FACTORS AFFECTING THE QUALITY OF MANAGEMENT ACCOUNTING INFORMATION SYSTEMS IN COMMERCIAL ENTERPRISES IN THAI NGUYEN PROVINCE

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Abstract: ***This study aims to identify and measure the factors affecting the quality of Management Accounting Information Systems (MAIS) in commercial enterprises in Thai Nguyen province. Data were collected from 407 enterprises through a survey. The research results indicate that seven factors have a positive and statistically significant impact on the quality of MAIS. Among them, system integration, digital technology, and the qualifications of accounting staff are the most influential factors. This study contributes to the existing literature by providing empirical evidence on the determinants of MAIS quality in commercial enterprises, while also offering a scientific basis for proposing managerial implications to enhance system effectiveness in the future.***

• Keywords: *management accounting information system; quality; commercial enterprises; digital technology; Thai Nguyen.*

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1. Introduction

In the context of globalization and rapid digital transformation, enterprises are increasingly facing intense competitive pressure and the need for timely and accurate decision-making. In such an environment, Management Accounting Information Systems (MAIS) have become an essential tool for collecting, processing, and providing information to support managerial and operational activities. The quality of MAIS directly affects decision-making effectiveness, thereby influencing firms' competitiveness and sustainable development.

In Vietnam, particularly in commercial enterprises, the application of MAIS remains limited. Many firms, especially small and medium-sized enterprises, still primarily focus on financial accounting and have not fully exploited the role of management accounting. In addition, the lack of synchronized technological development, the quality of accounting human resources, as well as limitations in processes and data, have hindered the effective operation of these systems. In practice, commercial enterprises in Thai Nguyen province are in the process of transformation and adaptation to the new business environment. However, the quality of MAIS has not yet met the requirements of modern management. Therefore, examining the factors affecting the quality of MAIS is necessary to identify key determinants and propose appropriate solutions. Based on this context, this study aims to analyze and evaluate the impact of various factors on the quality of MAIS in commercial enterprises in Thai Nguyen province, thereby providing a scientific basis for improving the system and enhancing managerial effectiveness within enterprises.

2. Literature Review

In recent years, factors affecting the quality of Accounting Information Systems (AIS) and MAIS have attracted significant attention from scholars. This interest stems from the increasingly important role of accounting information in supporting decision-making, especially in the context of digital transformation.

Early international studies focused on measuring system quality through user satisfaction and the effectiveness of information provision. Ives, Olson, and Baroudi (1983) emphasized user satisfaction, while Raymond (1990) and Gatian (1994) highlighted the role of information systems in improving organizational performance. Later studies expanded to incorporate technological, organizational, and human factors, such as Nicolaou (2000), Rom and Rohde (2007), Salehi et al. (2010), and Grande et al. (2011). Notably, the model developed by DeLone and McLean (2016) is

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considered a foundational framework for evaluating information system quality.

In Vietnam, empirical studies have also identified various factors influencing AIS quality. Nguyen Thi Duc Hieu (2021) found that managerial involvement, organizational structure, accounting staff, and information technology all have positive impacts, with managerial involvement being the most significant. Nguyen Van Hai et al. (2024) identified factors such as managerial knowledge, employee competence, user participation, and organizational culture as key determinants of system quality. Meanwhile, Duong Thi Luyen (2024), in the context of digital transformation, emphasized the importance of human resource capability, technological infrastructure, process automation, and internal control.

However, most domestic studies focus on AIS in general, without in-depth analysis of MAIS and its role in supporting internal managerial decision-making. Moreover, there is a lack of integrated models that simultaneously examine multiple factors within a unified theoretical framework, particularly in the context of commercial enterprises. Therefore, this study builds upon previous research and develops an appropriate model to analyze the factors affecting MAIS quality in commercial enterprises in Thai Nguyen province.

3. Quality of Management Accounting Information Systems in Enterprises

The quality of Management Accounting Information Systems (MAIS) is a critical aspect that reflects the extent to which the system meets the information needs of decision-makers, thereby directly affecting operational efficiency and firms' competitiveness. The perceived usefulness of the information generated by the system is a key determinant of this quality (Sajady et al., 2008).

In the literature, the concept of MAIS quality has been approached from different perspectives. DeLone and McLean (2016) associate quality with the overall success of information systems, while Stair and Reynolds (2018) emphasize user satisfaction. More recent studies, such as Prasetianingrum and Sonjaya (2024), argue that system quality is reflected in the level of integration among components, including technology, human resources, data, and processes.

Overall, these perspectives indicate that MAIS quality is a multidimensional concept, evaluated based on system effectiveness, the degree of integration among components, and the ability to meet users' information needs, thereby supporting accurate and timely managerial decision-making.

4. Research Model and Hypotheses

4.1. Proposed Research Model

Based on the theoretical foundation and prior studies, the quality of Management Accounting Information Systems (MAIS) is identified as the dependent variable, reflecting the extent to which the system meets managerial information requirements within enterprises. The influencing factors are categorized into three main groups: (i) human factors, (ii) technological factors, and (iii) organizational factors.

Specifically, the proposed research model includes seven independent variables: (1) managerial involvement, (2) accounting staff qualifications, (3) digital technology, (4) system interaction, (5) data quality, (6) procedures and guidelines, and (7) accounting software. These variables are expected to have a direct and positive impact on the quality of MAIS.

The relationships among variables are expressed through the following multiple linear regression model:

$$QLHT = \beta_0 + \beta_1 NQL + \beta_2 TDNV + \beta_3 CNS + \beta_4 STT + \beta_5 CLDL + \beta_6 TTQT + \beta_7 PMKT + \varepsilon$$

Where:

QLHT: Quality of MAIS

β_0: Intercept

β_i: Regression coefficients of independent variables

ε: Error term

4.2. Research Hypotheses

Based on theoretical arguments and prior empirical studies, the following hypotheses are proposed:

H1: Managerial involvement positively affects the quality of MAIS.

H2: Accounting staff qualifications positively affect the quality of MAIS.

H3: Digital technology positively affects the quality of MAIS.

H4: System interaction positively affects the quality of MAIS.

H5: Data quality positively affects the quality of MAIS.

H6: Procedures and guidelines positively affect the quality of MAIS.

H7: Accounting software positively affects the quality of MAIS.

5. Sampling Method

According to Nguyen Dinh Tho (2014), the minimum sample size required for a study should be determined based on the number of questionnaire items, typically estimated at five times the total number of questions. Accordingly, with 33 measurement items in the survey, the minimum sample size is 165 observations. However, considering the broad geographical scope of Thai Nguyen province and to ensure objectivity as well as the author's survey capacity, a total of 450 observations were selected. The data collection period was conducted from October 2024 to April 2025. A total of 450 questionnaires were collected. After data screening, 43 responses were excluded due to incomplete answers or selecting a single response option throughout. As a result, the final sample size used for analysis was 407 valid observations, which still satisfies the minimum sample requirement.

6. Research Results

6.1. Regression Model Estimation Results

To determine the magnitude and direction of the effects of factors identified from the EFA analysis on the quality of Management Accounting Information Systems (MAIS) in commercial enterprises in Thai Nguyen province, multiple regression analysis was conducted. This process also aimed to test the proposed research hypotheses. The general form of the multiple regression model is presented as follows:

Table 1. Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Coefficient	Std. Error				Tolerance	VIF
Constant	-0.995	0.188		-5.306	0.000		
NQL	0.179	0.028	0.233	6.490	0.000	0.746	1.341
TDNV	0.204	0.024	0.284	8.488	0.000	0.856	1.169
CNS	0.213	0.041	0.183	5.135	0.000	0.752	1.330
TTQT	0.228	0.036	0.218	6.309	0.000	0.805	1.242
CLDL	0.158	0.036	0.144	4.405	0.000	0.899	1.113
STT	0.104	0.029	0.134	3.596	0.000	0.691	1.447
PMKT	0.150	0.037	0.140	4.003	0.000	0.781	1.281

Source: SPSS output

The regression model illustrating the relationship between the dependent and independent variables is as follows:

$$CLHT = 0.233 \times NQL + 0.284 \times TDNV + 0.183 \times CNS + 0.218 \times TTQT + 0.144 \times CLDL + 0.134 \times STT + 0.140 \times PMKT$$

The results indicate that all regression coefficients are positive, suggesting that the factors including managerial involvement (NQL), accounting staff qualifications (TDNV), digital technology (CNS), procedures and guidelines (TTQT), data quality (CLDL), system interaction (STT), and accounting software (PMKT) all have positive effects on the quality of MAIS (CLHT).

In other words, improvements in these factors lead to enhancements in MAIS quality. Moreover, the significance values (p-values) for all coefficients are 0.000, which are lower than the 5% significance level. This confirms that the positive relationships are statistically significant and not due to random variation, thereby ensuring the reliability of the findings.

6.2. Model Fit Assessment

Table 2. Model Summary

Model	R	R^2	Adjusted R^2	Durbin-Watson (d)
1	0.786a	0.618	0.611	1.938

Source: SPSS output

The coefficient of determination (R^2) of the regression model is 0.618. This indicates that the independent variables, including NQL, TDNV, CNS, TTQT, CLDL, STT, and PMKT, explain 61.8% of the variation in the dependent variable, CLHT.

The adjusted R^2 value is 0.611, which falls within the acceptable range of 0.5 to 1, indicating that the model has relatively good explanatory power and is well-fitted to the dataset. This result demonstrates that the selected factors capture a substantial portion of the determinants of CLHT, providing a reliable basis for subsequent conclusions and managerial implications.

Table 3. Analysis of Variance (ANOVA)

Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
140.471	7	20.067	92.114	0.000b

Source: SPSS output

Based on the analysis results, the significance value (Sig.) is 0.000, which is lower than the 5% significance level, with an F-statistic of 92.114. This indicates that the proposed model is well-fitted to the empirical data. In other words, the independent variables have a statistically significant linear relationship with the dependent variable at the 99% confidence level.

6.3. Diagnostic Tests

Multicollinearity Test

Multicollinearity was examined using the Variance Inflation Factor (VIF). The results indicate that all independent variables (NQL, TDNV, CNS, TTQT, CLDL, STT, PMKT) have VIF values below 2 (ranging from 1.113 to 1.447), which are well below the threshold of 5. Therefore, no multicollinearity issue is detected, and the regression estimates are considered reliable.

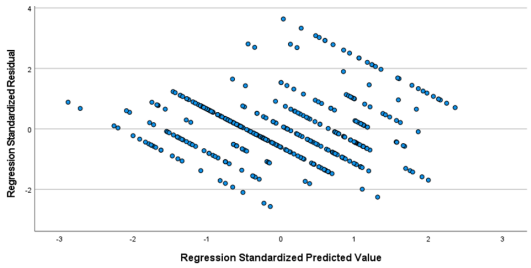
Autocorrelation Test

Autocorrelation was tested using the Durbin-Watson statistic. The result shows a value of 1.938, which falls within the acceptable range ($1 < DW < 3$). Hence, it can be concluded that there is no autocorrelation, satisfying the assumption of independent residuals.

Heteroscedasticity Test

To test for heteroscedasticity, the following hypotheses were formulated: H_0 assumes that the regression model does not exhibit heteroscedasticity, while H_1 assumes that heteroscedasticity is present. The test is conducted based on the results of the Scatter Plot distribution as figure 1:

Figure 1. Scatter Plot



Source: SPSS output

Since the distribution density of the Scatter Plot falls within the range of -2.5 to 2.5, the model does not violate the heteroscedasticity assumption. Therefore, the null hypothesis (H_0) is accepted.

6.4. Hypothesis Testing Results

After testing for model violations, no issues were detected. Therefore, based on the regression coefficients and p-values, the research hypotheses are evaluated as presented in Table 4:

Table 4. Results of Hypothesis Testing

Hypotheses	Regression Coefficient	p-value	Conclusion
H1: Managerial involvement positively affects the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.179	0.000	Supported
H2: Accounting staff qualifications positively affect the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.204	0.000	Supported
H3: Digital technology positively affects the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.213	0.000	Supported
H4: System interaction positively affects the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.228	0.000	Supported
H5: Data quality positively affects the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.158	0.000	Supported
H6: Procedures and guidelines positively affect the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.104	0.000	Supported
H7: Accounting software positively affects the quality of MAIS in commercial enterprises in Thai Nguyen province.	0.150	0.000	Supported

Source: Compiled by the authors

7. Discussion of Research Findings

The regression results indicate that all seven factors in the model have positive and statistically significant effects on the quality of Management Accounting Information Systems (MAIS). However, the magnitude of their impacts varies, reflecting the uneven roles of each factor in business practice.

Managerial Involvement

The results show that managerial involvement has a positive effect on MAIS quality ($\beta = 0.179$; $p < 0.001$), confirming its role in system orientation and supervision. However, strategic capabilities remain limited and need to be enhanced to meet digital transformation requirements.

Accounting Staff Qualifications

This factor has a strong impact ($\beta = 0.204$; $p < 0.001$), highlighting the critical role of accounting personnel in ensuring information quality. Despite strong professional competence, limitations in innovative thinking and organizational skills suggest the need for further training.

Digital Technology

Digital technology has a significant impact ($\beta = 0.213$; $p < 0.001$), improving information processing efficiency. However, limitations in system integration and data security indicate the absence of a comprehensive digital strategy.

System Interaction

This is the most influential factor ($\beta = 0.228$; $p < 0.001$), emphasizing the importance of system integration and data sharing in enhancing system quality.

Data Quality

Data quality has a positive impact ($\beta = 0.158$; $p < 0.001$) but remains a weak point due to issues related to accuracy and timeliness, requiring improvements in processes and control mechanisms.

Procedures and Guidelines

This factor has a relatively smaller impact ($\beta = 0.104$; $p < 0.001$) but plays a foundational role in ensuring system stability and compliance.

Accounting Software

Accounting software positively affects MAIS quality ($\beta = 0.150$; $p < 0.001$) by supporting automation and improving information processing efficiency. However, greater integration with other systems is necessary.

8. Managerial Implications

Based on the research findings, in order to enhance the quality of Management Accounting Information Systems (MAIS), commercial enterprises in Thai Nguyen province should consider the following managerial implications:

First, strengthen the role of managers in directing and developing MAIS. Top management should enhance their awareness of the system's importance while improving strategic management capabilities and the ability to apply technology in operations.

Second, develop accounting human resources with both strong professional expertise and technological skills, as well as innovative thinking. Enterprises should regularly provide training to improve analytical, managerial, and innovation capabilities of accounting staff.

Third, promote the synchronized adoption of digital technologies. Firms should not only invest in infrastructure but also develop comprehensive digital transformation strategies, with a focus on system integration and data security.

Fourth, enhance integration and interaction among information systems within the enterprise. Connecting MAIS with systems such as sales, inventory, and finance will improve the consistency and timeliness of information.

Fifth, improve accounting data quality by standardizing data entry processes, strengthening internal controls, and applying technology to minimize errors.

Sixth, refine accounting procedures and guidelines to ensure clarity, consistency, and regular updates, thereby maintaining system compliance and stability.

Seventh, select and upgrade appropriate accounting software that ensures flexibility, integration capability, and alignment with managerial needs. At the same time, enterprises should fully exploit software features to enhance efficiency.

Conclusion

This study identified and examined the factors affecting the quality of MAIS in commercial enterprises in Thai Nguyen province. The findings reveal that all seven factors, including managerial involvement, accounting staff qualifications, digital technology, system interaction, data quality, procedures and guidelines, and accounting software, have positive and statistically significant impacts on MAIS quality. Among these factors, system interaction, digital technology, and accounting staff qualifications exert the strongest influence. This highlights the critical importance of system integration, human resource capabilities, and technological application in the context of digital transformation. Meanwhile, data quality and procedures remain relatively weaker aspects, indicating areas that require further improvement. The study contributes to the existing literature by providing both theoretical and empirical evidence on MAIS in commercial enterprises in Vietnam. It also offers practical managerial implications to enhance system quality. However, the research is limited by its focus on a single geographical area and the exclusion of external factors. Future studies are encouraged to expand the research scope and incorporate additional variables to improve generalizability.

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