Factors affecting management accounting practices under mediating role of enterprise resource planning system: case in Vietnam

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Abstract: This study investigates the factors that influence management accounting practices (MAPs) through the mediating role of enterprise resource planning (ERP) systems in Vietnamese listed firms. Employing both qualitative and quantitative methods [partial least squares structural equation modelling PLS-SEM)], the research reveals that senior management commitment, organisational structure, software quality, vendor support, and innovative technologies have a statistically significant positive impact on ERP systems. Furthermore, this study highlights the mediating role of ERP systems in shaping the relationship between these factors and MAPs. These findings provide practical insights for organisations and policymakers to optimise ERP implementation, emphasising the importance of strong leadership, investment in advanced technologies, and robust vendor partnerships. These strategies are essential for enhancing organisational efficiency and maintaining long-term competitiveness in a dynamic business environment.

Keywords: enterprise resource planning system; management accounting practices; MAPs; Vietnam; PLS-SEM.

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1   Introduction

Enterprise resource planning (ERP) systems have become pivotal in modern organisational operations, offering integrated solutions that improve operational efficiency, data accuracy, and strategic decision making across functions such as finance, accounting, human resources, and supply chain management (Gupta and Kohli, 2006; Monk and Wagner, 2013). By centralising information and streamlining workflows, ERP systems support real-time data exchange, enhance agility, and strengthen organisational competitiveness (Bradford, 2020; Shtub and Karni, 2010). These systems can be web-based, client-server, or server-hosted and can be integrated with other platforms to form fully connected information infrastructures (Rom and Rohde, 2007).

A particularly significant area where ERP systems exert influence is their integration with management accounting practices (MAPs). ERP systems provide the technical infrastructure necessary to collect, process, and disseminate timely, accurate, and relevant financial and non-financial data. This capability enhances budgeting, cost control, performance evaluation, and strategic planning (Granlund and Malmi, 2002; Spathis and Constantinides, 2004). Additionally, modern ERP systems support advanced MAP tools, such as activity-based costing (ABC), balanced scorecard (BSC), and real-time variance analysis (Drury and Tayles, 2024; Robert et al., 1996). As a result, ERP adoption allows management accountants to shift from traditional data entry roles to more analytical and strategic positions (Alhatabat, 2020; Mahraz et al., 2019; Sánchez-Rodríguez and Spraakman, 2012).

While global literature has highlighted these transformations, most empirical evidence comes from developed countries with mature technological infrastructures. In contrast, Vietnam, particularly Ho Chi Minh City, the country's dynamic economic centre, offers a compelling yet under-researched context. Vietnamese listed firms face growing pressure to improve transparency, adopt digital innovation, and meet global standards. However, studies on ERP adoption in Vietnam have mostly focused on specific sectors (e.g., logistics) or localities (e.g., Hanoi) (Nguyen, 2020; Pham and Pham, 2020), lacking a comprehensive view of publicly listed enterprises where MAPs are crucial for performance and compliance.

Moreover, the practical determinants of ERP success, such as senior management commitment, organisational structure (OS), vendor support (VS), software quality, and integration of innovative technologies, have not been sufficiently examined in the Vietnamese context. The adoption of AI-enhanced ERP systems, a rising trend globally (Aktürk, 2021), also remains underexplored in Vietnamese enterprises. This limits our understanding of how digital innovations can support effective MAP transformation in emerging markets.

To address these gaps, this study investigates the factors that influence ERP systems and their mediating role in enhancing MAPs in Vietnamese listed firms. By applying partial least squares structural equation modelling (PLS-SEM), this study provides empirical evidence of how ERP-related organisational and technological factors shape the evolution of management accounting in Vietnam. The findings examine the factors influencing MAPs through the mediating role of ERP systems in Vietnamese listed firms.

2   Literature review and hypothesis development

2.1   Literature review

2.1.1   Resources based view theory

The resource-based view (RBV) theory is well known for strategic management and information systems (IS) (Ferreira and Ferreira, 2024). According to this theory, every organisation performs differently because of its different resources and management's ability to use resources and capitalise on opportunities (Penrose, 2009). Wernerfelt (1984) highlighted that competitive advantage can be obtained through a firm's resources and capabilities if the firm can utilise it effectively (Estensoro et al., 2022).

Highlighted by as Wernerfelt (1984), resources refer to all tangible and intangible assets that are semi-permanently attached to a firm at a given time, including technological knowledge, trade contracts, and machinery. Barney (1991) divides resources into three categories:

1   physical capital, such as property, plants, equipment, and the firm's location or surroundings

2   human capital employees' skills, experience, IT knowledge, intelligence, and loyalty to or the organisation

3   organisational capital, such as management accounting and control systems, coordination mechanisms, and formal and informal relations in the firm.

In general, the RBV highlights the pivotal role of organisational resources and capabilities in fostering competitive advantage and improving firm performance (Walker et al., 2015). Specifically, resources that are valuable, rare, inimitable, and non-substitutable (VRIN) enable companies to establish a competitive advantage, which leads to sustained superior performance compared to their competitors over time (Barney, 1991).

In the context of IS, the theory sheds light on how and capabilities impact the effects of business. In particular, a IS resources to harness packaged information firm's performance is determined by its ability to solidify and enhance its core competencies (Ravichandran et al., 2005). Using the RBV-guided theoretical background, this study managerial investigates ERP capabilities' contributions to improving firm performance through accounting practices (MAP). From this perspective, the MAP of an entity a firm to capture recognises ERP as an important capability that enables competitive advantage and improves its business performance.

2.1.2   Technology-organisation-environment framework

The technology, organisation, and environment (TOE) framework, introduced by (Tornatzky and Fleischer, 1990), aligns with Rogers' diffusion of innovations theory (Rogers, 1983). It has been widely recognised as an effective model for examining the adoption and integration of various information technology innovations (Oliveira and Martins, 2010). The TOE Framework effectively explains adoption behaviour across

three categories of technological innovation: those applied to technical tasks, innovations in business management, and technologies integrated into an organisation's core operations (Ramdani and Kawalek, 2007; Swanson, 1994). It highlights three critical factors influencing the adoption and implementation of technological innovation: the technological environment, OS, and external environmental conditions (Baker, 2011).

In the context of ERP systems, the TOE framework is particularly relevant, as it helps explain how firms assess their existing technological infrastructure, organisational readiness, and external pressures when deciding to implement ERP solutions (Baker, 2011). The technological context involves evaluating current IT systems and the compatibility of ERP software with existing processes, whereas the organisational context focuses on firm size, resource availability, leadership support, and internal communication. The environmental context examines external influences such as market competition, regulatory requirements, and industry trends. When applied to MAP, ERP systems – guided by the TOE framework–enhance data integration, automate routine accounting tasks, and provide real-time financial insights, enabling management accountants to engage in more strategic decision-making (Morawiec and Sołtysik-Piorunkiewicz, 2023). By improving process efficiency and supporting advanced analytics, ERP systems align with the TOE framework's premise that successful technology adoption requires a balance between internal capabilities and external environmental responsiveness. This connection highlights the value of the TOE framework in understanding how ERP systems can transform MAP, drive operational efficiency, and support strategic business goals (Mishra et al., 2007).

2.1.3   Technology diffusion theory

Technology diffusion theory explores the mechanisms through which technological innovation spread across different sectors and populations. This theory examines how new technologies are adopted over time, and the factors that influence their diffusion. The heart of technology diffusion theory is to understand the process of communicating and adopting innovations. Diffusion is defined as the spread of new ideas and technologies through various channels (Rogers et al., 2014). These authors established a comprehensive framework to examine the diffusion of technological change into various societal and OSs. There are many stages in the diffusion process. Early adopters are keen to adopt innovations first, followed by the early majority, the late majority, and laggards. This progression reflects increasing acceptance and integration of technology over time. In the study of Agarwal and Prasad (1997), the authors focused on the different overall diffusion rates due to the different adopter categories. Johannessen (2009) examined how the main influences of an innovation's relative advantage, compatibility with existing systems, complexity, trialability, and observability affect the extent of adoption. Moreover, opinion leaders and social networks have strong effects on technology diffusion. With broad implications, technological diffusion can impact behaviour, economic conditions, and subsequent innovations. (Bloom et al., 2021; Johannessen, 2009) analyse these impacts and how they drive future technological development.

2.2 *Empirical studies*

The transformative effects of ERP systems on MA practices were analysed by Sánchez-Rodríguez and Spraakman (2012) and Mahraz et al. (2019). First, Sánchez-Rodríguez and Spraakman (2012) focused on the role of ERP systems in changing the roles of management accountants from routine tasks to strategic roles through process automation, data integration, and reporting capabilities. However, the authors raised the challenges of ERP systems in terms of their complexity and training process requirements. On the other hand, data quality, information quality, and the evolving responsibilities of management accountants, which enhance efficiency and effectiveness, have been examined by Mahraz et al. (2019). The study focuses on ERP adoption duration; the authors believe that early adopters experience fewer substantial changes than late adopters do. Moreover, global ERP systems and business intelligence (BI) tools have driven MA transformations. Both studies conclude that ERP plays a significant role in reshaping MA practices while addressing distinct aspects of its implementation and adoption.

Alhatabat (2020) examined the influence of ERP system adoption on MAPs in Jordanian manufacturing firms. The research concluded that data accuracy, accelerating reporting processes, and decision-making capabilities are significantly improved by ERP systems. With ERP systems, real-time financial data and integrating accounting processes are implemented and applied; hence, the effectiveness of management processes is enhanced, and managers have more valuable and timely information to make decisions.

Aktürk (2021) highlights the integration of artificial intelligence (AI) into enterprise resource-planning systems, particularly in management accounting. The emerging trends, research contributions, and existing gaps in the literature regarding AI's role of AI in ERP systems were explored in this study. The role of AI in improving ERP functions AI's ability to perform tasks in a managerial accounting framework are shown in this research.

Astuty et al. (2022) focus on publicly owned enterprises in Indonesia, exploring the effect of ERP systems on the quality of management accounting IS. Partial least squares (PLS) analysis was used to analyse the 180 valid responses. The findings reveal positive relationships between ERP systems and the reliability, efficiency, and flexibility of MAIS in these organisations.

In Vietnam, there has been little research on ERP systems in specific industries or regions. For instance, the investigation of ERP applications in logistics enterprises of Pham and Pham (2020); and the general study of ERP systems in Ha Noi of Nguyen (2020). Comprehensive studies on the determinants of ERP adoption on MAPs in publicly listed companies on the Ho Chi Minh City Stock Exchange.

Despite extensive global research on the impact of ERP systems on MAPs, a notable research gap exists in the Vietnamese context. Existing studies, such as those by Pham and Pham (2020) on logistics enterprises and Nguyen (2020) on ERP systems in Hanoi, have primarily focused on specific industries or regions, lacking comprehensive analysis across diverse sectors. Critically, no study has investigated how ERP adoption influences MAPs in publicly listed companies on the Ho Chi Minh City Stock Exchange. These firms operate under complex regulatory frameworks and heightened stakeholder scrutiny, which may uniquely shape ERP implementation and its impact on accounting practices (Pham and Pham, 2020; Nguyen, 2020). Furthermore, while global studies have explored the integration of emerging technologies, such as AI, into ERP systems to enhance MAPs

(Aktürk, 2021), this area remains underexplored in Vietnam. Investigating how AI-driven ERP systems contribute to management accounting could provide valuable insights into strategic decision-making and operational efficiency. Additionally, advanced analytical techniques, such as PLS, effectively utilised by Astuty et al. (2022) in international research, are rarely applied in Vietnamese studies. This methodological gap limits our ability to thoroughly assess the relationship between ERP adoption and MAP outcomes.

Therefore, there is an urgent need for comprehensive research examining the factors influencing ERP adoption and their impact on MAPs in publicly listed companies in Vietnam. This research should also explore the integration of innovative technologies to improve ERP implementation and enhance strategic decision making.

2.3   Hypothesis development

2.3.1   The commitment of senior management impacts ERP system

Senior management commitment plays a pivotal role in the successful implementation of ERP systems (Umble et al., 2003). Moreover, Cooper (2006) defined management commitment as actively engaging in and sustaining behaviours that support others in achieving organisational goals. This commitment often involves investing in and upgrading information technology infrastructure while ensuring the provision of essential resources and authority for project execution (Englund and Bucero, 2006). Top management support can be defined by several key aspects, including active leadership participation in the project, accountability of leadership, and overall organisational and corporate backing (Karia and Soliman, 2017).

Siakas and Georgiadou (2003) highlighted that management commitment serves as a key motivator, driving employees toward continuous process improvement. Umble et al. (2003) further emphasise that senior management support is a critical success factor in ERP implementation. Zhang et al. (2003) identified two core dimensions of management commitment in ERP projects:

1   the allocation of adequate resources and leadership

2   the establishment of clear and achievable objectives for ERP implementation.

These elements are essential for ensuring the effective integration of ERP systems within organisations. Without consistent leadership and management commitment, ERP projects are more susceptible to failure because of misaligned goals and inadequate support. The studies by Hung et al. (2019), Tarigan et al. (2020) and Tarigan and Basana (2019) investigated the influence of top management's commitment on the ERP system.

Numerous studies, such as Bradford and Florin (2003) and Dezdar and Ainin (2011) have highlighted the crucial role of top management support throughout the ERP implementation process, emphasising its continued importance in realising the benefits of the system. Besides, Willcocks and Sykes (2000) identified senior leadership sponsorship, advocacy, support, and active involvement as key organisational factors that impact ERP success. ERP implementation extends beyond software adoption, requiring a company to realign its operations and transform its business processes (Dezdar and Ainin, 2011). Consequently, top management must openly, clearly, and genuinely demonstrate both financial and non-financial support to underscore the priority of ERP implementation (Somers and Nelson, 2001).

The authors proposed the hypothesis as follows:

Hypothesis H1   The commitment of senior management positively impacts ERP system at Vietnamese listed firms.

2.3.2   OS impacts ERP system

OS is crucial for the success of project implementation, as it enables effective coordination of various internal components, helping the organisation achieve its goals (Mintzberg, 1979). According to Karia and Soliman (2017), the organisational dimension focuses on how an organisation's characteristics and resources influence its decision to adopt technological innovation. They reported that the organisational dimension strongly influences the OS with the IT adoption of an innovation (Laukkanen et al., 2007). The ERP system is an enterprise-wide generic solution; thus, during the implementation phase, it requires vendors to customise the software according to the HEIs' requirements. Hence, a good understanding of how HEIs' characteristics are suitable for ERP systems is very important to examine organisations' decisions to adopt new IT innovations.

Morton and Hu (2008) developed a set of propositions about the relationships between the characteristics of ERP systems and the dimensions of OS based on structural contingency theory and Mintzberg (1979) ideal structural types of organisation. However, they do not empirically test the proposed relationships. While Morton and Hu (2004) mention that the success of ERP system implementation is significantly influenced by an organisation's structure. Applying structural contingency theory, their study identified how the fit between an organisation's structure and ERP system characteristics can predict implementation success. This analysis offers insights and future research directions to help managers tailor ERP adoption strategies to their OSs for better outcomes. Furthermore, Egdair et al. (2017) defined ERP systems are widely recognised as essential information technology tools that drive organisational improvement and have become a significant phenomenon in practice. This study examines how OS influences ERP by focusing on Libyan public institutions. Their findings suggest that OS can significantly improve ERP adoption in public organisations.

Hence, we proposed the hypothesis is:

Hypothesis H2   OS positively impacts ERP system at Vietnamese listed firms.

2.3.3   Software quality impacts ERP system

Software quality is commonly defined as the combination of the features and characteristics of a software product that determines its ability to fulfil user needs and expectations (Parthasarathy and Sharma, 2017). The International Organization for Standardization (ISO) formalised this concept through the ISO/IEC 9126 standard, mentioned in the study by Parthasarathy and Sharma (2017) has defined software quality as "the totality of features and characteristics of a product or service that bears on its ability to satisfy given needs". This definition was further expanded to describe software quality as "a total composite of characteristics of a software product which bears on the ability to meet the stated or implied needs" highlighting its multi-dimensional nature. This perspective aligns with Xenos and Christodoulakis (1997) five views of software quality: transcendental, user-based, manufacturing-based, product-based, and value-based. Additionally, Crosby (1979) offers a more straightforward definition,

describing software quality as 'conformance to requirements', which emphasises the importance of meeting established standards and user expectations (Parthasarathy and Sharma, 2017).

In practice, customers' perceptions change over time as they progressively become more acquainted with the product. An early estimation of a user's perception of software quality can be performed using the external software quality characteristics, based on which the software product can be delivered with a better quality (Parthasarathy and Sharma, 2017).

Software quality also affects the adaptability and scalability of an ERP system. Somers and Nelson (2001) emphasised that ERP systems must be flexible and customisable to align with dynamic business needs. High software quality allows for seamless customisation and integration with other organisational systems, thereby reducing the risk of project delays and cost overruns. Conversely, low-quality ERP software often requires extensive modifications, increasing complexity and the likelihood of implementation failure (Seddon et al., 2010).

In addition, the user experience is directly linked to software quality. If the ERP system is intuitive and user friendly, employees are more likely to adopt and use the system effectively. Markus et al. (2000) highlighted that user resistance is a common barrier in ERP projects, often stemming from poorly designed interfaces and complex workflow. High-quality software with an intuitive design reduces learning curves and enhances user engagement, leading to better system utilisation and improved organisational performance (Zhang et al., 2003).

Furthermore, the maintenance and upgradeability of ERP software are crucial for long-term success. Software with high-quality coding standards and documentation simplifies system maintenance and upgrades (Nah et al., 2001). This ensures that organisations can continuously adapt to technological advancements and evolving business requirements without incurring excessive costs or operational disruptions.

Hypothesis H3   Software quality positively impacts ERP system at Vietnamese listed firms.

2.3.4   VS impacts ERP system

According to Kinyua (2016), VS plays a crucial role in the successful implementation of ERP systems, although this has not been extensively explored in prior research. Vendors are responsible for providing essential maintenance and support services throughout the ERP implementation process (Fardipour, 2011). Although the definitions of VS vary, there is no universal consensus. Tarhini et al. (2015) described ERP vendors as implementation consultants who must thoroughly understand the client's existing business processes and align them with the pre-configured processes within the ERP system. Similarly, Oly Ndubisi et al. (2005) highlight that ERP vendors are responsible for maintaining and supporting ERP applications, offering updates and enhancements to ensure that the software evolves with technological and business advancements (Kinyua, 2016).

The importance of VS in ERP projects has been emphasised in various studies, although the findings differ. Tsai and Hung (2008) argued that vendor involvement is vital to ERP implementation, warning that inadequate support can negatively impact

project outcomes. This perspective is reinforced by Umble et al. (2003), who stressed the necessity of a strong vendor-client partnership to achieve successful ERP deployment.

Hypothesis H4   VS impacts ERP system at Vietnamese listed firms.

2.3.5 Innovation technologies affect ERP system

The study of Lara-Pérez et al. (2024) highlights that integrating innovative technologies into ERP systems enhances their effectiveness and provides manufacturing firms with a competitive advantage. Specifically, technological innovations improve the functionality of BI systems, facilitating the digital transformation of organisations and leading to improved overall firm performance. This study confirms that the synergy between ERP systems and innovation significantly optimises BI operations and positively impacts business outcomes. This research fills this gap by offering valuable evidence on how innovation-driven ERP systems contribute to organisational digitalisation and performance improvement.

2.3.6 ERP system impacts MAPs

ERP systems have significantly influenced MAPs by enhancing information accuracy, streamlining processes, and reshaping management accountants' roles (Hyvönen et al., 2009; Sangster et al., 2009). ERP systems automate routine accounting tasks, reduce errors, and provide comprehensive insights into organisational performance. Such integration facilitates more accurate budgeting, cost management, and strategic planning. Additionally, ERP systems support advanced analytical tools, enabling management accountants to shift from traditional reporting roles to more strategic value-adding functions, ultimately improving organisational efficiency and competitiveness (Spathis and Constantinides, 2004).

The study by Sánchez-Rodríguez and Spraakman (2012) find that ERP systems significantly improve management accounting by enhancing data accuracy, timeliness, and consistency through advanced computing power and standardised processes. Automation reduces manual data entry, allowing management accountants to focus on analysis. This study highlights the transformative impact of ERP systems on management accounting driven by enhanced transaction processing and an expanded chart of accounts.

Furthermore, according to Kholeif (2011), ERP systems have emerged as essential tools in modern business, driving significant changes in MAPs. Research shows that ERP systems integrate ICT with business processes, fundamentally transforming management accounting and control by enhancing data integration, standardisation, and process automation. Studies emphasise that ERP systems are not merely technological tools, but catalysts for re-evaluating and evolving management accounting functions. This shift has intensified discussions on management accounting change and stability, highlighting the critical role of ERP systems in reshaping how organisations manage and control financial information.

From the above arguments, we propose Hypothesis 5, that the ERP system positively impacts MAPs at Vietnamese listed firms.

3   Research model and methodology

3.1   Research model

Figure 1   Research model
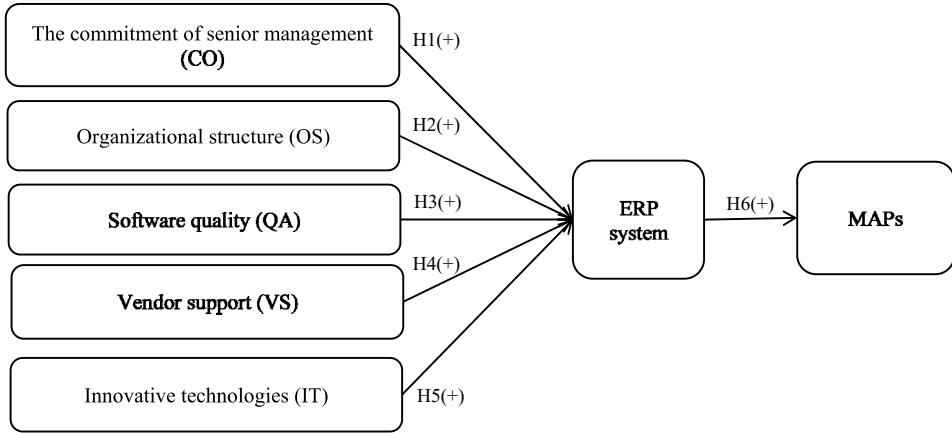
3.2   Research method

This study employs a mixed-method approach, including qualitative methods (such as expert interviews and surveys) and quantitative methods (using PLS-SEM). The specific steps are as follows:

First, qualitative research methods were used to explore, adjust, and supplement the observed variables on the initial scale. Specifically, the research team conducted expert interviews and a preliminary survey of customers to collect opinions on the appropriateness and representativeness of the draft scale. Based on the results of group discussions, the scale was adjusted and developed into an official scale. The research team then developed an interview questionnaire based on an adjusted scale and conducted a pilot survey. The questionnaire content was reviewed, evaluated, and adjusted, mainly through a heads and directors of in-depth group discussion session with 50 department enterprises in Ho Chi Minh City, Vietnam. This means enhancing the reliability while ensuring that the measured variables and usability of the survey tool, are highly appropriate in a practical context. All participants were informed of the purpose, scope, and voluntary nature of the study prior to their involvement. Informed consent was obtained from each participant before data collection commenced. Participants were assured of the confidentiality and anonymity of their responses, and were informed that they could withdraw from the study at any time without any consequences.

Second, the data collected and entered were processed using Smart PLS software, following these steps: descriptive analysis, analysis of factor loadings and convergent validity of variables, reliability testing of scales, discriminant validity testing, and multicollinearity assessment. Moreover, to test model fit, the study utilised R^2 or adjusted R^2 values (with priority given to the adjusted value for greater accuracy). In addition, the f-square (f^2) statistic in SmartPLS is an important measure of effect size, which helps assess the impact of the independent variable on the dependent variable in PLS-SEM.

This index helps to determine whether an exogenous variable has a significant impact on the endogenous variable. According to Cohen (2013), the effect size value is interpreted as follows:

1   small effect: if $f^2 \geq 0.02$

2   medium effect: if $f^2 \geq 0.15$

3   large effect: if $f^2 \geq 0.35$.

3.3   Sample size

According to Nguyen (2011), data collection requires a sample size of at least five observations per variable. Based on this guideline, the author distributed questionnaires directly to 345 managers and department heads/deputy heads at the branches of joint-stock commercial banks in Ho Chi Minh City from September 2023 to December 2023. After excluding incomplete surveys, we obtained 319 valid responses. Responses were measured using a five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'.

Random and non-probabilistic sampling was used in the qualitative phase. Thus, people were invited to be interviewed and to participate in focus groups according to professional criteria, practical experience, and readiness for cooperation. Using this approach, the research team could obtain in-depth and multi-dimensional data from professional literature and management practices from managers who deeply understand enterprise ERP systems and MAPs.

4   Research results and discussions

4.1   Descriptive statistics

This study offers a comprehensive analysis of the survey results, focusing on the characteristics of the respondents across several dimensions, including gender, age, educational background, enterprise size, and work experience. Of the 319 valid responses, 51% were male and 49% were female. The balance ratio of genders contributes to the rationale of the research and findings.

In terms of age, the diversity in the respondents appears as follows: 22% (71 individuals) of the under 30 years old group and 42% (133 individuals) of the 30–40 years age group, the largest group. Meanwhile, 24% (78 individuals) were aged 40–50 years and 12% (37 individuals) were over 50 years old. This distribution indicates a broad spectrum of age groups, allowing for varied insights based on generational experience.

The respondents' educational qualifications highlighted a high level of professional training. Only 5% (15 individuals) held other degrees and 13% (43 individuals) had college degrees. The majority, 50% (158 individuals), possessed a bachelor's degree, while 32% (103 individuals) held postgraduate qualifications. This suggests that most respondents were well educated and provided informed and credible perspectives for the study.

Table 1   Descriptive statistics

Sample		Frequency	Percentage (%)
Gender	Female	157	49%
	Male	162	51%
	Total	*319*	*100%*
Age	Under 30-year-olds	71	22%
	From 30- to 40-year-olds	133	42%
	From 40- to 50-year-olds	78	24%
	Over 50-year-olds	37	12%
	Total	*319*	*100%*
Educational qualifications	Postgraduate	103	32%
	University	158	50%
	College	43	13%
	Others	15	5%
	Total	*319*	*100%*
Firm size	Under 200 employees	68	21%
	From 200 to 500 employees	119	37%
	From 500 to 1,000 employees	81	25%
	Over 1,000 employees	51	16%
	Total	*319*	*100%*
Experience	Under 5 years	26	8%
	From 5 to 10 years	89	28%
	From 10 to 20 years	145	45%
	Over 20 years	59	18%
	Total	*319*	*100%*

Regarding the size of enterprises, the results reflect the participation of organisations with varying workforce sizes. Specifically, 21% of the surveyed companies had fewer than 200 employees, whereas 25% employed 500–1,000 individuals. The largest segment (37%) represented enterprises with 200–500 employees, and 16% of the respondents came from companies with over 1,000 employees. This distribution underscores the dominance of larger enterprises in the sample, offering insights into organisations with significant operational scales.

Work experience among respondents further enriches the dataset. Of the 327 respondents, only 8% had less than five years of experience, while 28% reported 5–10 years of tenure. The largest group (45%) had 10–20 years of experience and 18% had been in the workforce for more than 20 years. These figures reflect a balanced representation of professionals across various career stages, ensuring a comprehensive perspective of the topics explored.

4.2 Research results and testing

Based on Table 2, it can be concluded that the model satisfies the reliability requirements for the scales because all the variables have a Cronbach's Alpha ≥ 0.7 (DeVellis and Thorpe, 2022) and CR ≥ 0.7 (Bagozzi and Yi, 1988). Additionally, validity is passed as the average variance extracted (AVE) values exceed the threshold of 0.5. Specifically, the adequacy of the measurement model (Hair et al., 2017) was supported by the AVE values for all factors, ranging from 0.633 to 0.768.

Table 2   The results of the internal consistency reliability test (CA, CR, AVE)

	Cronbach's alpha (CA)	Composite reliability (CR)	Average variance extracted (AVE)
CO	0.993	0.993	0.979
ERP	0.868	0.866	0.721
IT	0.971	0.976	0.944
MAP	0.962	0.964	0.929
OS	0.948	0.952	0.865
QA	0.988	0.988	0.976
VS	0.871	0.878	0.794

Source: Results from Smart PLS

Table 3   Test for discriminant validity by HTMT

	CO	ERP	IT	MAP	OS	QA	VS
CO							
ERP	0.664						
IT	0.247	0.485					
MAP	0.353	0.726	0.421				
OS	0.496	0.539	0.25	0.353			
QA	0.359	0.385	0.141	0.265	0.251		
VS	0.567	0.636	0.328	0.485	0.497	0.252	

Source: Results from Smart PLS

Table 4   VIF values

	ERP	MAP
CO	1.653	
ERP		1.000
IT	1.123	
OS	1.424	
QA	1.157	
VS	1.547	

Source: Results from Smart PLS

According to Clark and Watson (2016) and Kline (2015), the standard threshold for assessing discriminant validity is 0.85. The results presented in Table 3 demonstrate that all the HTMT values are below the threshold of 0.85. Discriminant validity indicates that each construct is distinct from the other constructs within the model (Table 3).

The results in Table 4 indicate that the variance inflation factor (VIF) values confirm no violation of the assumption of multicollinearity among the predictor factors as all coefficients fall within the acceptable range (VIF < 3) (Hair et al., 2017). The next section provides the results of the model estimation using SmartPLS software (Figure 2).

Figure 2   Research results by using SmartPLS software (see online version for colours)
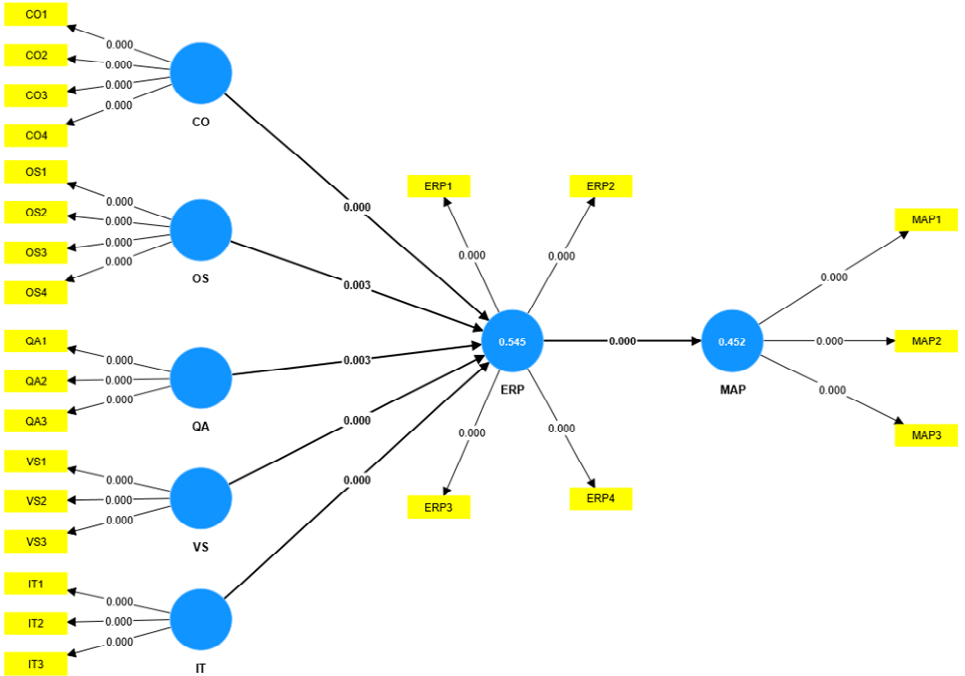
Source: Results from Smart PLS

Figure 2 shows the bootstrapping analysis performed using SMARTPLS 4. It provides most of the results essential for evaluating the structural model, including direct, indirect, and moderating effects of the factors within the model. These outcomes play a critical role in assessing the relationships between constructs, testing hypotheses, and understanding the dynamics of the above model. Subsequently, the authors used the R-squared or adjusted R-squared ratio to evaluate the extent to which one or more independent factors influence the dependent factor in the research model.

Table 5   R-square and R-square adjusted

	R-square	*R-square adjusted*
ERP	0.545	0.538
MAP	0.452	0.451

Source: Results from Smart PLS

Table 5 shows R-square and R-square adjusted. The results highlight the significant influence of organisational factors on ERP system. The R-square (R^2) value of 0.545 indicates that 54.5% of the variance in ERP system is explained by CO, OS, QA, VS, and IT. This suggests a strong relationship between these factors and ERPs system. Additionally, ERP system has a notable impact on MAPs, with an R^2 value of 0.452. This means that 45.2% of the variance in MAPs is driven by ERP system, underscoring ERP system's role in improving MAPs. The p-values of 0.000 confirm the statistical significance of these relationships.

4.3   Discussions

To evaluate the relationships between variables, the authors utilised the results of the bootstrap analysis. The outcomes of the hypothesis testing for the relationships between the variables are presented in Table 6.

Table 6   The summary of bootstrap results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
CO -> ERP	0.327	0.326	0.055	5.960	0.000
ERP -> MAP	0.673	0.672	0.049	13.633	0.000
IT -> ERP	0.254	0.253	0.063	4.066	0.000
OS -> ERP	0.145	0.143	0.048	2.992	0.003
QA -> ERP	0.121	0.120	0.041	2.973	0.003
VS -> ERP	0.211	0.212	0.056	3.730	0.000

Source: Results from Smart PLS

Table 6 presents the bootstrap analysis results, showing the relationships between various organisational factors and their impact on ERP systems and MAPs. Key statistical indicators, such as the original sample values (O), sample means (M), standard deviations (STDEV), t-statistics, and p-values, were used to assess the significance of these relationships.

First, the results reveal that the commitment of senior management (CO) has a significant positive impact on ERP performance, as indicated by a path coefficient of 0.327. This suggests that higher levels of senior management commitment substantially contribute to more effective ERP implementation. A t-statistics of 5.960 exceeds the critical threshold, and a p-value of 0.000 indicates that this relationship is statistically significant at the 1% level. These findings underscore the critical role of senior leadership in driving ERP system performance, highlighting that active involvement and support are essential for maximising system performance and achieving organisational goals. These findings are consistent with Hung et al. (2019), Tarigan et al. (2020) and Tarigan and Basana (2019).

Second, the impact of ERP systems on MAPs was most substantial in the model. The path coefficient was 0.673, supported by a very high t-statistic of 13.633 and a p-value of 0.000, confirming the statistical significance of this relationship. This result implies that well-implemented ERP systems lead to significant improvements in MAPs by providing better data integration, real-time reporting, and more accurate financial insights, ultimately enhancing decision-making processes within organisations. These findings

have been demonstrated by Hyvönen et al. (2009), Sangster et al. (2009), and Sánchez-Rodríguez and Spraakman (2012).

Third, the effect of innovative technologies (IT) on ERP systems is also significant, with a path coefficient of 0.254, a t-statistic of 4.066, and a p-value of 0.000. This finding highlights the importance of adopting advanced and innovative technologies to support the ERP system performance. The integration of cutting-edge technology ensures that ERP systems are more adaptable, efficient, and capable of assembling the evolving needs of organisations, thereby contributing to their overall effectiveness. The research results are in line with Lara-Pérez et al. (2024), who emphasised that innovative technologies are a key determinant of ERP system performance.

Fourth, OS shows a positive influence on the ERP system, with a path coefficient of 0.145, a t-statistic of 2.992, and a p-value of 0.003. Although this effect was smaller than that of the other factors, it was still significant. This suggests that a flexible and well-defined OS that promotes communication and collaboration across departments can facilitate smoother ERP adoption and operation. Some studies have confirmed this relationship, such as Morton and Hu (2004, 2008), and Egdair et al. (2017).

Fifth, the relationship between software quality (QA) and ERP systems is positive but moderate, with a path coefficient of 0.121, t-statistic of 2.973, and p-value of 0.003. This result emphasises that the quality of ERP software, including its reliability, user friendliness, and scalability, directly affects the success of ERP implementation. High-quality software reduces system errors, enhances user satisfaction, and improves the overall system performance. The findings were demonstrated by Markus et al. (2000), Zhang et al. (2003) and Nah et al. (2001), who confirmed that superior software quality ensures seamless integration with existing processes and reduces the risk of system failures, ultimately contributing to the long-term performance of ERP systems.

Finally, VS significantly impacts the ERP system, as demonstrated by a path coefficient of 0.211, a t-statistic of 3.730, and a p-value of 0.000. This finding underscores the importance of the ongoing support from ERP vendors in terms of training, system updates, and troubleshooting. Effective VS ensures that organisations can maximise the value of their ERP systems, promptly address technical challenges, and adapt to new requirements over time. The results are in line with Tsai and Hung (2008) and Umble et al. (2003), who argue that vendor involvement is vital for effectively performing ERP systems. In addition, they emphasised the necessity of a strong vendor-client partnership to achieve successful ERP system deployment.

5　Conclusions and limitations

This study provides comprehensive insights into the factors influencing ERP systems and their impact on MAPs in listed companies in Ho Chi Minh City, Vietnam. The findings confirm that ERP systems significantly enhance the MAP by improving data integration, real-time reporting, and decision-making processes. Among the influencing factors, senior management commitment has emerged as the most critical determinant of successful ERP implementation. This underscores the necessity of strong leadership support in resource allocation, goal setting, and fostering an organisational culture that embraces technological innovation. Building on this foundation, the study further reveals that innovative technologies, VS, and OS also have significant positive effects on ERP performance. This interconnected relationship suggests that when organisations invest in

advanced technologies, cultivate strategic partnerships with ERP vendors, and maintain a flexible OS, they create a more supportive environment for ERP adoption and success. Moreover, while the influence of software quality is moderate compared with other factors, it remains essential to ensure that ERP systems are user-friendly, scalable, and seamlessly integrated into organisational operations.

The practical implications of our findings are significant. Organisations aiming to optimise ERP performance should prioritise leadership engagement, strategically invest in cutting-edge technologies, and strengthen relationships with ERP vendors. This multifaceted approach can drive greater system efficiency and contribute to long-term organisational success. For policymakers and industry practitioners, these insights offer valuable guidance for developing strategies that maximise ERP investments, ultimately enhancing organisational efficiency and competitiveness in a dynamic market.

Although we have drawn up specific findings from this research, some limitations still exist. First, ERP adoption across diverse industries and firm sizes in Vietnam must be examined to capture broader insights. Additionally, the influence of cultural and regulatory factors on ERP success is yet to be thoroughly investigated. Another critical area for future research lies in exploring the integration of emerging technologies such as AI into ERP systems, a dimension that remains underexplored in the Vietnamese context but holds significant potential for advancing ERP capabilities.

Declarations

The authors declare no conflicts of interest regarding the publication of this manuscript. In addition, ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies, have been completely observed by the authors.

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