



Enterprise Resource Planning Systems and Firm Performance: Examining Mediating and Moderating Effects

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Abstract

This study examines the impact of Enterprise Resource Planning (ERP) systems on firm performance in Vietnam's Hotel, Restaurant, and Entertainment sector, with a particular focus on the moderating role of perceived environmental uncertainty (PEU). Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) on primary data, the findings reveal that ERP systems significantly improve firm performance through the enhancement of management accounting practices (MAPs). Improved MAPs enable more informed decision-making, efficient resource allocation, and greater operational effectiveness, thereby boosting overall firm performance. Furthermore, PEU moderates the relationship between MAPs and performance, with a more pronounced effect observed in highly uncertain environments. This research contributes to the existing body of knowledge by integrating the Resource-Based View, Contingency Theory, and Technology Diffusion frameworks, addressing a notable gap in ERP literature. The findings provide practical implications for organizations, underscoring the importance of aligning ERP implementation with strategic goals to enhance adaptability in uncertain markets and strengthen overall firm performance.

Keywords:

Enterprise Resource Planning System;
Management Accounting Practices;
Perceived Environmental Uncertainty;
Firm Performance.

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1- Introduction

In an era of rapid digital transformation, organizations increasingly leverage Enterprise Resource Planning (ERP) systems to enhance operational efficiency, streamline business processes, strengthen supplier relationships, reduce costs, and improve decision-making [1]. As Vietnam integrates into the global economy, businesses face mounting pressure to innovate and remain competitive. Service-oriented firms in the Hotel, Restaurant, and Entertainment sector must adopt technological advancements to optimize operations and sustain growth. ERP systems serve as strategic tools that enable real-time data processing, enhancing organizational agility and data-driven decision-making. However, most existing research has focused on ERP adoption in manufacturing firms, with limited studies investigating its impact on service businesses in emerging markets like Vietnam.

ERP systems integrate various business functions within a unified digital infrastructure, combining finance, accounting, human resources, supply chain, and customer relationship management [2, 3]. These systems play a crucial role in enhancing management accounting practices (MAPs) by automating processes, improving financial reporting, and supporting advanced management tools such as the Balanced Scorecard (BSC) and Activity-Based Costing (ABC) [4]. While prior studies have examined ERP's role in automating routine accounting tasks [5, 6], research on how ERP system influences firm performance via MAPs, particularly in service-oriented businesses, remains scarce. Additionally, most studies focus on large multinational firms, overlooking the unique challenges service businesses in emerging economies like Vietnam face.

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Studies by Alhatabat (2020) and Sánchez-Rodríguez, & Spraakman (2012) [5, 7] highlighted ERP's influence on MAPs, emphasizing the shift toward strategic roles for management accountants, process automation, and improved reporting capabilities. Meanwhile, Aktürk (2021) [8] explored AI's potential to enhance ERP functionalities, including automation, advanced data analytics, and decision-making improvements. Collectively, these studies underscore ERP's significant impact on management accounting, particularly in process automation, data integration, and enabling accountants to take on more strategic roles.

According to Chandra & Augustine (2020) [9], considering Perceived Environmental Uncertainty (PEU) enables organizations to better adapt to external changes, thereby improving performance. However, research has not extensively examined PEU's moderating role in the relationship between ERP adoption and firm performance, particularly through its impact on MAPs. While ERP systems enhance operational efficiency, financial reporting, and strategic decision-making [6, 8], previous studies have largely focused on ERP's direct effects on firm performance, neglecting its interaction with external uncertainty factors [7, 10]. Despite ERP's role in integrating financial reporting, cost control, and performance measurement [3, 4], the extent to which ERP-driven MAPs contribute to firm performance under uncertain conditions remains underexplored. Firms in high-uncertainty environments, facing market fluctuations, technological disruptions, and regulatory changes, must rely on ERP-enabled MAPs for forecasting, resource allocation, and strategic agility [1, 2]. In contrast, firms in low-uncertainty environments may depend less on ERP-driven MAPs, as their decision-making remains more stable [11].

To address this gap, this study examines the determinants of ERP system adoption and its impact on firm performance through the mediating role of MAPs, with a specific focus on PEU as a moderating factor. By integrating the Resource-Based View (RBV), Contingency Theory, and the Technology Diffusion Framework, this study offers a comprehensive theoretical framework that explains the strategic role of ERP system, the critical factors of its system, its environmental contingencies, and its diffusion across Vietnamese firms within the sector of Hotel, Restaurant, and Entertainment. A detailed discussion of this theoretical foundation is presented in Section 2.1.

By incorporating external uncertainty factors into the ERP-MAPs-performance framework, this study contributes to ERP and management accounting literature, addressing a critical research gap. The findings will offer both theoretical advancements and practical insights, guiding businesses on how to optimize ERP adoption to enhance decision-making, sustain operational efficiency, and maintain competitiveness in uncertain environments. Furthermore, by recognizing the moderating role of PEU, this study provides a nuanced understanding of how firms can tailor their ERP adoption strategies to navigate external uncertainties while strengthening internal management accounting processes.

2- Literature Review and Hypothesis Development

2-1-Literature Review

To provide a robust theoretical foundation, this study integrates Resource-Based View (RBV), Contingency Theory, and Technology Diffusion Theory to examine the complex relationship between ERP adoption, MAPs, and firm performance. RBV identifies ERP systems as strategic resources that enhance managerial decision-making [12], while Contingency Theory suggests that ERP's impact varies depending on external uncertainties [13]. Technology Diffusion Theory explains the adoption process, ensuring firms understand how ERP systems can be leveraged at different stages [14, 15]. Together, these theories provide a comprehensive framework for analyzing the direct, mediating, and moderating effects of ERP adoption on firm performance.

2-1-1- Technology Diffusion Theory

Technology Diffusion Theory explores the mechanisms through which technological innovations spread across different sectors and populations. This theory examines how new technologies are adopted over time and what factors influence their diffusion. The heart of Technology Diffusion Theory is understanding the process of communicating and adopting innovations. Diffusion is defined as "spreading new ideas and technologies through various channels [15]". These authors established a comprehensive framework to examine the diffusion of technological changes to various societal layers and organizational structures. There are many stages in the diffusion process. The early adopters are keen to adopt innovations first, then the early majority, and lately the late majority and laggards. This progression reflects the increasing acceptance and integration of technology over time. In the study of Rogers et al. (2014) [16], the authors focus on the different overall diffusion rates due to different adopter categories. Johannessen (2009) [17] examined how the main influences, which are the innovation's relative advantage, compatibility with existing systems, complexity, trialability, and observability, affect the extent of adoption. Moreover, the other factors, opinion leaders and social networks, have strong effects on technology diffusion. With broad implications, technological diffusion could impact behavior, economic conditions, and subsequent innovations. Johannessen (2009) and Bloom et al. (2021) [17, 18] analyzed these impacts and how they drive future technological developments.

Recent research has extended the application of Technology Diffusion Theory to enterprise systems, particularly sustainable ERP implementation. According to Abobakr et al. (2024) [19], the adoption and diffusion of sustainable ERP systems significantly impact firms' sustainability performance [20–22] by enhancing resource efficiency and reducing

environmental footprints. Their findings highlight that organizations that effectively integrate sustainable ERP experience higher levels of operational agility, aligning with the core principles of technological diffusion.

2-1-2- Resources Based View Theory

The Resource-Based View (RBV) theory is a well-known topic in Strategic Management and Information Systems. Based on that theory, every organization performs differently because of their different resources and management's ability to use resources and catch the opportunities [23]. In addition, Wernerfelt (1984) [24] highlighted that competitive advantage could be obtained through a firm's resources and capabilities if the firm can utilize them effectively.

According to Wernerfelt's (1984) [24] study, resources encompass all tangible and intangible assets that are semi-permanently tied to a firm at a given time, such as technological knowledge, trade contracts, and machinery. Barney (1991) [12] further categorized these resources into three distinct groups: 1) physical capital, which includes property, plant, equipment, and the firm's location or business environment; (2) human capital, encompassing employees' skills, experience, IT knowledge, intelligence, and commitment to the organization; and (3) organizational capital, which refers to management accounting and control systems, coordination mechanisms, and both formal and informal relationships within the firm. In general, the RBV highlights the pivotal role of organizational resources and capabilities in fostering competitive advantage and improving firm performance [25]. Specifically, resources that are valuable, rare, inimitable, and non-substitutable enable companies to establish a competitive advantage, which leads to sustained superior performance compared to their competitors over time [12].

Within the domain of information systems, the theory provides valuable insights into how IS resources and capabilities influence business outcomes. Specifically, a company's performance is determined by how effectively it utilizes information to enhance and strengthen its core competencies [26]. This study employed the RBV as its theoretical framework to investigate the role of ERP capabilities in enhancing firm performance through MAPs. Within this context, MAP of an entity considers ERP as a critical capability that enables firms to gain a competitive advantage and improve overall performance.

2-1-3- Contingency Theory

Contingency theory is one of the most widely used research approaches in management accounting (MA) [27]. It argues that there is no best way to design management accounting systems for all firms, as their design depends on various contingent factors, such as structure, environmental uncertainty, competitive intensity, technology, strategy, and firm size [28]. As a result, management accounting system configurations are firm-specific and can be considered inimitable resources [29].

In this paper, a contingency theory approach will be used to reflect the economics-based domain of MA research, employing a quantitative mathematical approach [30, 31]. Contingency theory helps explain the successful implementation and use of MAPs based on particular contingencies or factors, including environmental uncertainty, technology, organizational size and structure, strategy, and national culture [27]. This approach will be applied to predetermine and empirically test the assumptions in this study [30]. In addition to contingency theory, institutional theory concepts will be applied, in particular new institutional sociology, which explains the role of external institutions' structure in shaping and constraining the actions of implementing ERPs, in particular elements that reflect regulation, best practices, and copying other successful competitors [32].

2-1-4- Enterprise Resource Planning

The ERP system plays a pivotal role in modern business models by integrating comprehensive business information across the entire value chain, including financial, accounting, human resources, supply chain, and customer information [33]. This integration fosters streamlined operations and enhanced organizational efficiency. Building on this, [34] highlighted how ERP systems contribute to improving organizational competitive advantages, positioning businesses to respond more effectively to market demands.

ERP systems are particularly transformative in the field of management accounting, especially in small and medium enterprises (SMEs). Alsughayer (2024) [35] explored the role of ERP systems in management accounting within SMEs in Saudi Arabia, demonstrating how these systems enhance financial reporting, cost control, and real-time decision-making capabilities. Similarly, examine ERP integration in production companies, focusing on how the adoption of ERP systems reshapes the roles and required skills of management accountants, emphasizing the need for accountants to develop technological proficiency alongside traditional accounting expertise.

In the context of MA, the adoption of MAPs, a part of the business value chain, is affected critically by ERP systems. Alhatabat (2020) [5] believed that ERP systems improve transaction-oriented activities strongly. By using ERP, managers can gather more valuable accounting information in flexible ways, which agrees with findings by [36–38]. Therefore, the role of ERP systems consists of operational integration and strategic decision-making support.

2-2-Empirical Studies

The transformative effect of ERP systems on MA practices was analyzed by Mahraz et al. (2019) and Sánchez-Rodríguez & Spraakman (2012) [6, 7]. Rodríguez & Spraakman (2012) [7] 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 raise the challenges of ERP systems' complexity and training process requirements. On the other hand, data quality, information quality, and the evolving responsibilities of management accountants to enhance efficiency and effectiveness are examined by Mahraz et al. (2019) [6]. The study focuses on ERP adoption duration; the authors believe early adopters experience fewer substantial changes than late adopters. Moreover, MA transformations have been driven by global ERP systems and business intelligence tools. Both studies conclude that ERP's significant role in reshaping MA practices while addressing distinct aspects of its implementation and adoption.

In the study of Alhatabat (2020) [5], the influence of ERP system adoption on management accounting practices within Jordanian manufacturing firms is examined. The research concludes that data accuracy, accelerating reporting processes, and decision-making capabilities are significantly improved by ERP systems. With ERP systems, real-time financial data and integrated accounting processes are implemented and applied; hence, the effectiveness of management processes is enhanced, and managers have more valuable and in-time information to make decisions.

Aktürk (2021) [8] highlighted the integration of Artificial Intelligence (AI) into Enterprise Resource Planning systems, particularly in management accounting. The emerging trends, research contributions, and existing gaps in literature regarding AI's role in ERP systems are explored by the study. The roles of AI in improving ERP functions and AI's ability to perform tasks in a managerial accounting framework are shown in the research.

Astuty et al. (2022) [39] study focuses on the case of publicly owned enterprises in Indonesia, exploring the effect of Enterprise Resource Planning (ERP) systems on the quality of management accounting information systems (MAIS). Partial Least Squares (PLS) was used to analyze 180 valid responses. The findings reveal that there are positive relationships between ERP systems and the reliability, efficiency, and flexibility of MAIS in these organizations.

In Vietnam, there are few research about ERP systems in some specific industries or regions. For instance, the investigation of ERP applications in logistics enterprises of [40] and the general study of ERP systems in Ha Noi of [41]. There is a lack of comprehensive studies about determinants of ERP adoption on management accounting practices (MAPs) in Vietnamese service companies.

Recognizing this research gap, the author aims to explore how ERP systems impact MAPs in service companies in Vietnam. The goal is to provide recommendations for these companies to select and implement ERP systems that align with their management accounting strategies and overall development objectives. Such an alignment would help avoid resource waste while enhancing the competitive capacity of businesses in today's volatile market economy.

Overall, these studies collectively demonstrate that ERP systems are transformative for management accounting practices by improving data quality, process integration, and reporting capabilities. They also underscore the potential for further enhancement when combined with advanced technologies like AI and BI. However, the studies also recognize the challenges and adaptation requirements needed to leverage ERP systems effectively. However, this issue has not been explored in previous studies; thus, in the paper, we aim to examine the determinants of ERP systems on MAP under the moderating role of perceived environmental uncertainty (PEU).

2-3-Hypothesis Development

2-3-1- The Commitment of Senior Management Impacts MAP

Abbasi et al. (2014) [42] suggested that managers in businesses can adjust the accounting information system to meet the organization's information needs by shaping these needs into specific accounting practices. They also propose that senior management commitment involves allocating resources within the organization, particularly those essential for the continuous operation of ERP systems, as well as resources for maintenance and upkeep [43]. By participating in ERP implementation, executives prioritize investing time to ensure that ERP systems benefit the organization. These priorities influence the amount of accounting information generated, as leaders require more comprehensive information to support business decision-making. With advancements in technology and the widespread application of information systems in business operations, executives need a vision and the ability to set performance targets and allocate outcomes to specific departments [44, 45]. Choosing solutions and managing adverse information necessitates that managers align their decisions with the organization's overall objectives in relation to its business domain.

In addition, according to RBV theory, it is argued that firms gain competitive advantages when they effectively utilize strategic assets such as ERP systems [12]. Senior management commitment plays a crucial role in ensuring ERP adoption is successfully integrated into MAPs, enabling firms to improve decision-making and financial reporting [12].

From this, the following research hypothesis is proposed:

Hypothesis H1: The commitment of senior management positively impacts the managerial accounting practices on Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

2-3-2- ERP System Control Function Impacts the Managerial Accounting Practices

The ERP system control function means the combination of monitoring, managing, and regulating business operations. The main purpose of this function is to ensure ERP systems work correctly and serve the organization's goals. It requires a series of mechanisms, including access controls, data validation, workflow approvals, and real-time monitoring. Grabski et al. (2011) and Umble et al. (2003) [46, 47] believe that these controls are critical for maintaining data integrity, enhancing operational efficiency, and supporting compliance with regulatory requirements.

Data accuracy and reliability are two features that are improved essentially by ERP systems because of strict data entry protocols and validation checks. Reliable data is vital material for accurate financial reporting, cost analysis, and performance metrics, hence improving the quality of the decision-making process [11]. Additionally, ERP systems have the advantage of real-time financial information by centralizing data, integrating financial and non-financial data, and providing a better perception for managers to make decisions and plan [11].

Automation of budgeting and forecasting is implemented by using ERP systems thanks to centralized and consolidated data. Granlund & Malmi (2002) [48] stated that automation helps managers to evaluate the performance with standardized budgets; thus, the adjustment can occur in time. Moreover, ERP systems have strict data access and workflow approvals. It ensures the right people reach the right place, data which means improving internal control for the organization. In management accounting practices, these controls are significant in accountability and transparency in financial reporting [49].

Lastly, the controlling function of ERP systems plays an important role in improving decision-making processes through timely, valuable data [38]. Additionally, they mentioned that the integrated control function in ERP systems provides effective tools for managers to evaluate performance, profitability, and planning. Therefore, ERP systems are a strong base for practicing effective managerial accounting, leading to the success of a business [50].

Hypothesis H2: ERP system control function positively impacts the managerial accounting practices on Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

2-3-3- ERPs Software Quality Impacts the Managerial Accounting Practices

Ifinedo & Nahar (2006) [51] defined system quality as the technical specifications of an information system. Accordingly, a high-quality ERP system includes automated features for certain functions and allows for easy account additions. The authors suggest that flexibility, ease of use, ease of learning, and integration are key characteristics in determining ERP system quality. Rom & Rohde (2007) [11] proposed focusing on the technical aspects of ERP systems and examining their impact on management accounting practices. In this study, the authors also define technical support within an ERP system as the capability of its technical features to be utilized in designing and implementing management accounting techniques. Based on this, the following research hypothesis is proposed:

Hypothesis H3: ERP software quality positively impacts the managerial accounting practices on Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

2-3-4- ERP System Implementation Consultant Competency Impacts the Managerial Accounting Practices

ERP System Implementation Consultant competency refers to the skills, knowledge, and expertise of consultants involved in deploying ERP systems within an organization. The competency of consultants is key to the success of advancing MAPs [52]. In the ERP system, these consultants keep the system on the right track, which means the systems always serve the organization's operational and strategic needs and goals, including configuration, customization, training, and integration with existing processes. The customized ERP systems need to be able to collect relevant financial and non-financial data needed for managers' decision-making process [11].

Consultants have the role of connecting ERP functionalities and organizational goals. Using incorporating tools such as balanced scorecards and KPIs, they enable effective performance monitoring and strategic adjustments [50]. Moreover, they enhance real-time data access, crucial for tasks such as budgeting and variance analysis, allowing managers to quickly respond to shifting business conditions [11].

Lastly, competent consultants will ensure the ERP systems adapt to the changes of MAPs. Training processes and guidance for staff about the adjustment of the ERP will be provided by the consultants to maximize the benefits of the system [53]. Furthermore, according to Wang et al. (2007) [54], ERP systems are complex and enterprise-wide, requiring specialized skills to navigate challenges during implementation. To address this, organizations often rely on external consultants for expertise. These consultants act as both knowledge providers and facilitators, assisting with ERP configuration and value extraction by offering product insights and process guidance [55, 56]. Through structured learning, formal training, and knowledge-sharing activities, they help organizations develop the necessary competencies for successful implementation.

Hypothesis H4: ERP system implementation consultant competency impacts the managerial accounting practices on Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

2-3-5- MAPs Affect Firm Performance

Management Accounting Practices (MAPs), including various techniques and methods, involve the collection, processing, and provision of financial and non-financial data to users—particularly managers—to enhance overall organizational performance in areas such as cost management, budgeting, and performance measurement. By implementing well-developed MAPs, companies can improve the effectiveness of their performance [57, 58]. Additionally, MAPs help organizations achieve their strategic goals [59] by providing essential information to develop appropriate differentiation strategies—such as quality, delivery, and customer service—which are critical for customer loyalty and competitiveness [60]. Moreover, MAPs address the shortcomings of traditional approaches by offering better insights into outcome measurement and streamlining operations [61]. They do so by equipping managers with up-to-date data to make informed decisions that meet customer needs [61] and by motivating employees to work efficiently [62, 63], thereby enhancing organizational effectiveness. In conclusion, the effective application of MAPs contributes significantly to improved performance.

Gichaaga (2014) [64] highlighted that the increase in performance can be attributed to the implementation of MAPs. Similarly, research by Ahmad (2017) and Maziriri (2017) [65, 66] also confirmed the positive impact of MAPs on the performance of small and medium-sized enterprises (SMEs). Moreover, the empirical findings consistently demonstrate a significant correlation between MAPs—assessed through various tools such as budgeting, Activity-Based Costing (ABC), Balanced Scorecards (BSC), Total Quality Management (TQM), and organizational performance. Ultimately, the primary objective of implementing MAPs is to enhance firm performance [67].

Therefore, we propose the hypothesis as followed:

Hypothesis H5: MAPs have a positive effect on firm's performance in Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

2-3-6- Moderating Role of PEU

Environmental uncertainty affects competition, customers, suppliers, markets, and regulations, influencing company operations [9, 68]. PEU, a key contingency factor, complicates planning and control [69]. In stable environments, mechanistic control systems enhance performance, whereas organic systems offer flexibility in uncertain conditions [9].

PEU reflects management's perception of uncertainty, shaped by external conditions [70]. It captures competition intensity and market unpredictability, including pricing, customer preferences, and technological shifts [71, 72]. Beyond competition, it accounts for supply chain disruptions and new product introductions [70, 71].

Distinguishing risk from uncertainty, PEU extends beyond corporate outcomes to external conditions affecting performance [73]. Insufficient information increases uncertainty, making risk management essential. Decision-making becomes challenging in unstable environments, often leading to inefficiencies and suboptimal strategies [73, 74].

PEU also moderates the impact of firm resources on performance. Adaptability determines how effectively firms utilize technology and human capital; quick responses enhance outcomes, while rigid structures hinder progress [75, 76].

According to Contingency Theory, external factors like PEU influence organizational effectiveness [13]. Firms in volatile environments rely on ERP-enhanced MAPs to navigate change (Otley, 1980). This study hypothesizes that PEU positively moderates the MAPs-performance relationship.

Hypothesis H6: PEU positively moderates the effect of managerial accounting practices on firm performance at Vietnamese service firms within the sector of Hotel, Restaurant, and Entertainment.

3- Research Model and Methodology

3-1- Research Method

The article employs a mixed-method approach, including qualitative methods (such as expert interviews and surveys) and quantitative methods (using the Partial Least Squares Structural Equation Modeling-PLS-SEM). Data collected and entered is processed using the 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 (Figure 1). Moreover, to test model fit, the study utilizes R^2 or adjusted R^2 values (with priority given to the adjusted value for greater accuracy).

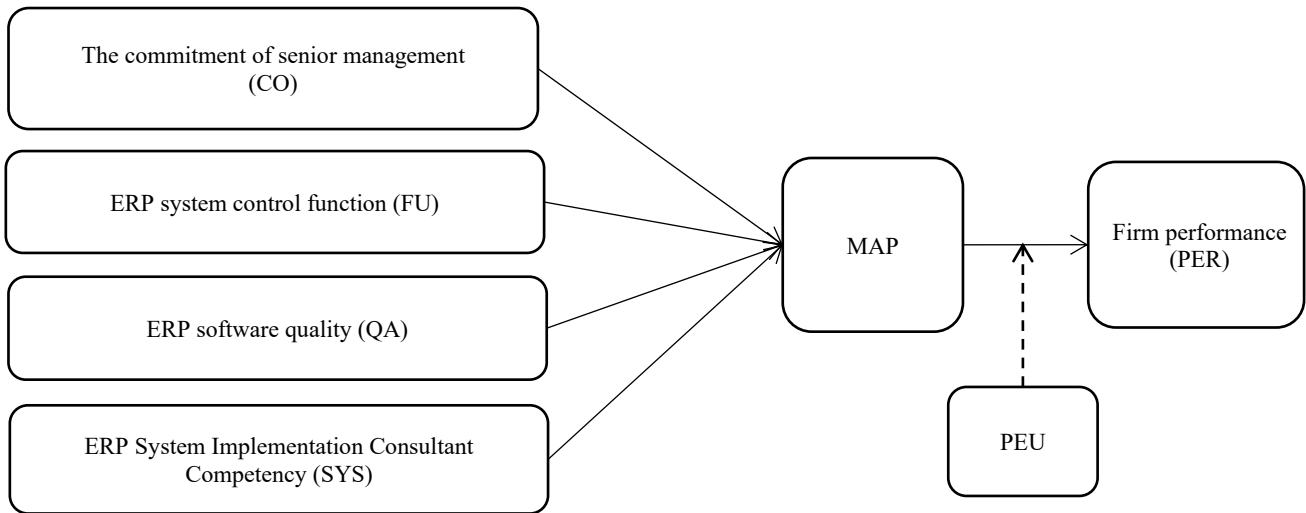


Figure 1. Research methodology

3-2-Sample Size

The 345 managers and department heads were selected for participation based their personal contribution to MAPs and the implementation of ERP systems in Vietnam’s Hotel, Restaurant, and Entertainment sector. Participants were managers or leaders, so they had authority in decision-making in terms of financial management, cost control, and budgeting. The study investigated Ninh Van Bay Travel Real Estate JSC, Hoi An Tourist Service Company, and ATS Investment Group Joint Stock Company to maintain industrial relevance.

A random, non-probability sampling approach was adopted for the study, which employed purposive sampling to target professionals with ERP experience and convenience sampling to enhance response rates. Based on the guideline set out by Nguyen (2011) [77], which states that for each variable, at least five observations should be made, a survey was conducted (from September to December 2023) that distributed 345 questionnaires (see Appendix I). Removing incomplete responses, we kept 319 valid responses, forming a strong, widespread response dataset.

4- Research Results and Discussions

4-1-Descriptive Statistics

The 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. There are 45% male respondents and 52% female respondents in the total of 198 valid responses. The balance ratio of genders contributes to the rationality and reasonableness of the research and findings.

In terms of age, the diversity in the respondents appears as follows: 21% (41 individuals) of the under-30-year-old group and 69% (137 individuals) of the 30–40 age group, the largest group. Meanwhile, 6% (12 individuals) were aged 40–50, and 4% (8 individuals) were over 50. This distribution indicates a broad spectrum of age groups, allowing for varied insights based on generational experiences.

The educational qualifications of the respondents highlight a high level of professional training. Only 1% (2 individuals) held vocational diplomas, and 2% (4 individuals) had associate degrees. The majority, 79% (156 individuals), possessed bachelor's degrees, while 18% (36 individuals) held postgraduate qualifications. This suggests that most respondents are well educated, providing informed and credible perspectives for the study.

Regarding the size of the enterprises, the results reflect the participation of organizations with varying workforce sizes. Specifically, 9% of the surveyed companies had fewer than 200 employees, while 28% employed 200–500 individuals. The largest segment, 39%, represented enterprises with 500–1,000 employees, and 24% of respondents came from companies with over 1,000 employees. This distribution underscores the dominance of larger enterprises in the sample, offering insights into organizations with significant operational scales.

Work experience among the respondents further enriches the dataset. Of the 229 respondents, 13% had less than five years of experience, while 37% reported 5–10 years of tenure. The largest group, 40%, had 10–20 years of experience, and 10% 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 on the topics explored (Table 1).

Table 1. Descriptive Statistics

	Sample	Frequency	Percentage (%)
Gender	Female	103	32%
	Male	216	68%
	Total	319	100%
Age	Under 30-year-olds	78	24%
	From 30- to 40-year-olds	137	43%
	From 40- to 50-year-olds	65	20%
	Over 50-year-olds	39	12%
	Total	319	100%
Educational qualifications	Postgraduate	87	27%
	University	156	49%
	College	43	13%
	Vocational education	33	10%
	Total	319	100%
Firm size	Under 200 employees	53	17%
	From 200 to 500 employees	106	33%
	From 500 to 1,000 employees	81	25%
	Over 1,000 employees	79	25%
	Total	319	100%
Experience	Under 5 years	26	8%
	From 5 to 10 years	89	28%
	From 10 to 20 years	107	34%
	Over 20 years	97	30%
	Total	319	100%

4-2- Research Results and Testing

Based on the figures in 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 [78] and CR ≥ 0.7 [79]. Additionally, the validity is passed as the Average Variance Extracted (AVE) values exceed the threshold of 0.5. Specifically, the adequacy of the measurement model [80] is 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	0.992	0.992	0.977
FU	0.948	0.953	0.864
MAP	0.987	0.988	0.963
PER	0.989	0.990	0.979
PEU	0.990	0.991	0.981
QA	0.989	0.989	0.979
SYS	0.887	0.887	0.816

Table 3. Test for discriminant validity by HTMT

	CO	FU	MAP	PER	PEU	QA	SYS	PEU × MAP
CO								
FU	0.513							
MAP	0.579	0.460						
PER	0.370	0.382	0.436					
PEU	0.214	0.230	0.466	0.441				
QA	0.420	0.345	0.395	0.357	0.091			
SYS	0.664	0.567	0.555	0.372	0.197	0.397		
PEU × MAP	0.151	0.269	0.582	0.042	0.132	0.146	0.212	

According to Clark & Watson (2016) and Kline (2015) [81, 82], the standard threshold for assessing discriminant validity is 0.85. The results presented in Table 3 demonstrate that all HTMT values are below the threshold of 0.85. Therefore, the discriminant validity indicates that each construct is distinct from other constructs within the model (Table 3).

Table 4. VIF values

	CO	FU	MAP	PER	PEU	QA	SYS	PEU × MAP
CO			1.843					
FU			1.494					
MAP				1.943				
PER					1.316			
PEU								
QA			1.258					
SYS			1.830					
PEU × MAP				1.557				

The results from 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 ($VIF < 3$) [80]. The next section provides the results of the model estimation using SmartPLS software (Figure 2).

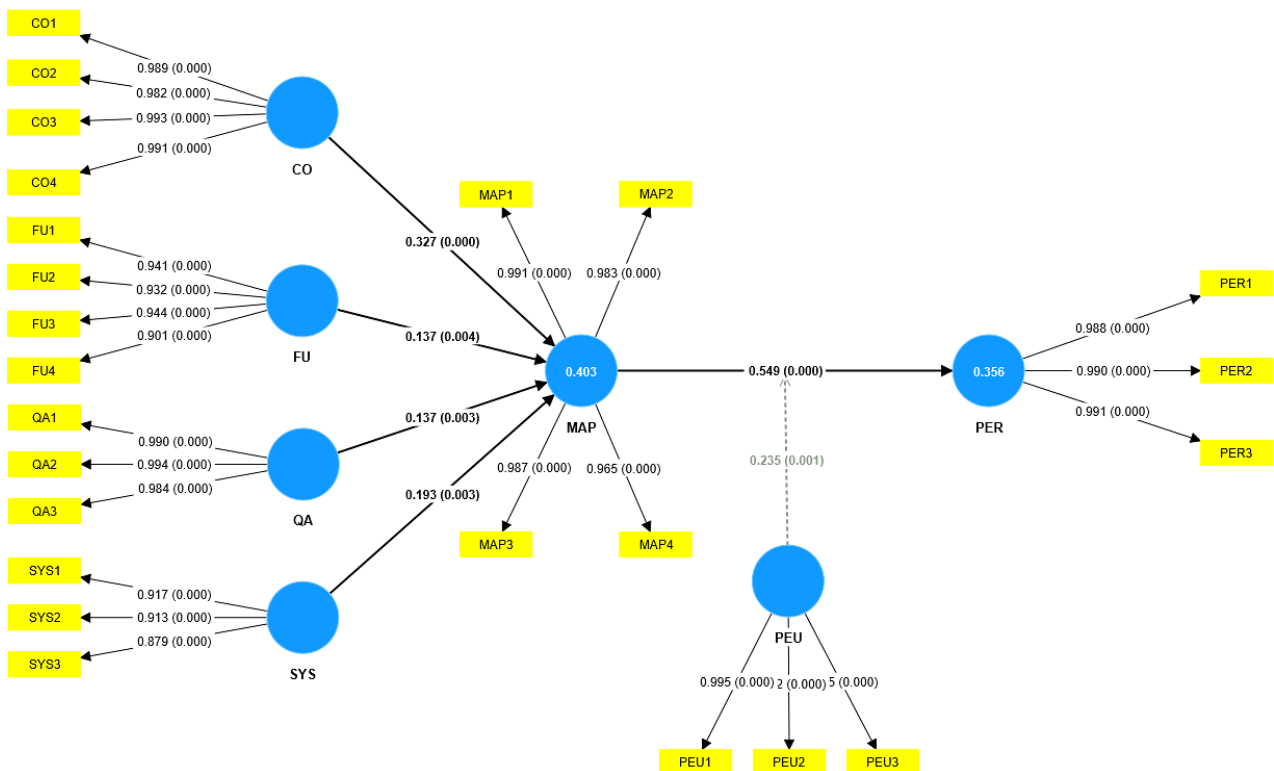


Figure 1. Structural equation modeling (PLS-SEM)

Figure 2 shows the bootstrapping analysis, which is performed in SMARTPLS 4. It provides most of the results essential for evaluating the structural model, including direct effects, indirect effects, and moderating effects of the factors within the model. These outcomes play a critical role in assessing the relationships between constructs, testing the hypotheses, and understanding the dynamics of the above model. Following that, the authors will use 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
MAP	0.403	0.395
PER	0.356	0.350

Table 5 indicates that the variance in managerial accounting practices (MAP) is 40.3% explained ($R^2 = 0.403$) by its independent predictors: The commitment of senior management (CO), ERP system control function (FU), ERP software quality (QA), and ERP System Implementation Consultant Competency (SYS); with 59.7% attributed to external factors. Similarly, the variance in firm performance (PER) is 35.6% explained ($R^2 = 0.356$) by MAP and perceived ease of use (PEU), leaving 64.4% influenced by factors outside the model.

4-3- Discussions

To evaluate the relationships between variables, the author will utilize the results of the Bootstrap analysis. The outcomes of the hypothesis testing for the relationships between variables are presented in Table 6.

Table 6. The result of the relationship impacts and hypothesis summary

Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ((O/STDEV))	P values	Accept/ Reject hypothesis
CO → MAP	0.327	0.324	0.053	6.135	0.000	Accept
FU → MAP	0.137	0.137	0.047	2.900	0.004	Accept
MAP → PER	0.549	0.552	0.096	5.708	0.000	Accept
PEU → PER	0.235	0.233	0.097	2.432	0.015	Accept
QA → MAP	0.137	0.137	0.046	2.955	0.003	Accept
SYS → MAP	0.193	0.198	0.065	2.966	0.003	Accept
PEU × MAP → PER	0.235	0.236	0.069	3.382	0.001	

All proposed hypotheses were accepted, indicating strong support for the relationships among constructs in the model. In concrete: (i) Managerial accounting practices (MAP) play a central role in linking ERP-related factors (CO, FU, QA, SYS) to firm performance (PER); (ii) perceived environmental uncertainty (PEU) acts as both an independent predictor and a moderator, emphasizing its dual influence on firm performance; (iii) senior management commitment (CO) exerts the strongest influence on MAP, highlighting the critical role of leadership in driving accounting practices. The results of the relationship impacts are analyzed as follows.

First, the relationship between senior management commitment and managerial accounting practices is significant with a path coefficient of 0.327, a T-statistic of 6.135, and a p-value of 0.000. This highlights the critical role of leadership in influencing accounting practices within the organization. The result has the same conclusion as Abbasi et al.'s (2014) [42] study. The strong commitment of managers will lead to a favorable environment for the adoption and implementation of managerial accounting practices, resulting in improved effectiveness. The findings highlight the roles of organization leaders in actively engaging and prioritizing accounting systems. The stronger senior management commitment is, the more effective managerial accounting practices are. With their managerial roles, they are able to support the accounting practices by providing resources, setting strategic priorities, and establishing an environment to achieve the organization's goals. In addition, the results are consistent with RBV theory, which emphasizes that ERP systems, as strategic assets, require strong managerial support to be effectively integrated into business operations [12]. Senior management's commitment ensures adequate resource allocation, structured implementation, and alignment of ERP functionalities with organizational objectives.

Second, the control function of ERP systems has a significant, albeit relatively weaker, impact on managerial accounting practices, with a path coefficient of 0.137, a T-statistic of 2.900, and a p-value of 0.004. These findings align with previous studies by [11, 49, 50], highlighting that ERP system controls positively contribute to accounting practices. The control functions embedded in ERP systems provide comprehensive tools for managing and monitoring financial data, ensuring its consistency and integrity across all departments. This integrated functionality eliminates redundancies and reduces errors, thereby facilitating more reliable managerial accounting practices. Additionally, these systems enable

process standardization by automating routine accounting tasks, such as budget monitoring and financial reporting, which improves operational efficiency and aligns accounting processes with organizational workflows. ERP systems also enhance financial monitoring by providing real-time data and analytical insights. This capability supports managers in making timely and informed decisions, particularly in dynamic business environments where quick adjustments are crucial. Furthermore, control functions ensure compliance with regulatory standards by maintaining audit trails and offering precise documentation, thus reducing organizational risks related to financial reporting. While the control function of ERP systems significantly contributes to managerial accounting, its impact may be less pronounced compared to factors such as senior management commitment. However, ERP system controls remain indispensable for organizations aiming to optimize their accounting practices. To fully leverage these benefits, companies should prioritize the effective implementation and continuous improvement of ERP system controls through regular updates and user training. This strategic focus can further enhance the role of ERP systems in supporting robust and efficient managerial accounting practices.

Third, the quality of ERP software has a significant impact on managerial accounting practices, as evidenced by a path coefficient of 0.137, a T-statistic of 2.955, and a p-value of 0.003. These findings are consistent with studies by [11, 51]. High-quality ERP software ensures reliability, accuracy, and ease of use, which are critical for effective accounting practices. This highlights the importance of selecting robust, well-designed ERP solutions to enhance managerial accounting efficiency. The results show evidence about ERP software quality significantly enhances MAPs in Vietnamese service firms within the Hotel, Restaurant, and Entertainment sector. A robust, well-integrated ERP system ensures financial accuracy, cost control, compliance adherence, and strategic financial planning, all of which are critical for sustaining operational efficiency and profitability. Given the sector's reliance on real-time financial insights and dynamic revenue management, organizations must prioritize high-quality ERP system implementation to remain competitive and achieve long-term success. The findings reaffirm that investing in well-designed ERP solutions is not just a technological decision but a strategic imperative for effective managerial accounting in Vietnam's growing service economy.

Fourth, consultant competency in ERP system implementation significantly affects managerial accounting practices, as indicated by a path coefficient of 0.193, a T-statistic of 2.966, and a p-value of 0.003. The findings are confirmed by [11, 48, 50, 53]. Competent consultants provide expertise and guidance that are crucial for ensuring the successful integration of ERP systems with managerial accounting functions in Vietnamese service firms within the Hotel, Restaurant, and Entertainment sector. This finding highlights the importance of engaging skilled professionals during ERP implementation to maximize its impact on accounting practices. Skilled consultants ensure proper ERP configuration, knowledge transfer, accounting system integration, and risk management, maximizing the benefits of ERP adoption. Engaging qualified professionals during ERP implementation is essential to achieving accounting efficiency, financial accuracy, and strategic decision-making capabilities, reinforcing the need for expert guidance in digital transformation initiatives.

Fifth, managerial accounting practices have a strong and significant impact on firm performance, as demonstrated by a path coefficient of 0.549, a T-statistic of 5.708, and a p-value of 0.000. These findings are consistent with the studies of [57–59, 61, 83]. Enhanced managerial accounting practices directly contribute to improved firm performance by supporting better decision-making, efficient resource allocation, and increased operational effectiveness. This underscores their critical role in driving organizational success. The strong impact of managerial accounting practices on firm performance in Vietnamese service firms within the Hotel, Restaurant, and Entertainment sector is well-supported by empirical evidence. Effective MAPs enhance decision-making, resource allocation, operational efficiency, and competitive positioning, making them a key driver of financial success. Given their crucial role, firms should invest in advanced managerial accounting techniques and integrate them with modern ERP systems to maximize financial performance and long-term sustainability.

Finally, PEU significantly influences firm performance, as indicated by a positive path coefficient of 0.235, a T-statistic of 2.432, and a p-value of 0.015. This finding suggests that firms operating in uncertain environments must adapt their strategies to mitigate risks and seize opportunities, ultimately enhancing performance. It highlights the critical role of external environmental factors in shaping organizational outcomes. Moreover, PEU moderates the relationship between managerial accounting practices (MAPs) and firm performance, with a path coefficient of 0.235, a T-statistic of 3.382, and a p-value of 0.001. This indicates that the impact of MAPs on performance is influenced by the level of environmental uncertainty. Firms facing higher uncertainty derive greater benefits from robust accounting practices, as these provide enhanced clarity and support for decision-making in volatile conditions. The research results align with Contingency Theory, which posits that external environmental factors shape the effectiveness of management systems [13]. When firms face high uncertainty, characterized by market fluctuations, regulatory changes, and technological disruptions, senior management's role becomes even more crucial. Their strategic direction and adaptive decision-making help organizations leverage ERP capabilities for real-time data processing, forecasting, and operational flexibility [9]. Senior management commitment fosters a dynamic approach, allowing firms to capitalize on ERP-enhanced MAPs for greater agility. This aligns with previous studies highlighting the role of ERP systems in improving budgeting, financial reporting, and strategic planning [11]. The strong impact of PEU suggests that organizations facing higher external volatility benefit more from ERP's ability to process vast amounts of real-time data and facilitate responsive decision-making [8].

While firms in high-uncertainty environments benefit significantly from ERP's real-time data processing and decision-support capabilities, the advantages of ERP adoption extend beyond volatile conditions. Firms in low-uncertainty settings also gain significant advantages, as ERP-driven MAPs enhance operational efficiency, cost control, and long-term strategic planning, ensuring financial stability even in predictable market conditions. Additionally, ERP systems support regulatory compliance, improve financial transparency, and provide scalability, enabling firms to adapt to gradual market changes and technological advancements. This highlights that ERP adoption remains a strategic asset regardless of environmental uncertainty levels.

This study's findings align with the integrated theoretical framework, reinforcing ERP systems as strategic assets that enhance managerial decision-making based on RBV theory [12]. The moderating effect of PEU on the MAPs–Firm Performance relationship supports Contingency Theory, highlighting that ERP effectiveness depends on external factors [13]. Under high levels of uncertainty, such as market fluctuations and regulatory changes, senior management plays a crucial role. Additionally, Technology Diffusion Theory explains variations in ERP adoption, as firms integrate innovations at different rates [14]. These insights confirm that ERP-driven MAPs significantly enhance firm performance, especially in uncertain environments.

Building on this, ERP systems mitigate environmental uncertainty, particularly supply chain disruptions and financial instability, in the Hotel, Restaurant, and Entertainment (HRE) sector. By integrating real-time data, automating procurement, and optimizing inventory, ERP solutions help firms manage supply risks, adjust sourcing, and enhance coordination. Additionally, ERP-driven MAPs improve financial stability by enabling firms to monitor cash flow, control costs, and apply predictive analytics to navigate economic fluctuations. With PEU as a moderating factor, firms using ERP systems gain greater adaptability and resilience. Future research should explore industry-specific differences in ERP effectiveness to further understand its role in managing environmental risks.

5- Conclusion

This research investigates how ERP systems influence the adoption of Management Accounting Practices (MAPs), with a specific emphasis on the moderating role of Perceived Environmental Uncertainty (PEU), using Partial Least Squares Structural Equation Modeling (PLS-SEM). The study focuses on service companies in Vietnam and addresses a research gap by examining the determinants of ERP systems in shaping MAP adoption and their subsequent impact on firm performance. Valuable insights are provided for organizations operating in unstable environments, particularly within the Vietnamese context.

Senior management commitment emerges as the most critical factor compared to others, such as system quality, control functions, and implementation consultant competency, in ensuring the successful deployment of ERP systems. This, in turn, significantly influences the effectiveness of MAPs and enhances firm performance. The study demonstrates that ERP systems improve managerial accounting practices, particularly in terms of reliability and efficiency, thereby supporting managers in making informed economic decisions, such as resource allocation and strategy development.

Furthermore, the study highlights the important role of PEU as a moderating variable in the relationship between MAPs and firm performance. In highly uncertain environments, firms can derive greater benefits from MAPs, as they ensure the timely provision of high-quality accounting information to support sound decision-making under volatile conditions. Serving both as an independent predictor and a moderator, PEU underscores the importance of adaptive strategies in uncertain environments.

The research contributes to the literature and practical application by integrating theoretical frameworks such as the Resource-Based View, Contingency Theory, and Technology Diffusion Theory to clarify the link between MAPs and firm performance. Beyond these academic contributions, the study encourages ERP system adoption among businesses by demonstrating how it supports managerial objectives, enhances competitiveness, and improves resource allocation—particularly under uncertain environmental conditions. This alignment is especially critical for Vietnamese listed companies, which are increasingly facing global competition and rapid technological change.

Despite its contributions, the study has several limitations. First, it focuses solely on the Hotel, Restaurant, and Entertainment (HRE) sector in Vietnam, limiting the generalizability of the findings to other industries. The adoption and impact of ERP systems on MAPs may differ across service sectors—such as healthcare, logistics, or financial services—due to their unique operational complexities, regulatory requirements, and data management needs. Second, the study primarily adopts a managerial perspective, without sufficiently addressing broader organizational factors, such as employee adoption barriers, IT infrastructure readiness, and digital transformation maturity, all of which may influence ERP implementation outcomes.

Future research should explore the integration of AI-driven analytics into ERP systems to enhance decision-making under uncertainty. AI-powered ERP systems can improve predictive accuracy, automate accounting tasks, and provide real-time risk insights. By leveraging machine learning, firms can better anticipate market changes, optimize supply chains, and enhance financial forecasting. Additionally, AI-integrated ERP solutions can strengthen regulatory compliance and cybersecurity, ensuring data integrity and effective governance. Examining the impact of such systems across various industries would provide deeper insights into optimizing MAPs and improving firm performance, regardless of environmental uncertainty.

6- Declarations

6-1-Data Availability Statement

The data presented in this study are available in the article.

6-2-Funding

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6-3-Institutional Review Board Statement

Not applicable.

6-4-Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

6-5-Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. In addition, the 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 author.

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Appendix I: Questionnaire

No.	Factors	Sources
I The commitment of senior management		
1	Top management fosters coordination between operations and accounting for effective management accounting and data-driven decisions.	[43, 45]
2	Top management prioritizes professional development by providing ongoing training and support, enabling employees to effectively fulfil their responsibilities.	
3	Top management supports modern management accounting techniques to improve decision-making and operations.	
4	Top management ensures structured supervision and evaluation to enhance accountability and efficiency.	
II ERP system control function		
1	ERP systems improve the accuracy of management accounting reports, enhancing decision-making in hotels, restaurants, and entertainment.	[38, 84–86]
2	The control function of ERP helps detect and prevent fraud, ensuring the integrity of financial reporting in service firms.	
3	ERP systems reduce uncertainty and enhance cost management, supporting managerial accounting practices in service firms.	
4	ERP ensures that input data is accurate and properly recorded, leading to more reliable financial and managerial accounting information for service firms.	
III ERP software quality		
1	ERP systems enhance firm's process efficiency, improving managerial accounting practices in the hotel, restaurant, and entertainment sectors.	[11, 51]
2	ERP systems provide accurate and timely information, supporting better managerial accounting decisions in service firms.	
3	ERP ensures up-to-date financial data, enhancing cost control and financial planning in hospitality businesses	
IV ERP System Implementation Consultant Competency		
1	ERP consultants offer training programs that help managerial accountants in hospitality firms use the system effectively.	[46, 53, 87–89]
2	"ERP consultants possess technical expertise to optimize system configurations, enhancing managerial accounting practices in service firms.	
3	ERP consultants support service firms in customizing the system to meet the specific needs of managerial accounting in hospitality businesses.	
V MAP		
1	Management accounting practices enhance cost control, financial planning, and revenue management in hospitality firms.	[64, 67, 90, 91]
2	Budgeting, cost analysis, and performance measurement enhance financial decisions and efficiency in hospitality.	
3	Variance and profitability analysis help service firms optimize pricing and boost profitability.	
4	Management accounting practices improve financial monitoring, resource allocation, and adaptability in hospitality.	
VI Firm performance		
1	MAPs enhance credit risk management and financial performance in hospitality firms.	[45, 64, 67, 92, 93]
2	Management accounting supports strategic decision-making, leading to better performance in the hospitality industry.	
3	MAPs improve managerial decisions and boost profitability in hospitality businesses.	
VII Perceived environmental uncertainty		
1	Economic uncertainty moderates the effect of MAPs on firm performance in hospitality.	[70]
2	Technological uncertainty influences how managerial accounting practices improve firm performance in hotels, restaurants, and entertainment firms.	
3	Changes in customer preferences moderate the relationship between managerial accounting practices and business performance in the service industry.	