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Accounting Information Systems Quality Through Information Technology and User Competence

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ABSTRACT

This research examines the impact of information technology and user competence on the efficiency of accounting information systems. Using a survey approach, the study involves 47 regional government organizations. Hypothesis testing is conducted through structural equation modeling (SEM) with data analyzed using Smart PLS-SEM. The study found that user competence significantly enhances the quality of accounting information systems, while information technology has minimal impact. In the Medan City Government, this highlights the crucial role of user competence in ensuring system effectiveness, with technology playing a lesser role. The Medan City Government remains focused on enhancing the competence of its personnel in utilizing accounting information systems. Additionally, continuous efforts are made to adapt the existing information technology to meet the evolving needs of users. This study offers new insights into how information technology and user competence jointly influence the quality of accounting information systems in the Medan City Government.

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1. INTRODUCTION

Accounting information systems play a crucial role within organizations (Xu, 2020). These systems consist of tools and technologies designed to process inputs and generate outputs (Ramadhan et al., 2023). Their primary function is to convert raw data into meaningful financial information (Richardson et al., 2021). The effectiveness of an accounting information system is determined by its ability to transform data into valuable financial insights that align with user expectations (Fitrios, 2019). Key indicators for evaluating the quality of such systems include the integration of components, compatibility with other systems, and seamless data integration (Darma, 2018).

Technology plays a pivotal role in modern information systems, particularly in addressing business challenges (Laudon and Laudon, 2022). Information technology, which includes computers and electronic devices, is utilized for data storage, retrieval, transmission, and manipulation (Romney et al., 2021). Its effectiveness is often measured using indicators such as standardization, interoperability, adaptability, scalability, connectivity, speed, and the availability of replacement parts and services (Fitrios et al., 2022). Research has shown mixed results regarding its impact on accounting information systems. Although research by Rachman et al. (2019), Putra et al. (2020), and Tuswoyo and Hartanti (2020) highlights a positive impact on the effectiveness of these systems, other studies, such as those conducted by Rohmah (2017), Aprianty (2017), and Paranoan et al. (2019), indicate no significant effect on the quality of management accounting systems.

User competence, encompassing physical and cognitive abilities such as knowledge, skills, and expertise, is also critical to the success of accounting information systems (Elliot et al., 2017; Haleem and Kevin, 2018). This competence can be evaluated through indicators like system and task knowledge, the ability to operate and articulate system requirements, task alignment, and job-specific expertise. Similar to information technology, the impact of user competence on accounting systems has also yielded mixed findings. Studies by Puspitawati (2016), Murtadho et al. (2018), and Fitrios et al. (2022) found a positive relationship between user competence and system efficiency. However, other studies, such as those by Putranto and Chasbiandani (2020) and Putra et al. (2020), reported no significant impact. Additionally, the competence of human resources has been shown to significantly improve the quality of government financial reporting (Bagjana and Rachman, 2021).

This study's uniqueness lies in its questionnaire design, which connects exogenous construct indicators with endogenous construct indicators—a method not applied in previous research. Moreover, the analytical approach used in this study sets it apart from earlier work. Unlike previous studies that utilized multiple regression analysis, this research employs structural equation modeling (SEM). Through SEM analysis, it becomes possible to determine which indicators significantly contribute to forming exogenous constructs, thereby affecting endogenous construct indicators.

This study explores the role of information technology and user competence in enhancing the quality of accounting information systems, specifically in higher education institutions. It aims to identify essential elements that contribute to improving the efficiency and reliability of these systems. By examining the interaction between technology and user expertise, the research seeks to uncover valuable insights into factors influencing system effectiveness. The findings are expected to offer practical guidance for optimizing accounting information systems within academic settings, ensuring they operate more effectively. Ultimately, this study aspires to support the continuous improvement and development of reliable systems in educational institutions.

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2. METHODS

The This study uses a survey approach, targeting users of accounting information systems (AIS) within the Medan City Government as its population. Users were chosen as the sample group due to their direct experience and familiarity with the quality of the AIS in use. A purposive sampling method was applied to select 47 respondents.

This study focuses on two key aspects: the role of information technology (IT) in shaping the quality of accounting information systems (AISQ) and the impact of user competence (UC) on their overall effectiveness. It explores three central variables—IT, UC, and AISQ—which are comprehensively described in **Table 1** to establish a clear analytical framework. The research seeks to uncover the connections between technological infrastructure, user skills, and the performance of accounting information systems in a government setting. By analyzing these relationships, the study aims to provide valuable insights into improving system quality and effectiveness through balanced technological and human contributions.

The research examined 3 aspect variables: Information Technology (IT), User Competency (UC) and Accounting Information Systems Quality (AISQ) with ordinal measurements.

Table 1. Variable Operationalization

Variable	Indicators
Information Technology (IT)	Standardization (IT1)
	Interoperability (IT2)
	Adaptability (IT3)
	Replacement parts and service available (IT4)
	Scalability (IT5)
	Connectivity (IT6)
	Speed (IT7)
User Competency (UC)	System knowledge (UC1)
	Task knowledge (UC2)
	Ability to operate the system (UC3)
	Ability to operate information needs (UC4)
	Ability to express how the system should work (UC5)
	Carry out work assignments (UC6)
	Aligning abilities with tasks (UC7)
	Expertise on the job (UC8)
	Expertise in expressing needs (UC9).
Accounting Information Systems Quality (AISQ)	System component integration (QAIS1)
	Integration with other systems (QAIS2)
	Data integration (QAIS3)
	System is working properly (QAIS4)
	System generates accurate information(QAIS5).

Source: Theoretical Review

This research utilizes primary data obtained directly through methods such as surveys and interviews (Alareeni and Hamdan, 2022). Data collection was carried out using a questionnaire designed with a four-point Likert scale ranging from "strongly agree" to "strongly disagree,"

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aimed at capturing participants' views on various statements. A pre-test was conducted to ensure the questionnaire's validity and reliability. Validity was assessed through convergent and discriminant validity tests, while reliability was measured using composite reliability and Cronbach's alpha.

The study focuses on latent variables and applies Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach for analysis. This method is well-suited for exploring relationships between latent variables, their indicators, and the links among constructs while addressing potential measurement errors (Pramudita et al., 2020). Hypothesis testing was conducted using t-tests and significance evaluations to assess the strength and importance of the proposed relationships. This rigorous methodology ensures that the findings are reliable, valid, and provide a comprehensive understanding of the interactions between variables.

3. RESULTS AND DISCUSSION

3.1. Respondent Demography

Fifty-six questionnaires were distributed to 56 Local Agencies of the Medan City Government. However, only 47 questionnaires were returned and used in statistical analysis. Based on the returned questionnaire, the demographics characteristics of the respondents can be seen in **Table 2** below:

Table 2. Demographic characteristics of the respondents

	Frequency	Percentage
Gender		
Male	18	38,30
Female	29	61,70
Amount	**47**	**100**
Age		
20 - 29	5	10,64
30 - 39	15	31,91
40 - 49	24	51,06
50 - 59	3	6,38
Amount	**47**	**100,00**
Educational Level		
Diploma	18	38,30
Bachelor	27	57,45
Magister	2	4,26
Amount	**47**	**100,00**
Educational Background		
Accounting	18	38,30
Non Accounting	29	61,70
Amount	**47**	**100,00**

Source: Research Questionnaire

Demographic respondents table above show that female respondents dominated as many as 29 respondents or 61.70 percent while the remaining 18 respondents or 38.30 percent were

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male. Respondents aged between 40-49 dominated by 24 or 51.06 percent, followed by those aged between 30-39 by 15 or 31.91 percent, aged between 20-29 by 5 or 10.64 percent, and by those aged between 50-59 by 3 or 6.38 percent. The education level of the respondents was dominated by Bachelors as much as 27 or 57.45 percent, followed by Diploma as much as 18 or 38.30 percent, and Masters as much as 2 or 4.26 percent. The educational background of the respondents was dominated by Non-Accounting as much as 29 or 61.70 percent while the rest was Accounting as much as 18 or 38.30 percent.

3.2. Descriptive statistics.

Furthermore, based on the respondents' answers, the descriptive statistics of the data can be seen in **Table 3** below

Table 3. Descriptive statistics

Variable	Indicator	Mean	Category
Information Technology (IT)	Standardization (IT1)	3,255	high
	Interoperability (IT2)	3,213	high
	Adaptability (IT3)	3,213	high
	Replacement parts and service available (IT4)	3,043	high
	Scalability (IT5)	3,106	high
	Connectivity (IT6)	3,128	high
	Speed (IT7)	3,170	high
User Competency (UC)	System knowledge (UC1)	3,298	high
	Task knowledge (UC2)	3,298	high
	Ability to operate the system (UC3)	3,277	high
	Ability to operate information needs (UC4)	3,191	high
	Ability to express how the system should work (UC5)	3,213	high
	Carry out work assignments (UC6)	3,213	high
	Aligning abilities with tasks (UC7)	3,234	high
	Expertise on the job (UC8)	3,277	high
	Expertise in expressing needs (UC9).	3,255	high
Accounting Information Systems Quality (AISQ)	System component integration (QAIS1)	3,277	high
	Integration with other systems (QAIS2)	3,043	high
	Data integration (QAIS3)	3,106	high
	System is working properly (QAIS4)	3,277	high
	System generates accurate information(QAIS5).	3,298	high

Source: Smart-PLS output version 3

The descriptive statistics presented indicate the average responses of respondents to the questionnaire statements. Overall, respondents rated all indicators of the three variables highly. Among the information technology indicators, standardization received the highest average response of 3.255, while the availability of spare parts services received the lowest at 3.043. For indicators of user competence, system knowledge and task knowledge had the highest average response of 3.299, while the ability to operate information needs had the lowest at 3.191. Regarding the quality of the accounting information system, the indicator rated highest was the

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system's ability to produce accurate information, with an average response of 3.298, while integration with other systems received the lowest average response also at 3.298.

3.3. Assessment of the Measurement Model or Outer Model.

The measurement model illustrates the connection between latent variables and their observed indicators over time (Moustafa, 2021). Specifically, the outer model, often called the measurement model, represents the relationship between latent variables and their corresponding indicators (Sholihin and Ratmono, 2021; Mitrovic et al., 2022). This research adopts a reflective measurement approach, which assumes that latent variables have an influence on their observed indicators (Gunzler et al., 2021). The main aim of this approach is to ensure that the indicators accurately and reliably represent the associated latent variables.

The evaluation process includes several important steps: (1) analyzing composite reliability to check internal consistency, (2) examining outer loadings to validate the reliability of individual indicators, (3) assessing the average variance extracted (AVE) for convergent validity, and (4) conducting cross-loading tests to confirm discriminant validity. Before carrying out these evaluations, calculations are performed to determine values for outer loadings, AVE, composite reliability, and Cronbach's Alpha. These calculations, typically conducted using software like Smart-PLS, provide the data required to ensure the measurement model's quality and reliability.

Figure 1 displays the results of these calculations, highlighting the relationships and validity metrics derived from the reflective measurement model. By ensuring the indicators are both reliable and valid, the reflective measurement model confirms that the observed indicators accurately reflect their latent variables, strengthening the study's findings and interpretability.

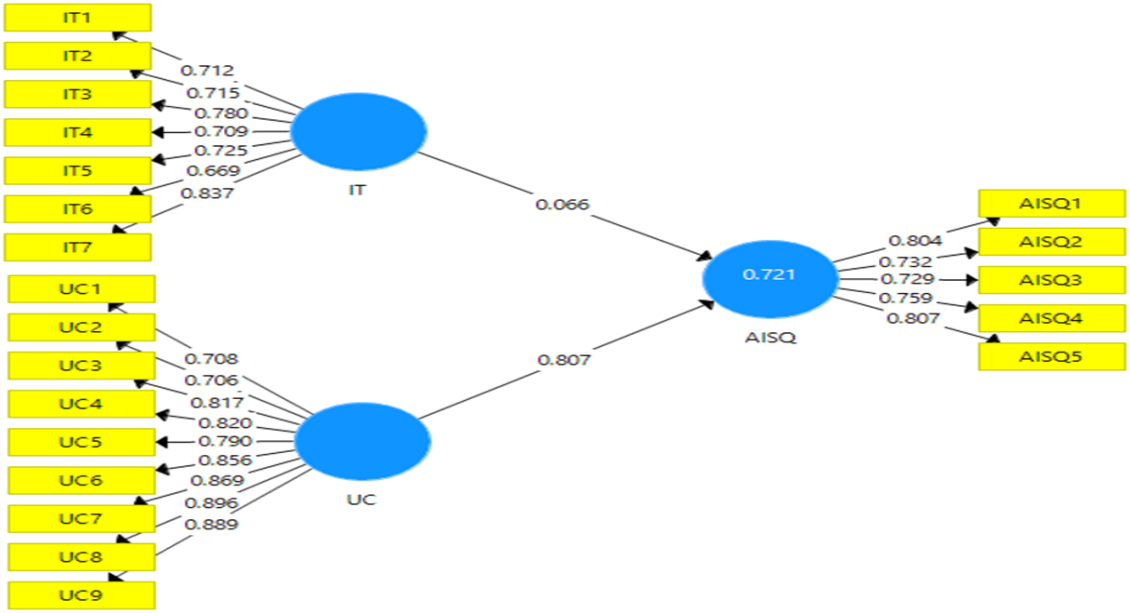

Figure 1. Algorithm Calculation Result

Validity Assessment Result. The validity evaluation includes both convergent and discriminant tests. Convergent validity is determined by examining the strong correlations among reflective indicators within a construct. To assess convergent validity for a construct with reflective indicators, the Average Variance Extracted (AVE) is calculated. An indicator is deemed reliable if its AVE value exceeds 0.5 (Sergi and Sulistiawan, 2022). The results of the convergent validity analysis are summarized in **Table 4** below.

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Table 4. Result of Convergent Validity Test

Variable	Number of Questionnaire Items	Average Variance Extracted	Critical Score	Conclusion
Accounting Information Systems Quality (AISQ)	5	0,588	0.500	Valid
Information Technology (IT)	7	0,543	0.500	Valid
User Competency (UC)	9	0,671	0.500	Valid

Source: Smart-PLS output version 3

The table above confirms the convergent validity of the constructs, as all Average Variance Extracted (AVE) values exceed the threshold of 0.5. This indicates that the indicators reliably represent their respective latent variables.

Discriminant validity, on the other hand, assesses whether each reflective indicator is more strongly correlated with its associated construct than with others, ensuring accurate measurement of the intended constructs (Hurriyati et al., 2018). The results of this test are detailed in **Table 5**, which demonstrates that the indicators effectively distinguish between the constructs while maintaining strong associations with their corresponding latent variables.

Table 5. Result of the discriminant validity test

	AISQ	IT	UC
AISQ1	0,804	0,394	0,817
AISQ2	0,732	0,391	0,521
AISQ3	0,729	0,565	0,544
AISQ4	0,759	0,364	0,591
AISQ5	0,807	0,463	0,706
IT1	0,475	0,712	0,483
IT2	0,322	0,715	0,301
IT3	0,479	0,780	0,611
IT4	0,378	0,709	0,331
IT5	0,331	0,725	0,353
IT6	0,290	0,669	0,319
IT7	0,523	0,837	0,622
UC1	0,653	0,316	0,708
UC2	0,807	0,463	0,706
UC3	0,804	0,394	0,817
UC4	0,680	0,508	0,820
UC5	0,600	0,613	0,790
UC6	0,638	0,640	0,856
UC7	0,618	0,534	0,869
UC8	0,705	0,503	0,896
UC9	0,638	0,580	0,889

Source: Smart-PLS output version 3

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Discriminant Validity analysis shows that the indicator values for each variable's cross-loading are higher than those for the other variables. This indicates that all the indicators satisfy the validity criteria, confirming their validity.

To assess reliability, both Composite Reliability and Cronbach's Alpha tests were applied. Composite Reliability, which measures a construct's true reliability and internal consistency, is particularly crucial in this study. Sergi and Sulistiawan (2022) suggest that a Composite Reliability value greater than 0.7 is deemed acceptable. The results from these assessments are presented in **Table 6**, providing a clear overview of the reliability of the constructs used in the study. These tests ensure that the constructs used in the research are both valid and reliable, supporting the overall robustness of the model and the accuracy of the measurements taken in the analysis.

Table 6. Result of composite reliability test

Variable	Number of Questionnaire Items	Composite Reliability	Conclusion
Accounting Information Systems Quality (AISQ)	5	0.877	Reliable
Information Technology (IT)	7	0.892	Reliable
User Competency (UC)	9	0.948	Reliable

Source: Smart-PLS output version 3

The table for Composite Reliability presented above indicates that all indicators have values exceeding 0.7, indicating their reliability.

Cronbach's Alpha represents the minimum acceptable level of reliability for a variable, with a threshold typically set above 0.60 (Hair Jr et al., 2021). The results of the Cronbach's Alpha assessment are shown in **Table 7** below:

Table 7. Result of Cronbach's Alpha Test

Variable	Number of Questionnaire Items	Cronbach's Alpha	Conclusion
Accounting Information Systems Quality (AISQ)	5	0.827	Reliable
Information Technology (IT)	7	0.861	Reliable
User Competency (UC)	9	0.938	Reliable

Source: Smart-PLS output version 3

The Cronbach's Alpha table shows that all variables have values exceeding 0.6, confirming the reliability of the indicators used in the study.

Assessment of the Structural Model or Inner Model. The structural model is assessed to evaluate its ability to explain and predict constructs within the study (Hair Jr et al., 2021). This model demonstrates the connections between latent variables and their observable indicators (Fah and Hoon, 2021) while outlining the relationships among latent variables themselves (Mitrovic et al., 2022). Furthermore, it describes the causal relationships between exogenous and endogenous variables as detailed in the inner model (Wong, 2019).

Based on an analysis of prior research and related literature, the study model includes three latent variables: information technology and user competence as independent (exogenous)

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variables, and the quality of accounting information systems as the dependent (endogenous) variable.

To assess the relationships between these latent variables, bootstrapping calculations are carried out to generate t-statistics and significance levels. These calculations, performed using the Smart-PLS software, are depicted visually in Figure 2.

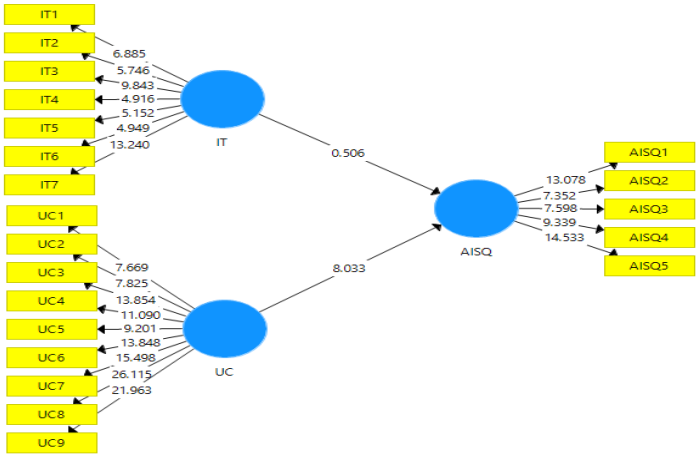

Figure 2. Bootstrapping Calculation Result

Results of Hypothesis Testing. The bootstrapping analysis indicates that the t-statistic values for all indicators and the exogenous variable exceed the critical threshold of 2.015. This threshold is determined from the t-table, considering degrees of freedom (N-3) equal to 44. These findings confirm that each indicator effectively represents its respective variable, ensuring its validity within the study. Furthermore, the analysis provides strong statistical evidence of the relationships between the variables and their indicators, affirming the reliability of these indicators in measuring the intended constructs.

These results highlight the strength of the model and the appropriateness of the selected indicators in reflecting the study's theoretical framework. For a more detailed explanation of the hypothesis testing results, **Table 8** provides a comprehensive summary and deeper analysis, offering greater clarity on the findings and their implications.

Table 8. Result of Hypothesis Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
IT -> AISQ	0.066	0.096	0.130	**0.506**	**0.613**
UC -> AISQ	0.807	0.797	0.100	**8.033**	**0.000**

Source: Smart-PLS output version 3

The hypothesis testing results indicate that information technology does not significantly influence the quality of accounting information systems. This is demonstrated by a t-statistic of 0.506, which is below the critical value of 2.015, and a significance level of 0.613, exceeding the acceptable threshold of 0.05. As a result, the null hypothesis for this variable is accepted. In contrast, user competence shows a significant positive effect on system quality, supported by a t-statistic of 8.033, which is well above the critical value of 2.015, and a significance level of 0.000, which is below the 0.05 threshold. Thus, the null hypothesis is rejected, affirming that user competence is a critical factor in enhancing system quality.

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These findings emphasize the importance of prioritizing user training and skill development to optimize the performance of accounting information systems. It becomes evident that user competence has a greater impact on improving system quality compared to information technology. Additionally, the influence of exogenous variables on the endogenous variable is reflected in the R Square value, as detailed in **Table 9**.

Table 9. Result of R Square

	R Square	R Square Adjusted
AISQ	**0.721**	0.708

Source: Smart-PLS output version 3

An R Square value of 0.721 suggests that information technology and user competence together explain 72.1% of the variation in the quality of accounting information systems, indicating a significant and strong influence, as highlighted by McCormick and Salcedo (2020). This finding emphasizes the crucial role of these two factors in determining system quality. However, 27.9% of the variation remains unexplained, suggesting the influence of other variables not covered in this study. Future studies could investigate these additional factors to provide a more comprehensive understanding of what impacts the quality of accounting information systems.

3.4. The influence of information technology on the quality of accounting information systems.

This study indicates that information technology does not significantly affect the quality of accounting information systems, even though individual indicators perform well. The indicator with the best performance is the speed of financial data processing, with an outer loading value of 0.837 and an average response score of 3.170, both classified as high. In contrast, the weakest indicator, related to the availability of spare parts and services, has an outer loading value of 0.669 and an average response score of 3.043, which is also categorized as high. However, despite the strong performance of these individual indicators, they do not collectively improve the quality of accounting information systems in the Medan City Government. Respondents pointed out that the current information technology infrastructure is not sufficient to enhance the system's quality. Although certain aspects of the technology function well independently, their combined application does not lead to a dependable accounting information system.

A significant limitation lies in the inability of existing technology to integrate data from various sources, preventing the timely presentation of financial information. The relatively limited specifications of the technology used by administrative bodies in the Medan City Government lead to delays in processing financial reports. This is further evidenced by the fact that many government organizations struggle to submit financial reports promptly, as several processes remain manual. These findings support prior research (Rohmah, 2017; Aprianty, 2017; Paranoan et al., 2019; Titisari and Chomsatu, 2020), which also found no substantial influence of information technology on accounting information systems. This highlights the urgent need for better technological integration and implementation to support system improvement.

3.5. The influence of user competence on the quality of accounting information system.

User competence is a critical factor in improving the quality of accounting information systems, with its indicators effectively representing the associated variables and significantly

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contributing to system performance. The most impactful indicator is the ability to transform data into financial information, demonstrated by an outer loading value of 0.896 and an average response score of 3.277. Although task knowledge has a lower outer loading value of 0.706, it still provides a notable contribution, supported by an average response score of 3.298. Both indicators, despite their differing levels of influence, are vital in enhancing the overall quality of accounting information systems. This is particularly evident within the Medan City Government, where user competence is essential for ensuring accurate and dependable financial data processing and reporting.

Respondents indicated that understanding the functionality of the accounting information system facilitates seamless integration of its components, leading to accurate data outputs. They highlighted that clarity in roles and responsibilities simplifies data integration from multiple sources, ensuring dependable results. Moreover, respondents emphasized that their ability to operate the system significantly affects the accuracy of the information produced. Successfully generating financial information as required demonstrates the system's capability to deliver precise results. A solid understanding of how the system operates was identified as crucial for ensuring its smooth functioning. Respondents also noted that effective task completion contributes to generating accurate outputs, and aligning individual skills with job responsibilities is essential for maintaining the system's efficiency. They further pointed out that proficiency in executing tasks ensures reliable outcomes and that clear communication of task requirements by experts enhances system functionality.

This research concludes that user competence within the Medan City Government plays a significant role in enhancing the quality of its accounting information systems. These results align with previous studies by Puspitawati (2016), Haleem and Kevin (2018), Murtadho et al. (2018), Utomo (2019), and Artana et al. (2021), all of which emphasize the importance of user competence in improving accounting systems.The study contributes both theoretically and practically by linking information technology, user competence, and accounting information systems. It integrates theories related to information technology and user skills, evaluating their combined impact on the quality of accounting information systems within government organizations, particularly in the public sector.

A notable finding is that while information technology is theoretically expected to improve system quality, this effect is not evident in the Medan City Government. Although respondents understand the ideal characteristics of effective information technology, the current infrastructure does not meet these expectations, limiting its impact. This highlights the need to create optimal conditions for information technology to positively influence the quality of accounting systems. Addressing these shortcomings in infrastructure is essential to realizing the potential benefits of technological innovation, as outlined in existing theoretical frameworks.

In contrast, user competence significantly affects the quality of accounting information systems. Respondents acknowledged that their skills align with practical requirements, underscoring the vital role of user competence in improving system performance. This finding demonstrates that high levels of user competency are crucial to achieving more efficient and effective accounting systems.

These insights are particularly valuable for the management of the Medan City Government. To ensure a high-quality accounting information system, the government should focus on providing adequate information technology that meets user needs. Furthermore, implementing continuous user competency development programs is essential for adapting to changes and maintaining system effectiveness.

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The study has certain limitations, as it focuses on a single local government with a relatively small sample size. Future research could provide deeper insights by analyzing multiple local governments with varying levels of commitment to information technology. Comparative studies could examine differences in system quality between governments that prioritize technological investment and those that do not. Additionally, comparisons could be made between governments that emphasize staff competency development and those with less focus on this aspect.

4. CONCLUSION

Conclusion This study concludes that user competence plays a significant role in determining the quality of accounting information systems within the Medan City Government, while the impact of information technology is less pronounced. Competent users, equipped with the skills to operate systems effectively, align tasks with system requirements, and integrate data accurately, contribute significantly to the system's reliability and effectiveness. These findings underscore the importance of continuous training and development programs to enhance users' abilities, ensuring the system meets operational demands and generates accurate financial information.

Conversely, the limited impact of information technology highlights the inadequacy of existing IT infrastructure, which fails to fully support the integration and efficiency of accounting processes. Although specific IT features, such as speed and connectivity, perform well independently, they do not collectively enhance system quality due to insufficient adaptability and reliance on manual processes. Addressing these issues requires prioritizing IT infrastructure upgrades to meet standardized requirements, ensuring seamless system integration. These insights emphasize the need for a balanced approach that focuses on both improving user competence and advancing technological capabilities to optimize accounting information systems.

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