



Impact of ERP System Implementation on Accounting Information Quality in Vietnamese SMEs



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Abstract: This research explores the influence of enterprise resource planning (ERP) system implementation on the quality of accounting information in Vietnamese small and medium-sized enterprises (SMEs). ERP systems, designed to unify and streamline information across various business processes such as accounting, finance, supply chain, and human resources, are critical in integrating internal and cross-business information. Given their complexity and cost, the effective implementation of ERP systems necessitates proficient users. This study, employing the Ordinary least squares (OLS) method for analysis, gathered data through purposive sampling from 145 users across 117 Vietnamese SMEs. The analysis, based on regression and complemented by t-tests, examined the hypothesized relationship between ERP implementation and accounting information quality enhancement. The findings reveal a significant positive correlation between ERP system implementation and improved accounting information quality, underscoring the importance of ERP systems in elevating the standard of accounting practices in SMEs. These insights are crucial for understanding the broader implications of ERP systems in business management and financial reporting.

Keywords: Enterprise resource planning (ERP); Accounting information quality; Ordinary least squares (OLS) method; Vietnamese small and medium-sized enterprises (SMEs); Business process integration

JEL Classification: H83, M40, M41

1. Introduction

A company's business processes are predominantly influenced by two categories of factors: internal and external. Internal factors, originating from within the organization, encompass operational aspects and human resources. External factors, on the other hand, emerge from outside the organization, impacting business processes significantly. These include elements such as market competition and technological progress (Kalkan et al., 2011; Nguyen & Dang, 2022b; Nguyen & Dang, 2023b; Radmehr et al., 2023). In the current era of rapid technological advancement, the role of information systems in ensuring organizational sustainability is increasingly recognized. The development of information systems, particularly in the domain of accounting, has been identified as a key driver of operational efficiency.

It has been observed that companies fostering a culture of innovation and adaptability are more inclined to implement ERP systems. In contrast, organizations with a more conservative culture tend to be resistant to adopting such transformative technologies. The complexity inherent in an organization's structure and processes also plays a crucial role in the decision to adopt ERP systems. Organizations with complex processes may find ERP systems advantageous in streamlining and enhancing operational efficiencies.

The implementation of ERP systems is often fraught with various challenges and potential failures that can significantly impact the effectiveness and success of the initiative. One common challenge is the insufficient support from top management, as their commitment is pivotal for allocating resources and ensuring a clear strategic vision. Poor project management, including inadequate planning and scope definition, can lead to delays, cost overruns, and an inability to meet project milestones. Inadequate training and change management programs pose

another challenge, as employee resistance and a lack of acceptance of the new system can impede its successful integration. Data quality and migration issues are frequent stumbling blocks, with poor data quality and migration strategies leading to inconsistencies and errors. The temptation of excessive customization to fit the ERP system to existing processes can result in complexity and maintenance challenges. Employee resistance to change, often stemming from fear or a lack of understanding, poses a significant hurdle to successful ERP implementation. Insufficient communication about the goals and benefits of the ERP system can breed confusion and skepticism among stakeholders. Inadequate vendor selection, scope creep, and overlooking post-implementation support further contribute to potential failures. In contrast, recognizing and addressing these challenges through success factors such as strong top management support, effective project management, comprehensive training, data management strategies, and strategic communication is imperative. Success factors play a crucial role in steering ERP implementations away from pitfalls, ensuring smooth transitions, and maximizing the benefits of these complex systems. The careful consideration and application of these success factors underscore their paramount importance in mitigating challenges and contributing to the triumph of ERP implementations.

ERP emerges as a widely used software package, integrating various applications across an organization. Serving as a comprehensive and fully integrated solution, an ERP system supports automation of the entire business process within organizational standards. By offering a holistic view of the company's business through a shared and integrated database, the ERP system becomes crucial in the current era. In the realm of ERP systems, the significance of information grows, emphasizing the importance of updated and relevant data. Accounting Information (Hu et al., 2015; Li et al., 2018; Ying et al., 2017). Systems play a vital role by providing historical accounting information and forecasting, covering aspects like financial accounting, management control, and financial analysis (Beasley & Salterio, 2001; Knechel & Willekens, 2006; Nguyen, 2023a).

For effective management and investor monitoring, a company requires an information system capable of integrating all its activities. One such system is ERP, designed to automate business processes and provide real-time deployment of enterprise data. While conventional information systems manage transaction processing, reporting, and decision-making information, they may prove insufficient due to changes in the business environment.

The success of ERP implementation relies on permanent factors such as data, processes, and users. Additionally, the success factors that can be altered during ERP implementation include the adoption process, organizational resistance, and factors related to the organization's environment, system environment, user environment, and vendor environment, as noted by Morris & Laksmana (2010).

2. Literature Review

Agency Theory, also known as agency theory, elucidates the relationship dynamics between the agent and principal (Dang et al., 2020; Dang & Nguyen, 2021b; Nguyen & Dang, 2023a). In this theoretical framework, both parties—be it the principal or the agent—act in pursuit of their own self-interest. Agents seek to maximize their benefits, encompassing aspects such as salary, bonuses, or investments in the company, while principals strive to acquire comprehensive information, including insights into management activities related to company funds. The principal's responsibility entails evaluating management performance through reports, but a tendency exists for management to engage in actions that violate auditing standards, presenting reports that appear favorable to enhance their perceived performance. To counteract this, principals employ independent parties, such as external auditors, to conduct tests and reduce or minimize fraudulent activities by management in financial reporting.

ERP systems have played a pivotal role in diminishing conflicts of interest and mitigating information asymmetry within organizations (Paredes & Wheatley, 2018). By integrating various business processes, ERP systems provide a centralized platform for data storage, retrieval, and analysis. This centralized approach ensures that stakeholders across different departments access the same set of accurate and up-to-date information, reducing the likelihood of conflicting data interpretations (Paredes & Wheatley, 2018). Moreover, ERP systems streamline communication and collaboration by fostering a unified and transparent information flow. This transparency curtails the potential for conflicts of interest to arise due to disparate data sources or varying interpretations of organizational data. Furthermore, ERP systems facilitate real-time reporting, enabling decision-makers to access pertinent information promptly (Weshah et al., 2021). This timely access to information enhances organizational agility, reducing the information asymmetry that could lead to conflicts of interest. In practice, ERP systems act as a common ground where employees, managers, and executives share a consistent understanding of organizational data, fostering trust and minimizing conflicts arising from discrepancies or misunderstandings. The automation of routine processes and the enforcement of standardized practices by ERP systems also contribute to a more equitable distribution of information, reducing the likelihood of information asymmetry and conflicts of interest within the organizational framework.

Bonazzi & Islam (2007) expound on the agency relationship between legislators as principals and executive agencies as agents. The executive, possessing more information, may be inclined to maximize its budget opportunistically, while legislators, aiming to propose programs aligned with their constituents' interests, lack

sufficient information to verify the correct implementation of these programs by the executive (Almustafa et al., 2023; Dang & Nguyen, 2021a, Dang & Nguyen, 2022; Dang et al., 2022; Farag et al., 2018; Jensen, 1986; Watts & Zimmerman, 1983). Asymmetry in information may lead to executives concealing certain information from legislators. In such conditions, executives could influence accounting figures in financial statements. Instances of audit-related errors and fund mismanagement, involving auditors as independent parties, have been observed both nationally and internationally.

Khai (2022), Nguyen & Dang (2020), and Roberts (2005) assert that the agency problem arises between the principal and agent due to conflicting objectives and self-interest. Conflict emerges when multiple interests converge in a joint activity. The conflict of interest encourages information asymmetry. Principals must monitor agents to achieve organizational goals efficiently and enhance public accountability. In this context, ERP systems emerge as software solutions tailored for large-scale businesses. Comprising modules for marketing, sales, product design, field service, production, inventory control, distribution, procurement, facilities management, quality, process design, human resources, accounting, and finance, ERP systems employ relational database technology to consolidate diverse components within an organization's information systems. The ERP concept endeavors to control a firm's resources by handling integrated data and information systems, facilitating efficient planning and decision-making for management. ERP systems encompass all aspects of a company, both structurally and functionally.

Accounting, as a medium of communication in the business world, plays a diverse role depending on the type and complexity of the business entity. Accounting, according to Abedifar et al. (2019), is a system that follows business activities, processes information in the form of reports, and communicates them to decision-makers. In essence, accounting is the process of recording a company's business activities, documented in a form useful to stakeholders in decision-making. Accounting information, derived from the measurement, identification, and correlation of data, is crucial for decision-making. Accounting information quality hinges on its accurate and timely presentation, free from misleading notions, and providing benefits to information users. High-quality information contributes to a company's success, while information with low quality can make the business fail (Chan et al., 1986; Guérineau & Léon, 2019; Ho et al., 2023; Huynh et al., 2020; Kalkan et al., 2011; Nguyen, 2020, Nguyen, 2021). Accounting information must be presented comprehensively to meet the desired and necessary criteria.

As per O'Leary (2000), ERP systems are strategically designed to facilitate improvements in business processes, thereby elevating the quality of information, processes of decision-making, and overall company performance. This realization is achieved through the integrated nature of the firm's information, facilitated by the ERP system and its centralized database. The implementation of an ERP system in an organization is commonly perceived as challenging and intricate, leading to hesitancy among both top management and users. An intriguing phenomenon observed during ERP implementations is that success is contingent on key user support, which is complemented by strong backing from top management.

A notable advantage associated with the implementation of ERP systems is their capacity to enhance internal management decision-making. This circumstance is expected to position companies that adopt ERP systems for superior performance compared to non-ERP counterparts (Nguyen, 2022b; Nguyen, 2022c; Paredes & Wheatley, 2018; Shafakhebari & Oladi, 2015; Weshah et al., 2021;). Additionally, the implementation of ERP systems augments the management's capability to handle financial information for external users. Despite the agency problem being one of the challenges associated with ERP implementation, the system proves effective in improving management accuracy and reducing information asymmetry between investors and managers. Based on these insights, the formulated hypothesis for the study is as follows:

H1: The ERP system has a positive impact on the quality of accounting information.

3. Methodology

The data utilized in this study consist of primary data, specifically ERP user perceptions and opinions regarding the impact of the ERP system on accounting information quality. The primary data were gathered by distributing questionnaires to a manufacturing firm in Ho Chi Minh City that employs the ERP system. We sent survey questionnaires to 500 SMEs using the convenient sampling method; the number of quality-assured survey questionnaires returned was 145. Sampling in countries like Vietnam is considered very important by previous studies (Le et al., 2021; Nguyen, 2022a; Nguyen, 2022d; Nguyen, 2023c; Phan et al., 2021; Vo, 2020). Convenient sampling is a non-probability sampling method wherein participants are selected based on their easy accessibility and availability to the researcher rather than through a random or systematic approach. This method is often employed for its practicality and efficiency, especially when time, resources, or logistical constraints make random sampling difficult to implement. Researchers opt for convenient sampling when the goal is to gather information quickly or when the population of interest is challenging to reach through random methods. While convenient sampling offers logistical advantages, it comes with notable limitations. One major drawback is the potential for selection bias, as individuals who are more accessible may not be representative of the entire population. This bias

can compromise the external validity and generalizability of the study's findings. Additionally, convenient sampling may overlook certain segments of the population, leading to an underrepresentation of diverse perspectives. Researchers employing this method should be cautious about the inherent limitations and consider the trade-off between convenience and the reliability of the study's results, taking steps to acknowledge and address potential biases in their analysis and interpretation of the data. Despite its limitations, convenient sampling remains a pragmatic choice in certain research contexts, where the benefits of quick data collection outweigh the drawbacks associated with non-random participant selection.

Data collection methods: The research employed a questionnaire as the method of data collection, which respondents filled out. The questionnaire contained questions directed at ERP users to obtain their perceptions and opinions. Researchers ensured that the respondents received clear and straightforward instructions to facilitate accurate responses. Respondents were requested to provide a rating on a scale of 1 to 5 for the questions in the questionnaire.

Data Analysis. The data analysis in this study encompassed both descriptive analysis and statistical analysis conducted using SPSS 20 software. Descriptive statistics, as explained by Santoso et al. (2022), were employed to describe the obtained data for each variable without aiming to draw generally applicable conclusions. The statistical analyses included validity and reliability tests, the normality test, the R square test, the F test, as well as the t test.

The independent variable in this study is ERP. ERP is defined as an information system optimizing the distribution of company resources to enhance operational performance and competitiveness by integrating resources more efficiently (Pérez-Cornejo et al., 2019). To measure the ERP system's success, questions were designed to capture user experiences with the implementation, with respondents providing ratings on a 5-point Likert scale ranging from strongly disagree to strongly agree.

As per Bushman et al. (2004), Nguyen (2023b), Nguyen & Dang (2022a), Srinidhi (2021), and Yang et al. (2023), the dependent variable is the quality of accounting information. This is defined as information that reliably discloses complete and accurate material covering relevant and essential dimensions. Various questions were used to assess the quality of accounting information generated by the ERP system. Respondents assigned values on a 5-point Likert scale, where 1 point indicated the selection of the lowest-quality accounting information and 5 points indicated the highest-quality accounting information.

4. Results and Discussion

Validity Test: The validity test serves as a critical component in assessing the effectiveness and accuracy of the questionnaire instrument used for data collection. In this study, the validity test was executed to ensure that the questions in the questionnaire reliably measured what they intended to measure. The analysis of the results using SPSS revealed that all items in the questions demonstrated a significant level below 0.05. This outcome signifies that the questions employed in the questionnaire possess a high level of validity, indicating their capability to accurately measure the intended constructs or variables. A significant level below 0.05 suggests that the observed relationships or differences in responses are unlikely to occur by random chance. In other words, the findings are statistically significant, bolstering confidence in the questionnaire's ability to capture meaningful and accurate information. The low p-values indicate a strong relationship between the measured variables and the questions asked, affirming that the questionnaire is a valid tool for collecting pertinent data. In practical terms, the validity of the questionnaire ensures that the data collected is representative of the constructs under investigation. Researchers can have confidence that the responses obtained accurately reflect the participants' perceptions or opinions regarding the ERP system's impact on the quality of accounting information. This robust validation process enhances the credibility and reliability of the study's findings, contributing to the overall rigor of the research methodology.

Reliability Test: In the presented study, the reliability test, as shown in the Table 1, revealed that all variables attained Cronbach's alpha values exceeding the commonly accepted threshold of 0.70. This threshold is indicative of internal consistency among the items within each variable. The reliability coefficients, by surpassing 0.70, demonstrate that the questions designed to measure each variable are dependable and consistently measure the intended construct. A Cronbach's alpha value above 0.70 suggests that the items within each variable are closely related and contribute cohesively to the measurement of the targeted concept. It indicates that the questionnaire is measuring a unidimensional construct consistently, reinforcing the trustworthiness of the data collected. The higher the Cronbach's alpha, the greater the internal consistency among the items, and consequently, the higher the reliability of the measurement instrument.

Table 1. Reliability test

Variables	Cronbach's Alpha	Ket
ERP	0.799	reliable
AIQ	0.812	reliable

Normality test is shown in Table 2, the Kolmogorov-Smirnov test is a statistical method used to assess the normality of data distribution. In the context of your study, where the effect of the ERP application on the accounting information quality is being investigated, the result of the Kolmogorov-Smirnov test is crucial in determining whether the data conforms to a normal distribution. In your explanation, you state that the value of the Kolmogorov-Smirnov test is 0.726, which is greater than the significance level (0.05). This result indicates that the data is normally distributed. In statistical terms, when the p-value associated with the Kolmogorov-Smirnov test is greater than the chosen significance level (commonly set at 0.05), it suggests that there is no significant departure from normality. Therefore, the data can be considered to follow a normal distribution. The normal distribution assumption is important, especially when using regression models. A normal distribution of data is one of the key assumptions for the validity of statistical tests, including regression analysis. When data is normally distributed, it enhances the reliability and interpretability of the results obtained from statistical analyses. Moreover, you mention that the regression model is feasible for predicting the dependent variable, which is the information quality, based on the input of the independent variable, i.e. the ERP application. This is a crucial inference, as it suggests that the relationship between the ERP application and the accounting information quality can be meaningfully modeled and analyzed using regression techniques.

Table 2. Normality test

-	Residual Unstandardized
N	.145
K-Smirnov Z	.620
Asy. Sig (2-tailed)	.726

F Test: From the Table 3, it is evident that the F count stands at 4.251 with a significance coefficient below 5%. This signifies that the regression model is deemed suitable. Hence, it suggests that the regression model is effective in predicting the impact of ERP system implementation on accounting information quality.

Table 3. F test

Models	df	F	Sig.
Regression	1	4.251	0.002
Residual			
Total			

Table 4. R2 test

Model	Adjusted R2	Standard Error
1	0.078	3.403

Source: Author work

In Table 4, in the context of the given regression model, the coefficient of determination (R2) is 0.078. This implies that the established regression model can elucidate approximately 7.8% of the variance in the dependent variable through the included independent variables. Notably, the remaining 92.2% of the dependent variable's variance is influenced by other independent variables that were not specifically examined in this study. This underscores the importance of considering additional factors that may contribute to the overall explanation of the dependent variable's variability beyond the variables investigated in the present analysis.

The t-test in Table 5 serves as a tool for assessing the impact of the independent variable on the dependent variable. The next table shows the results of the t-test analysis, which shows how the data was processed statistically to find out how important the independent variable was and how it affected the dependent variable. This analytical approach aids in understanding the relationships and effects between variables in a more comprehensive manner.

Table 5. T test

Model	Sig.
1 (constant)	0.007
Total ERP	0.031

Presented are the outcomes derived from conducting a multiple linear regression analysis via SPSS to assess the impact of independent variables, specifically ERP, on accounting information quality (in Table 6). This analytical

approach is employed to delve into the intricate relationships between the identified independent variables and the measured quality of accounting information. By employing statistical tools and software such as SPSS, researchers gain a more nuanced understanding of how these variables interact and contribute to the overall quality of accounting information.

Table 6. Regression results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	beta		
1 (constant)	11.212	3.412		2.921	0.000
Total ERP	0.201	0.061	0.313	2.321	0.021

Dependent variable: Accounting information quality

The outcomes of the t-test indicate a noteworthy positive impact of the ERP system implementation on the quality of accounting information. The ERP system implementation variable demonstrates statistical significance, evident from the significance level being below 0.05. Consequently, H1 is accepted, affirming that the ERP implementation has a significant positive effect on the quality of accounting information. These findings highlight that the ERP implementation brings about a meaningful improvement in the quality of accounting information. The results of the regression test further support this conclusion, as the calculated significance level is below 0.05 at the confidence level. In the specific context of SMEs in Vietnam, further discussion is warranted to delve into the implications and specific factors influencing the observed positive impact of ERP implementation on the quality of accounting information within the SME sector in the Vietnamese business landscape.

Our research reveals a significant positive impact of ERP applications on the quality of accounting information within Vietnamese SMEs. This finding underscores the crucial role of ERP systems in enhancing the accuracy, reliability, and overall quality of accounting information. In the context of SMEs in Vietnam, where efficient business operations are pivotal for sustainable growth, the adoption of ERP applications emerges as a strategic decision for organizations aiming to optimize their financial reporting and decision-making processes. The positive correlation observed highlights the potential of ERP technology to streamline accounting practices, contributing to improved data accuracy and relevance for informed decision-making.

The implications of our findings extend beyond the immediate benefits of improved accounting information quality. For Vietnamese SMEs, where resource optimization is a key consideration, the integration of ERP systems offers a holistic approach to managing various aspects of business operations. The enhanced quality of accounting information derived from ERP applications not only supports internal decision-making but also strengthens external reporting, fostering transparency and accountability. Moreover, by leveraging ERP technology, Vietnamese SMEs position themselves to adapt to the evolving business landscape, meet regulatory requirements, and potentially gain a competitive edge in the market.

The discerned significant correlation between the implementation of an enterprise resource planning (ERP) system and the improvement of accounting information quality holds valuable implications for business managers and decision-makers in SMEs. This study suggests that SMEs stand to benefit substantially from adopting ERP systems, as the integration of various business processes through such systems can lead to more accurate, timely, and reliable accounting information. Business managers should consider the practical advantages of ERP implementation, such as streamlined processes, enhanced data accuracy, and real-time reporting capabilities. By recognizing the positive impact on accounting information quality, decision-makers can make more informed and data-driven choices, leading to improved financial management and strategic planning. Additionally, SMEs should prioritize adequate training programs to ensure that employees can effectively utilize the ERP system, thereby maximizing its benefits. The findings underscore the potential for ERP systems to contribute significantly to the overall efficiency and effectiveness of accounting practices in SMEs, offering a competitive edge in a dynamic business environment. Therefore, business managers and decision-makers should seriously consider the adoption of ERP systems as a strategic investment for optimizing accounting information quality and, subsequently, enhancing their decision-making processes.

In conclusion, the positive impact of ERP applications on accounting information quality in Vietnamese SMEs carries significant implications for organizational efficiency and competitiveness. This research underscores the importance of technological integration in optimizing accounting practices, with broader implications for informed decision-making, regulatory compliance, and overall business success within the dynamic landscape of Vietnamese SMEs.

5. Conclusion

In conclusion, this study delved into the impact of ERP implementation on the accounting information quality within SMEs in Vietnam. The findings unequivocally demonstrate a positive and significant relationship between

the adoption of ERP applications and the enhancement of accounting information quality in Vietnamese SMEs. The empirical evidence suggests that ERP systems play a pivotal role in optimizing business processes, contributing to the accuracy, reliability, and relevance of financial data.

While the findings of this study provide valuable insights into the correlation between ERP system implementation and the enhancement of accounting information quality, the extent of generalizability to all SMEs in Vietnam and potentially to SMEs in other developing countries should be approached with caution. Generalizability is contingent upon various contextual factors, such as the specific characteristics of the SMEs, the industries they operate in, and the economic and regulatory environments unique to each country. Vietnam, like any other developing nation, exhibits a diverse SME landscape with variations in size, industry focus, and technological infrastructure. Therefore, the study's applicability to the entire SME sector in Vietnam may be limited. Moreover, the business landscape and regulatory frameworks in other developing countries can differ significantly, influencing the relevance of the findings. While the study provides a valuable foundation, it is recommended that future research consider these contextual nuances to enhance the external validity of the findings and facilitate a more accurate assessment of the potential generalizability of the findings to SMEs in various developing country contexts.

The implications of this research extend beyond the immediate focus on accounting information quality. Vietnamese SMEs stand to benefit substantially from the adoption of ERP technology, not only in terms of internal decision-making processes but also in meeting external reporting requirements and fostering transparency. As technology continues to evolve, the positive correlation observed in this study emphasizes the strategic importance of embracing ERP applications as a means to enhance operational efficiency and gain a competitive edge in the dynamic business landscape of Vietnam.

In light of these findings, it is recommended that SMEs in Vietnam consider ERP adoption as a strategic investment to optimize their accounting processes, improve data quality, and ultimately position themselves for sustained growth and competitiveness. Future research endeavors may explore the specific challenges and opportunities faced by SMEs during the ERP implementation process and delve deeper into the nuanced factors influencing the observed positive impact on accounting information quality within the Vietnamese business context.

Data Availability

The data used to support the research findings are available from the corresponding author upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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