC4	0.838							
	CC3	0.832							
	CC6	0.825							
	CC5	0.820							
	CC1	0.736							
2	QAIS4		0.888						
	QAIS7		0.879						
	QAIS2		0.842						
	QAIS5		0.813						
	QAIS3		0.780						
	QAIS1		0.725						
3	IC2			0.898					
	IC5			0.891					
	IC4			0.869					
	IC3			0.866					
	IC1			0.834					
4	IT6				0.874				
	IT7				0.869				
	IT5				0.829				
	IT1				0.827				
	IT2				0.710				
5	MS4					0.927			
	MS1					0.902			
	MS3					0.865			
	MS2					0.833			
6	OS2						0.923		
	OS4						0.909		
	OS1						0.860		
	OS3						0.844		
7	EP4							0.943	
	EP2							0.887	
	EP1							0.775	
	EP3							0.698	
8	TE5								0.940
	TE2								0.857
	TE3								0.701
	TE4								0.655

Note: Extraction method: Principal component analysis. Rotation method: Promax with Kaiser normalization. Rotation converged in 7 iterations.

In cases where the observed indicators and sufficient sample size does not warrant the assumption, a suitable alternative method to conduct the study is the partial least squares (PLS) method. PLS analysis does not work with latent variables but works with block variables and estimates model parameters to maximize the explained variance for all endogenous constructs in the model through a series of ordinary least squares (OLS) regression.

4. RESULTS

According to Hair et al. (2017), the composite reliability index is > 0.7 (guaranteed convergence), Average variance extracted (AVE) index is > 0.5 (indicating full convergence). Thus, both indexes in Table 4 ensure the assessment threshold and convergence satisfy very strong conditions. Therefore, the variables satisfy the conditions to proceed to the next steps in Table 5 below.

Table 4. Convergence value analysis

Factor	CR	AVE	Factor	CR	AVE
EP	0.878	0.644	IT	0.885	0.606
CC	0.911	0.631	MS	0.918	0.737
QAIS	0.910	0.628	OS	0.922	0.747
IC	0.925	0.712	TE	0.863	0.611

Table 5. Discriminant validity

Factor	EP	CC	QAIS	IC	IT	MS	OS	TE
EP	**0.802**							
CC	0.389	**0.795**						
QAIS	0.391	0.466	**0.792**					
IC	0.229	0.271	0.413	**0.844**				
IT	0.338	0.338	0.367	0.308	**0.778**			
MS	-0.234	-0.047	0.004	-0.014	-0.191	**0.858**		
OS	0.590	0.284	0.442	0.388	0.277	-0.197	**0.864**	
TE	0.567	0.405	0.404	0.286	0.344	-0.456	0.570	**0.782**

In Table 5, discriminant validity is assessed in the measurement model using the criteria of Fornell and Larcker (1981). All bold values and cross-loading factors should have a higher weight than the remaining variables (Soundarapandiyan et al., 2018), the threshold value for discriminant validity. The research variables and scales in Tables 4 and 5 are all satisfactory for implementation in subsequent analyses.

From the results of evaluating the reliability of the scale through Cronbach's alpha coefficient and EFA. The authors continue to analyze confirmatory factor CFA to evaluate the appropriateness of the scale and collected data.

The scale components are further evaluated through the critical model, which has 632 degrees of freedom and is consistent with market data (Chi-square/df = 1.733 < 2; comparative fit index — CFI = 0.930 > 0.9; Tucker-Lewis index — TLI = 0.923 and root mean square error of approximation — RMSEA = 0.054 < 0.08, see Figure 2) (Steiger, 1990). In addition, there is no correlation between the measurement errors, so the observed variables are one-way observed variables. This means that an observed variable is only used to measure a single latent variable (research concept).

Observed variables are guaranteed to be reliable, ensure convergence and discrimination in value, and are eligible for inclusion in CFA and SEM analysis.

Figure 2. Results of model fit assessment through confirmatory factor analysis
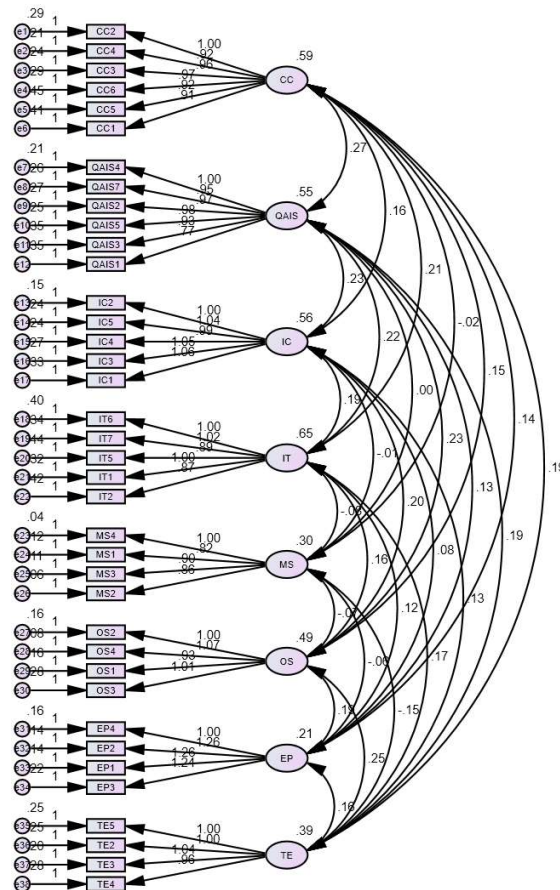
Note: Chi-square/df = 1.733, Goodness of fix index (GFI) = 0.819, CFI = 0.930, TLI = 0.932, RMSEA = 0.054, PCLOSE = 0.096.

Figure 3 shows a linear structure model of SEM shows that the indicators are suitable for market data (Chi-square/df = 1.847, CFI = 0.918, RMSEA = 0.058).

Figure 3. Structural equation model theoretical analysis results
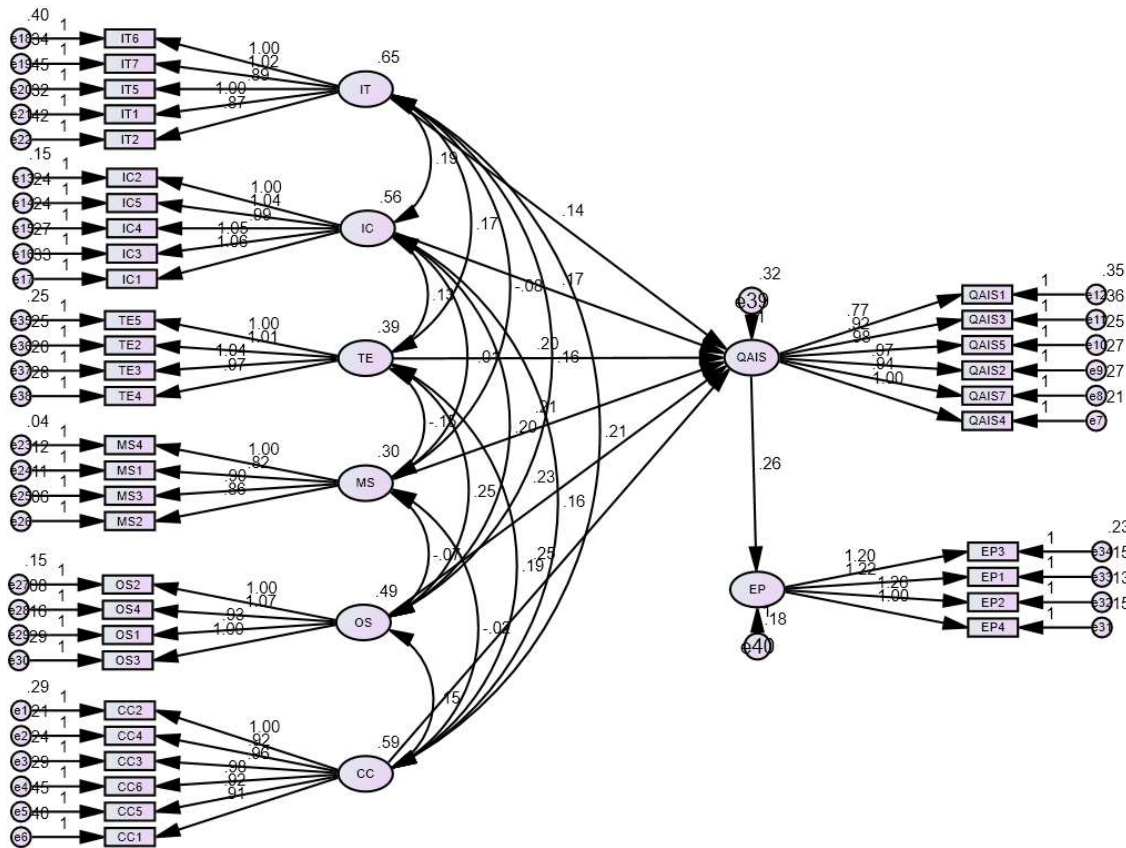
Note: Chi-square/df = 1.847, GFI = 0.810, CFI = 0.918, TLI = 0.911, RMSEA = 0.058, PCLOSE = 0.005.

Table 6 shows the strongest effect of *QAIS* on *EP* (0.262). The impact of *IT* on *QAIS* is the weakest (0.137). However, factor *TE* did not affect *QAIS* (p = 0.07 > 0.05).

Table 6. Model test results

Hypothesis	Estimate	Std. error	CR	P
QAIS ← IT	0.137	0.060	2.290	0.022
QAIS ← IC	0.170	0.063	2.707	0.007
QAIS ← TE	0.196	0.108	1.812	0.070
QAIS ← MS	0.211	0.090	2.336	0.020
QAIS ← OS	0.229	0.079	2.909	0.004
QAIS ← CC	0.248	0.065	3.818	***
EP ← QAIS	0.262	0.044	5.924	***

*Note: CR — Covariance ratio, *** p < 0.05.*

The results of parameter estimation in Figure 3 and Table 6 show that the relationships are statistically significant. Specifically, accept hypotheses *H1, H2, H4, H5, H6,* and *H7* because the relationship between variables has a positive impact ($p < 0.05$ and regression weights in order is $\beta = 0.137$; 0.170; 0.211; 0.229; 0.248; 0.262). In addition, the study rejects hypothesis *H3* because the relationship between variables has the opposite effect ($p > 0.05$ and the regression weight is $\beta = 0.196$).

The effect of the moderator variable occurs when the third variable changes the relationship between two related latent variables. Multigroup analysis was performed to evaluate the invariance of the measurement and through the structural groups (Hair et al., 2017). In this study, multi-group analysis uses the test of the effect of the moderator variable *firm size.*

Firm size can be measured by total revenue, total assets, or number of employees. The use of financial measures can be difficult between companies because each company will use a different AIS (Chenhall, 2003). On the other hand, the study of Kaluarachchi (2016) measures *firm size* based on number of employees. Therefore, the research chooses the size of the enterprise measured by the number of employees. The sample in this study is divided into 2 groups: medium enterprises (with the number of employees from 100 to less than 200 people) have 175 enterprises, and large enterprises (over 200 people) have 75 enterprises.

H9₀: There is no difference between immutable and mutable models.

H9: There is a difference between immutable and mutable models.

The enterprise scale model shows that Chi-square = 2,448.397, df = 1.286. The invariant enterprise scale model shows that the Chi-square = 2,471.702, df = 1.293 (see Table 7). Thus, there is a Chi-square difference between the variable model and the invariant model. Both the variable and partial invariant models of the two groups of *firm sizes* are consistent with market trends. The results of testing the difference between the variable and partial invariant models by *firm size* show that the difference between the two models is statistically significant. The p-value is 0.0015 < 0.05 (95% confidence level), rejecting the hypothesis $H9_0$.

The study chose the variable model because of its higher compatibility (Tho & Trang, 2008).

Table 7. Difference between immutable and mutable models

	Chi-square	*df*
Immutable	2,471.702	1.293
Mutable	2,448.397	1.286
Divergent	23.305	7
p-value	0.00150811	

Thus, the hypotheses *H8a* and *H8b* are accepted. There is a difference in the degree of influence of factors on the *QAIS* and the degree of influence of the *QAIS* on the *EP* between medium and large enterprises. However, this difference is not significant.

Table 8. The difference between large and medium enterprises

Factor	Large enterprises		Medium enterprises	
	Standardized regression weights	*p-value*	*Standardized regression weights*	*p-value*
QAIS ← IT	0.047	0.631	0.189	0.012
QAIS ← IC	-0.009	0.927	0.325	0.118
QAIS ← TE	0.268	0.041	0.115	0.035
QAIS ← MS	-0.131	0.211	0.212	0.006
QAIS ← OS	0.354	***	0.235	***
QAIS ← CC	0.259	0.013	0.208	0.007
EP ← QAIS	0.827	***	0.795	***
Squared multiple correlation R² (*QAIS*)	0.571		0.553	
Squared multiple correlation R² (*EP*)	0.685		0.632	

*Note: *** p < 0.05.*

For large enterprises (see Table 8), the level of impact between variables *IT, TE*, and *MS* on *QAIS* is not significant (variables with p-values are 0.631; 0.927; 0.211 > 0.05, respectively). However, for medium-sized enterprises, the level of impact between the variable *IC* and *QAIS* is not significant (p-value > 0.05), the remaining variables are all significant. In addition, the impact of *QAIS* on the *EP* of both large and medium enterprises is significant. For large enterprises, the impact level of *QAIS* and *QAIS* factors on *EP* (0.571 and 0.685, respectively) has a higher impact on medium enterprises (0.553 and 0.632 respectively).

5. DISCUSSION

Results of *H1* in the study: *IT* has a positive meaning and affects the *QAIS*. This result is consistent with previous studies by Fitrios et al. (2022), Ismail and King (2007), Nguyen (2016), and Sačer and Oluić (2013). This shows that construction and real estate enterprises have stable accounting software and network systems. Accounting software meets user needs and can control and manage the timely response to information systems of enterprises. The network system has been set up to suit the needs of construction and real estate enterprises. Today, the development of computer networks, the internet, wireless networks and personal digitization devices has changed the way enterprises conduct business. Accounting software packages have improved traditional business operations and processes. Electronic storage devices are set up more tightly, safely and securely, contributing to improving accuracy in data processing and limiting errors.

The results of *H2* in the study: *IC* have a positive meaning and affects the *QAIS*. This result

is consistent with previous studies by Anggadini (2015), Dobija and Kravchenko (2017), Ernawatiningsih and Arizona (2023), Kepramareni et al. (2022), Nguyen (2016), Nguyen et al. (2023), Yusuf (2021). Thus, the more effective the *IC* system, the more it contributes to improving *QAIS*. An effective *IC* system has a positive impact on the unit's operating efficiency. Besides, it creates conditions to help ensure *QAIS* through control procedures, or monitoring of *IC* for the unit's AIS.

Based on the results of model testing, *H3* in the study is rejected. That means *ET* and coaching do not affect *QAIS*. The results are consistent with the study results by Ernawatiningsih and Arizona (2023), Handoko et al. (2023), and Mokodompit and Wuriasih (2017). In fact, construction and real estate enterprises listed on the stock exchange are not applying quite a few training programs for corporate employees on how to use the system. When new employees are recruited to the company, they have not been trained in skills to use the system, so the quality of the system cannot be improved. This training needs to be organized periodically on a monthly, quarterly or yearly basis through programs and training courses by external organizations. It is these activities that will provide employees with comprehensive knowledge to use AIS.

H4 shows that *MS* has a positive meaning and affects AIS quality. This result is consistent with previous studies by Anggadini (2015), Handoko et al. (2023), Mokodompit and Wuriasih (2017), and Yusuf (2021). The *QAIS* in enterprise will receive special attention from senior management and they have high expectations that the use of AIS will bring good results. Senior management uses its expertise to check the quality of a system. At the same time, they will make plans for the future to develop quality systems by being willing to invest in related

software technology. Select and use accountants according to their qualifications. Be willing to fire employees who do not contribute to the business.

The *OS* factor has a positive impact on *QAIS* in construction and real estate enterprises listed on the Vietnamese stock market. The analysis results accept hypothesis *H5*. This result is consistent with previous studies such as Binh et al. (2022), Kuraesin (2016), Salehi (2011), and Yusuf (2021). The *OS* highlights the relationships of responsibility and control, and the integration of member actions within the unit's system. An *OS* with a clear division of functions and tasks will contribute to increasing performance, achieving the desired goals of AIS, and providing quality accounting information to the unit. In addition, the *OS* related to the interaction between departments in the organization, especially the accounting department, can affect the *QAIS*.

The biggest obstacle for the construction and real estate industries when entering the 4.0 technology revolution is having to change 40% of *CC*. The next obstacle is the lack of connection between departments, solidarity or sharing among members of the enterprise, and the relationship between the business owner or management board and employees. The specific characteristics of Vietnamese business culture are that there are still many family companies, so the value of culture is even more necessary. Any business that wants to develop and upgrade needs to promote cultural values because culture is a source of inspiration and motivation in controlling human behaviour in the formation of *CC*. According to research results, *CC* has a positive meaning and affects the *QAIS*. Therefore, hypothesis *H6* is accepted. This result is consistent with previous studies by Ernawatiningsih and Arizona (2023), Salehi (2011), Wisna (2015), and Yusuf (2021). This shows that when *CC* changes, the *QAIS* will be improved. On that basis, construction and real estate enterprises listed on the stock market are stepping up to upgrade their business rankings by using symbols such as logos, brands, costumes, and rituals, traditions in communication.

Research results show that the factors have increased the *EP* of construction and real estate enterprises through the indirect relationship of the *QAIS* or have an influence on *EP*. Linear structural model analysis shows that the interaction between factors affecting the *QAIS* has improved *EP*. Therefore, hypothesis *H7* is accepted. This result is consistent with the results by Al-Ibbini (2017), Ismail and King (2005), and Sunarta and Astuti (2023). Reality shows that the higher the *QAIS*, the higher the *EP*. In the research, the authors have not found a direct relationship between factors affecting *EP*, but there are a few studies that have indirect positive impacts on *EP* through the AIS.

In addition, the study also considers the impact of the moderating variable *firm size*. It can be seen that there is a difference between medium and large-scale construction and real estate businesses in Vietnam, but that difference is not significant. Research results have shown that the correlation between variables is different between two business sizes. It can be seen that large-scale enterprises in Vietnam have AIS according to the correct process, so there is a difference with medium-sized enterprises. The results show that *firm size* influences the structure tested in the previous hypothesis. Therefore, hypotheses *H8a* and *H8b* are accepted. This result is consistent with the research of Ismail and King (2007).

6. CONCLUSION

The study used a combination of qualitative and quantitative research methods. The research used survey methods, sent questionnaires and analyzed the content of in-depth interviews with experts at enterprises. The results of this study confirm that there is a significant impact of factors on the quality of AIS in construction and real estate enterprises listed on Vietnam's stock market in recent years. The factors of IT, internal control, manager's support, organizational structure, and corporate culture are decisive to the quality of the AIS. Employee training and coaching do not impact the quality of AIS. The quality of AIS has a positive effect on an enterprise's performance. This result is especially important for businesses looking to compete in a globalized environment.

Based on the obtained results, there are some policy implications. The government creates a favourable regulatory environment to respond to market fluctuations. On the other hand, the Ministry of Finance promulgates accounting standards and regimes in line with international practices and reality in Vietnam. The Vietnam Association of Accountants and Auditors (VAA) continues to gather and unite organizations and individuals operating in the field of accounting and auditing. Purpose to improve professional quality, maintain professional quality and ethics.

Construction and real estate enterprises need to perfect their organizational structure; design and operate a robust internal control system and invest in IT equipment. In addition, it is necessary to build and improve corporate culture. To do this, senior managers need to care about supporting the entire development process of AIS.

However, the study still has some limitations. Collecting data tables through survey questionnaires, the authors chose a non-probability convenience sample. Although the experimental results in the study show that the effectiveness of the method is insignificant. On the other hand, data is collected at a point in time, not the whole process. Therefore, the study does not take into account the time-lagged effects of changes in organizational factors on the operating system because these factors do not directly affect the performance of enterprises. Further studies may add other sampling methods.

Survey subjects in the research of the authors' group are accountants who are direct users of AIS and managers are participants in using AIS. The purpose of the research is to understand the direct usage behaviour of those employees. However, for the accounting information system, there are many different objects and the users of AIS can be direct or indirect people. At the same time, the future trend of AIS will be an integrated system, linked with all other information systems in the entire enterprise, so the system users will be more diverse. Future research direction should classify objects and conduct more surveys of target groups using information systems to evaluate and compare the differences in AIS in enterprises.

These limitations suggest directions for future research. Further studies may consider expanding the scope of the study of space and time.

REFERENCES

1. Al-Eqab, M. M. A. (2009). *The relationship between contingency factors and accounting information system, and its subsequent impact on information technology benefits: A survey on Jordanian listed companies* [Doctoral dissertation, Universiti Utara Malaysia]. https://etd.uum.edu.my/1681/1/Mahmoud_Mohmad_Ahmad_Al-Eqab.pdf
2. Al-Hashimy, H. N. H., Said, I., Yusof, N. A., & Ismail, R. (2022). Evaluating the Impact of computerized accounting information system on the economic performance of construction companies in Iraq. *Informatica, 46*(7), 13–24. https://doi.org/10.31449/inf.v46i7.3920
3. Al-Ibbini, O. M. (2017). The critical success factors influencing the quality of accounting information systems and the expected performance. *International Journal of Economics and Finance, 9*(12), 162–167. https://doi.org/10.5539/ijef.v9n12p162
4. Anaman, K. A., & Osei-Amponsah, C. (2007). Analysis of the causality links between the growth of the construction industry and the growth of the macro-economy in Ghana. *Construction Management and Economics, 25*(9), 951–961. https://doi.org/10.1080/01446190701411208
5. Anggadini, S. D. (2015). The effect of top management support and internal control of the accounting information systems quality and its implications on the accounting information quality. *Information Management and Business Review, 7*(3), 93–102. https://doi.org/10.22610/imbr.v7i3.1157
6. Baines, A., & Langfield-Smith, K. (2003). Antecedents to management accounting change: A structural equation approach. *Accounting, Organizations and Society, 28*(7–8), 675–698. https://doi.org/10.1016/S0361-3682(02)00102-2
7. Barney, J. B., & Wright, P. M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management, 37*(1), 31–46. https://doi.org/10.1002/(SICI)1099-050X(199821)37:1<31::AID-HRM4>3.0.CO;2-W
8. Bassioni, H. A., Price, A. D. F., & Hassan, T. M. (2005). Building a conceptual framework for measuring business performance in construction: An empirical evaluation. *Construction Management and Economics, 23*(5), 495–507. https://doi.org/10.1080/0144619042000301401
9. Binh, V. T. T., Tran, N.-M., & Vu, M.-C. (2022). The effect of organizational culture on the quality of accounting information systems: Evidence from Vietnam. *SAGE Open, 12*(3). https://doi.org/10.1177/21582440221121599
10. Bollen, K. A. (1989). *Structural equations with latent variable.* Wiley.
11. Brewerton, P., & Millward, L. (2001). *Organizational research methods: A guide for students and researchers.* SAGE Publications.
12. Chenhall, R. H. (2003). Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society, 28*(2–3), 127–168. https://doi.org/10.1016/S0361-3682(01)00027-7
13. Committee of Sponsoring Organizations of the Treadway Commission (COSO). (2013). *Internal control — Integrated framework. Executive summary.* https://www.coso.org/_files/ugd/3059fc_1df7d5dd38074006bce8fdf621a942cf.pdf
14. Cragg, P., King, M., & Hussin, H. (2002). IT alignment and firm performance in small manufacturing firms. *The Journal of Strategic Information Systems, 11*(2), 109–132. https://doi.org/10.1016/S0963-8687(02)00007-0
15. Dobija, D., & Kravchenko, G. (2017). Supervisory board composition and firm financial performance: A case of companies listed on the Warsaw Stock Exchange. *Central European Management Journal, 25*(4), 75–95. https://doi.org/10.7206/jmba.ce.2450-7814.208
16. Ernawatiningsih, N. P. L., & Arizona, I. P. E. (2023). Factors that influence the use of accounting information systems. *International Journal of Accounting Finance in Asia Pasific, 6*(2), 1–13. https://doi.org/10.32535/ijafap.v6i2.1540
17. Fitrios, R., Nur, D. E., & Zakya, I. (2022). How information technology and user competence affect the quality of accounting information through the quality of AIS. *Quality — Access to Success, 23*(187), 109–118. https://doi.org/10.47750/QAS/23.187.13
18. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.1177/002224378101800104
19. Gelinas, U. J., Dull, R. B., Wheeler, P., & Hill, M. C. (2017). *Accounting information systems.* Cengage learning.
20. Government of Vietnam. (2018). *Nghị định số 39/2018/NĐ-CP của Chính phủ: Quy định chi tiết một số điều của Luật Hỗ trợ doanh nghiệp nhỏ và vừa* [Decree No. 39/2018/ND-CP: Detailing a number of articles of the law on supporting small and medium enterprises]. https://vanban.chinhphu.vn/default.aspx?pageid=27160&docid=193166
21. Hair, J. F., Jr., Matthews, L. M., Mathews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis, 1*(2), 107–123. https://doi.org/10.1504/IJMDA.2017.087624
22. Han, S.-Y., Yoo, S.-H., & Kwak, S.-J. (2004). The role of the four electric power sectors in the Korean national economy: An input–output analysis. *Energy Policy, 32*(13), 1531–1543. https://doi.org/10.1016/S0301-4215(03)00125-3
23. Handoko, B. L., Thomas, G. N., & Indriati, L. (2023). Analysis of factors affecting accounting information system performance on banking company. In *Proceedings of the 2023 6th International Conference on Computers in Management and Business* (pp. 58–64). Association for Computing Machinery. https://doi.org/10.1145/3584816.3584825
24. Henry, L. (1997). A study of the nature and security of accounting information systems: The case of Hampton Roads, Virginia. *Mid-Atlantic Journal of Business, 33*(3). https://go.gale.com/ps/i.do?p=AONE&u=googlescholar&id=GALE|A20901848&v=2.1&it=r&sid=AONE&asid=38056c00
25. Ismail, N. A., & King, M. (2005). Firm performance and AIS alignment in Malaysian SMEs. *International Journal of Accounting Information Systems, 6*(4), 241–259. https://doi.org/10.1016/j.accinf.2005.09.001
26. Ismail, N. A., & King, M. (2007). Factors influencing the alignment of accounting information systems in small and medium sized Malaysian manufacturing firms. *Journal of Information Systems and Small Business, 1*(1–2), 1–20. https://ojs.deakin.edu.au/index.php/jissb/article/view/1

27. Kaluarachchi, D. G. P. (2016, December 8). *Adoption of accounting information system practices by entrepreneurs in Sri Lanka (with special reference to Polonnaruwa District)* [Paper presentation]. 13th International Conference on Business Management (ICBM 2016), Colombo, Sri Lanka. http://doi.org/10.2139/ssrn.2906180

28. Kepramareni, P., Pradnyawati, S. O., & Savitri, N. P. S. (2022). Internal factors affecting the performance of accounting information systems at the People's Credit Bank (study in Abiansemal Bali). *Journal of International Conference Proceedings, 5*(1), 415–426. https://doi.org/10.32535/jicp.v5i1.1490

29. Krivka, A., & Stonkutė, E. (2015). Complex analysis of financial state and performance of construction enterprises. *Business, Management and Economics Engineering, 13*(2), 220–233. https://doi.org/10.3846/bme.2015.300

30. Kuraesin, A. D. (2016). Influence organizational structure on the quality of accounting information systems. *Research Journal of Finance and Accounting, 7*(2), 225–234. https://core.ac.uk/download/pdf/234631252.pdf

31. Mera, K., & Renaud, B. (2000). *Asia's financial crisis and the role of real estate.* Routledge. https://doi.org/10.4324/9781315500010

32. Miller, D. (1987). Strategy making and structure: Analysis and implications for performance. *The Academy of Management Journal, 30*(1), 7–32. https://www.jstor.org/stable/255893

33. Mkonya, V. L., Jintian, Y., Nanthuru, S. B., & Jinyevu, S. A. (2018). Analysis of top management support and individual factors influence on accounting information system and its impact on the accounting information quality for projects. *International Journal of Management Science and Business Administration, 4*(3), 19–29. http://doi.org/10.18775/ijmsba.1849-5664-5419.2014.43.1003

34. Mokodompit, M. P., & Wuriasih, A. (2017). The quality of accounting information system: A case of Regional Public Hospital Manokwari. *Jurnal Ekonomi Dan Bisnis, 20*(2), 275–290. https://doi.org/10.24914/jeb.v20i2.696

35. Nah, F. F.-H., Zuckweiler, K. M., & Lau, J. L.-S. (2003). ERP implementation: Chief information officers' perceptions of critical success factors. *International journal of Human–Computer Interaction, 16*(1), 5–22. https://doi.org/10.1207/S15327590IJHC1601_2

36. Nguyen, B. H. (2016). Impact of effective internal control system and information technology on the quality of accounting information system of enterprises in Ho Chi Minh city. *VNUHCM Journal of Science and Technology Development, 19*(4), 5–20. https://doi.org/10.32508/stdj.v19i4.768

37. Nguyen, D. T. (2011). *Phương pháp nghiên cứu khoa học trong kinh doanh: Thiết kế và thực hiện* [Research methodology in business]. Labor Publishing House. http://thuvienso.bvu.edu.vn/handle/TVDHBRVT/16010

38. Nguyen, T. N. L., Vu, T. K. A., & Bui, T. N. (2023). Impact of internal control on the quality of accounting information at enterprises listed on the stock market in Vietnam. *International Journal of Professional Business Review, 8*(5), Article e01010. https://doi.org/10.26668/businessreview/2023.v8i5.1010

39. Nunnally, J., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

40. Oladinrin, T. O., Ogunsemi, D. R., & Aje, I. O. (2012). Role of construction sector in economic growth: Empirical evidence from Nigeria. *FUTY Journal of the Environment, 7*(1), 50–60. https://doi.org/10.4314/fje.v7i1.4

41. Raymond, L., Pare, G., & Bergeron, F. (1995). Matching information technology and organizational structure: An empirical study with implications for performance. *European Journal of Information Systems, 4*(1), 3–16. https://doi.org/10.1057/ejis.1995.2

42. Ren, H., Folmer, H., & Van der Vlist, A. J. (2014). What role does the real estate–construction sector play in China's regional economy? *The Annals of Regional Science, 52*, 839–857. https://doi.org/10.1007/s00168-014-0613-5

43. Romney, M., Steinbart, P. J., Mula, J. M., McNamara, R., & Tonkin, T. (2012). *Accounting information systems.* Pearson Australia.

44. Sačer, M. I., & Oluić, A. (2013). Information technology and accounting information systems' quality in Croatian middle and large companies. *Journal of Information and Organizational Sciences, 37*(2), 117–126. https://www.researchgate.net/publication/288694428_Information_Technology_and_Accounting_Information_Systems'_Quality_in_Croatian_Middle_and_Large_Companies

45. Salehi, M. (2011). A study of the barriers of implementation of accounting information system: Case of listed companies in Tehran Stock Exchange. *Journal of Economics and Behavioral Studies, 2*(2), 76–85. https://doi.org/10.22610/jebs.v2i2.224

46. Soudani, S. N. (2012). The usefulness of an accounting information system for effective organizational performance. *International Journal of Economics and Finance, 4*(5), 136–145. https://doi.org/10.5539/ijef.v4n5p136

47. Soundarapandiyan, K., Kumar, T. P., & Priyadarshini, M. K. (2018). Effects of workplace fun on employee behaviors: An empirical study. *International Journal of Mechanical and Production Engineering Research and Development, 8*(Special issue 3), 1040–1050. https://www.researchgate.net/profile/Praveen-Kumar-40/publication/331928113_Effects_of_workplace_fun_on_employee_behaviors_An_emprical_study/links/5c9350d6299bf111693bec9c/Effects-of-workplace-fun-on-employee-behaviors-An-emprical-study.pdf

48. Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*(2), 173–180. https://doi.org/10.1207/s15327906mbr2502_4

49. Sunarta, I. N., & Astuti, P. D. (2023). Accounting information system quality and organizational performance: The mediating role of accounting information quality. *International Journal of Professional Business Review, 8*(3), Article e01192. https://doi.org/10.26668/businessreview/2023.v8i3.1192

50. Tatari, O., Castro-Lacouture, D., & Skibniewski, M. J. (2008). Performance evaluation of construction enterprise resource planning systems. *Journal of Management in Engineering, 24*(4), 198–206. https://doi.org/10.1061/(ASCE)0742-597X(2008)24:4(198)

51. Tho, N. D., & Trang, N. T. M. (2008). *Nghiên Cứu Khoa Học Marketing – Ứng Dụng Mô Hình Cấu Trúc Tuyến Tính SEM* [Scientific research on marketing: Applying linear structural models SEM]. Ho Chi Minh City National University Publishing House.

52. Trong, H., & Ngoc, C. N. M. (2008). *Analyze research data with SPSS.* Hong Duc Publishing House.

53. Wang, N. (2014). The role of the construction industry in China's sustainable urban development. *Habitat International, 44*, 442–450. https://doi.org/10.1016/j.habitatint.2014.09.008

54. Wisna, N. (2015). Organizational culture and its impact on the quality of accounting information systems. *Journal of Theoretical and Applied Information Technology, 82*(2), 266–272. https://www.jatit.org/volumes/Vol82No2/9Vol82No2.pdf

55. Xiong, B., Lu, W., Skitmore, M., Chau, K. W., & Ye, M. (2016). Virtuous nexus between corporate social performance and financial performance: A study of construction enterprises in China. *Journal of Cleaner Production, 129*, 223–233. https://doi.org/10.1016/j.jclepro.2016.04.078

56. Young, R., & Jordan, E. (2008). Top management support: Mantra or necessity? *International Journal of Project Management, 26*(7), 713–725. https://doi.org/10.1016/j.ijproman.2008.06.001

57. Yusuf, M. (2021). Factors affecting the performance of the accounting information system. *Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi, 5*(2), 278–290. https://www.neliti.com/publications/424588/factors-affecting-the-performance-of-the-accounting-information-system