

Optimizing Accounting Information Systems: The Critical Roles of User Involvement and Cloud Computing Integration in Bandung, Indonesia

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Abstract: Information technology within a company plays a crucial role in providing timely and accurate information that aligns with the needs of managers in decision-making. The quality of an Accounting Information System is reflected in a system that successfully integrates all necessary elements and sub-elements to produce high-quality information. This study aims to assess the influence of User Involvement and Cloud Computing on the Quality of Accounting Information Systems (QAIS) in private national banks located in Bandung, Indonesia. The method used in this study is SEM (Structural Equation Model) with the PLS (Partial Least Square) approach. The research sample consists of 81 respondents from 14 private banks. The results reveal that User Involvement has a notable and substantial impact on the Quality of Accounting Information Systems, contributing 49.7%. User engagement in the development and utilization of accounting information systems is vital for improving system quality. Meanwhile, Cloud Computing also significantly influences QAIS, though its contribution is smaller at 5.3%. Both factors contribute significantly, thus, these findings provide important insights for banking management, highlighting that improving the quality of Accounting Information Systems relies not only on the adoption of advanced technology but also on maximizing user engagement.

Keyword: Accounting Information System, User Involvement, Cloud Computing

INTRODUCTION

The rapid development of information technology has become the backbone for many companies in supporting their business advancement. Information technology is no longer merely a tool but a primary necessity to achieve operational efficiency and effectiveness. A high-quality information system is not only measured by the sophistication of the technology used but also by its compatibility with the users. The utilization of information technology, such as Cloud Computing, enables companies to manage data and applications more quickly and effectively through the internet.

According to data from the Indonesian Internet Service Providers Association (APJII), internet penetration in Indonesia in 2024 continues to rise, with 221.5 million people connected to the internet, culminating in a new record high in 2024 (Asosiasi Penyelenggara Jasa Internet Indonesia, 2022). This increase has accelerated the adoption of internet-based technologies, such as cloud-based applications, which are widely used to support daily activities, including in the banking sector. Banking applications, such as mobile banking, have become one of the most frequently used technologies by Indonesians, particularly in Java, which records the highest internet usage. However, despite the benefits offered by these technologies, there are still challenges in their implementation, particularly regarding the quality of accounting information systems. Issues that arise, demonstrate that large banking systems still face difficulties in managing high transaction volumes. This emphasizes the need for improvements in accounting information system quality, particularly in payroll and financial management. Furthermore, by the end of 2022, data from the Financial Services Authority indicated that the number of bank branches decreased by 2,597. It was revealed that the closure of bank branches was driven by the digitalization that the banking sector must confront. The impact of banking digitalization warrants special attention. Meanwhile, bank employees in finance and accounting should anticipate the threats posed by digitalization by honing new skills to understand digital accounting, and they should consider transitioning to other jobs if digitalization becomes increasingly challenging to keep up with.

According to (Susanto, 2017) an accounting information system is an integrated set of physical and non-physical subsystems that are interconnected and function collaboratively to process transaction data related to financial matters into financial information. Research by (Laudon & Laudon, 2004) suggests that the quality of an information system is measured by its ability to blend technical efficiency with responsiveness to both human and organizational needs, ultimately boosting job satisfaction and productivity. Thus, a high-quality accounting information system is one that is reliable, efficient, effective, user-friendly, and easy to learn. The quality of an accounting information system can also be seen as the outcome of the integration of all involved components and subcomponents, aimed at producing high-quality information. Evaluating the quality of such a system is often used to assess the performance of existing information technology infrastructure. The success of an accounting information system can be gauged by improvements in efficiency, effectiveness, and productivity within a company's operations. Key indicators for evaluating the quality of these systems include efficiency, ease of access, integration, system response time, relevance, accuracy, timeliness, and completeness (Buana & Wirawati, 2018). According to (Bodnar & Hopwood, 2013) a high-quality accounting information system should meet the following criteria: 1) Relevance, 2) Timeliness, 3) Accuracy, 4) Completeness, and 5) Conciseness.

In the development of accounting information systems, whether manual or computerized, user involvement during the planning and development stages is essential. Involving users in this process can enhance the performance of the accounting information system by providing valuable feedback or customizing the system to meet specific needs. Users play a significant role in the successful implementation of a system or technology. Therefore, addressing users' needs and contributions is crucial in technology implementation, as the human factors and the consequences of resulting changes are fundamental to the operationalization of computer technology (Samrotun, 2014). According to (Susanto, 2017) user involvement refers to the extent to which system users—mainly operators and managers—engage with the developed information system. (Susanto, 2017) further emphasizes that user involvement is necessary to support the operation of accounting information systems, reflected through several indicators: 1) User needs, 2) Knowledge of local conditions, 3) Resistance to change, 4) Users feeling threatened, and 5) Enhancing democratic processes. Previous studies by (Ayu & Syarifuddin, 2022; Nisa et al., 2020; Rapina et al., 2022; Susanto, 2017) highlight

that user involvement has a positive effect on the quality of accounting information systems. However, research by Permana and Suryana (2018) and Sherly et al. (2023) suggests that user involvement does not significantly impact the quality of accounting information systems.

Cloud Computing is a technological advancement that uses the internet as the primary platform for managing data and applications, enabling the execution of various tasks (Hassan et al., 2022). According to (Wildana, 2017) defines cloud computing as internet services that utilize cloud computing technology, allowing users to access accounting functions, financial analysis, and other tasks through computers or connected devices. This transition is driven by efforts to streamline accounting documents and migrate different accounting operations to cloud-based platforms, significantly transforming accounting information systems (Ionescu et al., 2013). Advancements in computing and networking have had a profound impact on various aspects of accounting. Cloud computing technology has gained increasing popularity in recent years, particularly due to rapid digital transformations. The key indicators of Cloud Computing usage, according to (Sallehudin et al., 2020) include: 1) Compatibility, 2) Needs, 3) Reliability, 4) Functionality, and 5) Storage Availability. Subsequent research examining the relationship between variables has been conducted by (Abd El Rahman Rashwan, 2022; Abutaber, 2023; Boroumandfar et al., 2023; Kmaleh, 2023; Maswadeh, 2024), suggesting that cloud computing has a positive impact on the quality of accounting information systems. In contrast, a study by Al Goubi (2017) argues that cloud computing does not affect the quality of accounting information systems.

One crucial factor influencing the quality of Accounting Information Systems (AIS) is user involvement. Active user involvement in the development of information systems has been shown to have a positive impact on system quality and performance. Various studies, including those by (Nisa et al., 2020; van Velthoven et al., 2018) suggest that user participation ensures that the developed systems meet their operational needs, thereby enhancing the effectiveness of the information system in supporting company activities. Moreover, technologies like cloud computing play an important role in supporting digital transformation in accounting. Cloud computing allows companies to simplify data management processes and migrate accounting documents to cloud-based platforms. While offering many advantages, these technologies also pose risks, particularly regarding data security. Therefore, companies need to balance the adoption of new technologies with risk management efforts to ensure that the information systems used truly provide added value to their operations. This study aims to explore and analyze the relationship between user involvement and cloud computing methods on the quality of Accounting Information Systems in private national banks in Bandung, Indonesia.

METHOD

This study employs Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) method as an analytical tool to identify the influence among the variables under investigation. In this research, data were collected through a survey conducted with 81 respondents from 14 national private banks operating in Bandung City, Indonesia. The application of SEM-PLS allows for a deeper exploration of the complex relationships among the variables involved in this study. To obtain relevant data, primary data sources utilized in this study include a questionnaire specifically designed to gather information from the respondents. The research model comprises three latent variables, including two independent variables, user involvement (X1) and cloud computing (X2), and one dependent variable, which is the quality of accounting information systems (Y). Through this approach, the study aims to provide clearer insights into how user involvement and cloud computing can contribute to enhancing the quality of accounting information systems in the banking sector in Bandung City, Indonesia.

RESULTS AND DISCUSSION

In this study, validity and reliability tests were conducted to ensure that the questionnaire is both valid and reliable. The results of the validity test indicate that all items from each research variable: User Involvement variable (X1), Cloud Computing variable (X2), and Quality of Accounting Information Systems variable (Y), demonstrate valid results. The reliability of the measurement tools in this study was assessed using Cronbach's Alpha. The results show that all items in the questionnaire are reliable, confirming that the measures used for User Involvement (X1), Cloud Computing (X2), and Quality of Accounting Information Systems (Y) proceed consistent results. The results of the full model calculation as hypothesized were obtained as follows:

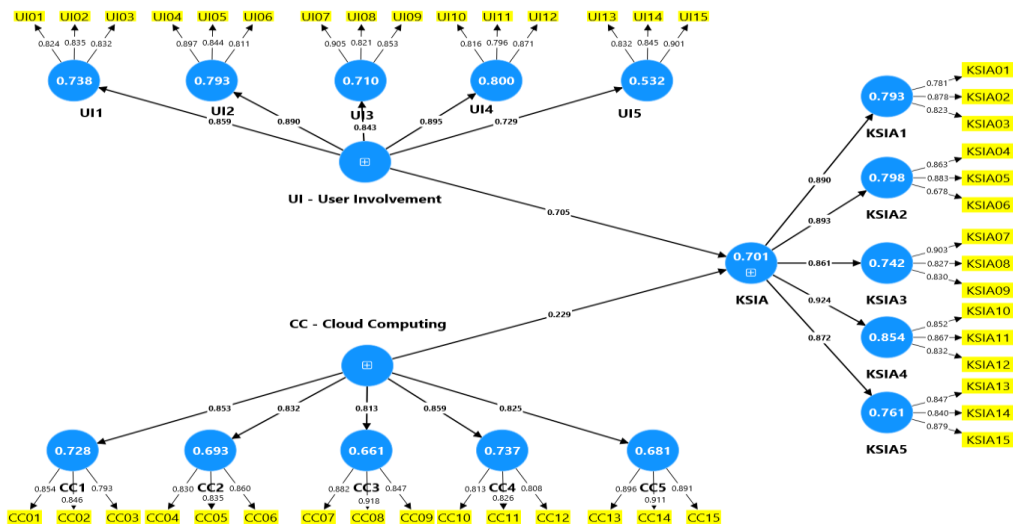


Figure 1. Path diagram of the SEM model using the Partial Least Squares (PLS) approach

The structural equation model for the influence of User Involvement and Cloud Computing on the Quality of Accounting Information Systems is as follows:

$$\eta = 0,705\xi_1 + 0,229 \xi_2 + 0,299$$

The result of the calculation of the influence of User Involvement on the Quality of Accounting Information Systems is shown by the path coefficient value of 0.705. The influence of Cloud Computing on the Quality of Accounting Information Systems is indicated by the path coefficient value of 0.229. The R-square value for the Quality of Accounting Information Systems variable is 0.701, resulting in an error term model of $1-0.701 = 0.299$.

The results of the loading factor calculation for each indicator of the latent variables (User Involvement, Cloud Computing, and Quality of Accounting Information Systems) have met the Indicator Reliability, where the loading factor values for all variables exceed 0.7. The Indicator Reliability (λ^2) values from the table above, which are greater than 0.5, indicate that the latent variable indicators of User Involvement, Cloud Computing, and Quality of Accounting Information Systems have met the minimum requirements for indicator reliability. Internal consistency is assessed based on two measures: Cronbach's alpha and Composite Reliability. The Internal Consistency Reliability test for the three latent variables has been fulfilled. All three variables demonstrate high (good) Internal Consistency Reliability.

Table 1. Internal Consistency Reliability Result

Variabel Laten	Composite Reliability (rho_c)	Cronbach's alpha
UI - User Involvement	0.939	0.931
CC - Cloud Computing	0.939	0.931
KSIA – Accounting Information	0.949	0.942

Convergent Validity is assessed by considering the Average Variance Extracted (AVE) value. Based on data processing, each research variable has an AVE value greater than 0.5. This AVE value meets the Convergent Validity requirement, which stipulates that the AVE value must exceed 0.5 (Hair et al., 2019). The AVE values obtained from each variable indicate that more than 50% of the information contained in each indicator is reflected through each variable. This demonstrates that the constructs formed by their indicators adequately represent the information from the variables being studied.

Table 2. Convergent Validity

	Average Variance Extracted (AVE)
UI - User Involvement	0.510
CC - Cloud Computing	0.509
KSIA - Accounting Information	0.556

Discriminant validity assesses how the validity of a construct compares with other constructs, ensuring that each concept of the latent variables differs from the others. The results of the Fornell-Larcker criterion calculation, can be seen in the following table:

Table 3. Discriminant Validity – (Fornell-Larcker criteria)

	UI – User Involvement	CC – Cloud Computing	KSIA – Accounting Information
UI - User Involvement	0.714		
CC - Cloud Computing	0.468	0.714	
KSIA – Accounting Information	0.812	0.559	0.746

The results of the correlation between constructs and the AVE square root values in the table show that the square root of AVE for each variable is greater than the correlation between the constructs of the research variables. In general, this result indicates that the Discriminant Validity of the latent variables is high. This demonstrates that all constructs exhibit good consistency.

Table 4. Correlation Values of Latent Variables and AVE Root Values

	AVE	\sqrt{AVE}	Correlation Matrix		
			UI	CC	KSIA
UI - User Involvement	0.510	0.714	1	0.468	0.812
CC - Cloud Computing	0.509	0.714	0.468	1	0.559
KSIA - Accounting Information	0.556	0.746	0.812	0.559	1

The structural model testing (inner model) was conducted using the R-square and effect size f^2 values. The R^2 value indicates the predictive accuracy of the model (Hair et al., 2019). An R^2 value of 0.25 indicates a weak effect, 0.5 indicates a moderate effect, and 0.75 indicates a substantial effect (Chin, 2010). The R-square value for the Accounting Information System Quality variable is 0.701. This result indicates that 70.1% of the Accounting Information System Quality variable is influenced by the User Involvement and Cloud Computing variables. An R^2 value between 0.5 and 0.75 indicates that the model's predictive accuracy has a moderate effect.

Table 5. R-Square Value

Variable	R Square	R Square Adjusted
KSIA - Accounting Information	0.701	0.693

The effect size f^2 shows the contribution of each construct to the Accounting Information System Quality. An f^2 value of 0.02, 0.15, and 0.35 can be interpreted as indicating that the predictor latent variables have small, moderate, and large effects, respectively (Hair et al., 2019). The f^2 value for User Involvement is 1.295. With an f^2 value greater than 0.35, it can be stated that the effect size for the influence of User Involvement on Accounting Information System Quality is large. The f^2 value for Cloud Computing is 0.137. An f^2 value between 0.02 and 0.15 indicates that the effect size for the influence of Cloud Computing on Accounting Information System Quality is small.

Table 6. Assessment of Structural Model Effect Size

No	Endogenous construct	f^2 (Kualitas Sistem Informasi Akuntansi)
1	User Involvement	1,295
2	Cloud Computing	0.137

To assess the model fit in SEM-PLS, the SRMR (Standardized Root Mean Square Residual) value is used. SRMR is a measure of model fit in SEM-PLS models. The criteria for a good fit are an SRMR value below 0.08, indicating a good model fit, while an SRMR value between 0.08 and 0.10 is still acceptable (Hair et al., 2019). For the model used in this study, the SRMR value was calculated to be 0.099. With an SRMR value between 0.08 and 0.10, it is still acceptable, indicating that the model fits well or has a good model fit.

Table 7. Fit Summary

	Saturated model	Estimated model
SRMR	0.094	0.099
d_ ULS	36.122	40.375
d_ G	n/a	n/a
Chi-square	infinite	infinite
NFI	n/a	n/a

Hypothesis Testing

After explaining the results of the measurement model tests for each variable and the accuracy of the structural model, the next step is to test the partial significance of the exogenous variables (independent variables) on the endogenous variable (dependent variable) based on the proposed hypotheses. To test the hypotheses, the t-statistic value is used. The calculation of statistical significance in SEM analysis with the PLS approach is performed using the bootstrapping technique. The data used for bootstrapping is data that has already passed through the measurement phase.

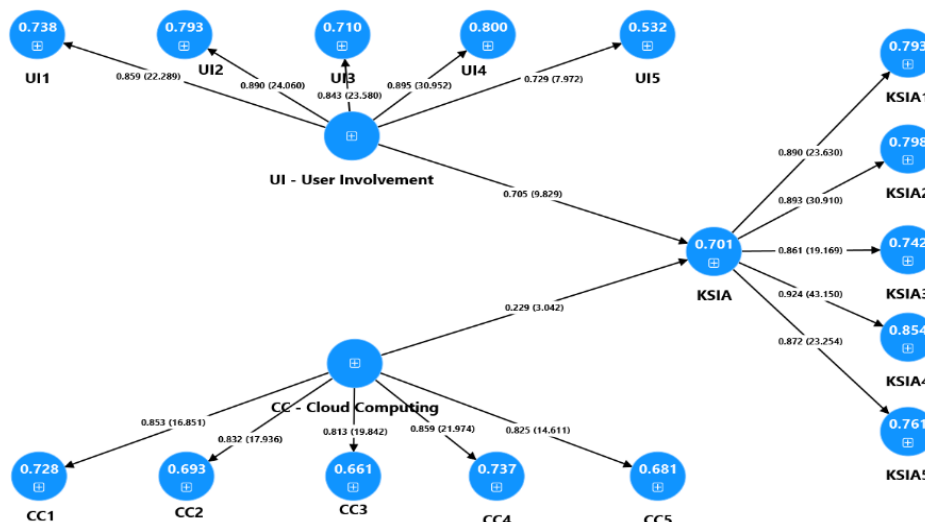


Figure 2. Structural Model T statistic

Hypothesis testing is performed by comparing the t-statistic or t-value that has been determined. The t-value generated in the bootstrapping test must be greater than the critical value (Critical Value), which is 1.96, for an α (significance level) of 5%, or a p-value below 0.05 (Hair et al., 2019).

Table 8. Results of Significance Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Statistics	P Values
UI - User Involvement -> KSIA	0.705	0.700	0.072	9.829	0.000
CC - Cloud Computing -> KSIA	0.229	0.238	0.075	3.042	0.002

The results of hypothesis testing indicate that the relationship between User Involvement and Accounting Information System Quality is shown by a path coefficient value of 0.705, with a t-statistic value of 9.829 and a p-value of 0.000. The t-statistic obtained is greater than the critical value (1.96), and the p-value (0.000) is smaller than the alpha value of 0.05. This result indicates that User Involvement significantly affects the Accounting Information System Quality. The direct impact of User Involvement on Accounting Information System Quality is calculated as $(0.705 \times 0.705 \times 100\%) = 49.7\%$. This means that User Involvement contributes 49.7% to the Accounting Information System Quality. Based on the results, the f^2 value for User Involvement (UI) is 1.295. The f^2 effect size indicates the contribution of the construct to the endogenous variable. According to (Hair Jr. et al., 2021) f^2 values of 0.02, 0.15, and 0.35 are interpreted as small, medium, and large effects, respectively. Since the f^2 value exceeds 0.35, it can be concluded that the effect size of User Involvement on Accounting Information System Quality is large. Therefore, User Involvement has a significant impact on Accounting Information System Quality at private national banks in Bandung.

The hypothesis testing for the relationship between Cloud Computing and Accounting Information System Quality reveals a path coefficient value of 0.229, a t-statistic value of 3.042, and a p-value of 0.002. The t-statistic is greater than the critical value (1.96), and the p-value (0.002) is smaller than the alpha value of 0.05. This result indicates that Cloud Computing significantly affects the Accounting Information System Quality. The direct impact of Cloud Computing on Accounting Information System Quality is calculated as $(0.229 \times 0.229 \times 100\%) = 5.3\%$, meaning Cloud Computing contributes 5.3% to the Accounting Information System Quality. Based on the calculation, the f^2 value for Cloud Computing is 0.137. As per (Hair Jr. et al., 2021) f^2 values between 0.02 and 0.15 indicate a small effect size. Since the f^2 value falls within this range, it can be concluded that the effect size of Cloud Computing on

Accounting Information System Quality is small. Therefore, Cloud Computing has a moderate (reasonably strong) contribution to the Accounting Information System Quality at private national banks in Bandung.

CONCLUSION

This study aims to evaluate the impact of User Involvement and Cloud Computing on the Quality of Accounting Information Systems (QAIS) in private national banks in Bandung. By employing the Structural Equation Modeling (SEM) approach using Partial Least Squares (PLS) techniques, this research tests hypotheses regarding the contributions of each variable to system quality, measured based on statistical significance and effect size. The results of this analysis provide a clear picture of the extent to which these two variables influence QAIS in the banking organizational context. The findings indicate that User Involvement has a significant and substantial effect on Quality of Accounting Information Systems, contributing 49.7%. User involvement in the development and use of accounting information systems is crucial for enhancing system quality. The large effect size signifies that User Involvement has a very strong and significant impact on Quality of Accounting Information Systems, particularly in private national banks in Bandung. On the other hand, Cloud Computing also significantly affects Quality of Accounting Information Systems, although its contribution is smaller at 5.3%. Cloud Computing plays a role in improving the quality of accounting information systems, despite its effect being categorized as small. Nevertheless, Cloud Computing still provides a reasonably strong contribution to enhancing system quality.

Based on these research findings, it can be concluded that User Involvement has a more significant influence compared to Cloud Computing in improving the Quality of Accounting Information Systems. While both factors make meaningful contributions, active user participation in the development and utilization of information systems emerges as a key determinant of system quality. These results offer valuable insights for banking management, emphasizing that enhancing the quality of Accounting Information Systems depends not only on the implementation of advanced technology but also on optimal user involvement.

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