



Management Accounting, Business Ethics, Enterprise Risk Management and Firm Outcomes: Evidence from Vietnamese SMEs

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ABSTRACT

This study examined how business ethics (BE), management accounting (MA), and enterprise risk management (ERM) relate to perceived firm outcomes (FO) in Vietnamese small and medium-sized enterprises (SMEs). Drawing on the Agency Theory, the Resource-based View, and the Contingency Theory, an integrated model was tested using partial least squares structural equation modelling on 304 valid survey responses. The measurement model showed acceptable reliability and convergent validity, although high correlations among several perceptual constructs called for cautious interpretation. The findings were consistent with business ethics being positively associated with management accounting and, indirectly, with perceived firm outcomes through management accounting, and with enterprise risk management serving as an important intervening mechanism. The model accounts for a high proportion of variance in the endogenous constructs, although this should be read cautiously given the perceptual, single-source measures. The study offers an integrated, theory-based account of these associations in a developing-economy SME setting

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1. INTRODUCTION

Vietnamese SMEs often operated with limited accounting infrastructure, informal risk-control routines, and resource constraints. These conditions make management accounting (MA) particularly important because it provides internal information for planning, monitoring, and decision-making. The factors influencing MA adoption can be divided into internal factors (production scale, business strategy, information systems, and management awareness) and external factors (legal regulations, business environment pressures, and international economic integration). With market fluctuations and digitalisation trends, businesses and accountants are gradually adopting management accounting techniques to develop new management methods suited to current conditions. However, the application of MA in Vietnam remains limited, particularly among SMEs (Nguyen, 2018), which face greater competition from larger domestic and foreign-invested enterprises.

SMEs play an important role in Vietnam's economy, particularly in employment creation and local business activity. Despite their economic significance, Vietnamese SMEs face considerable challenges in adopting modern management practices, including limited financial resources, inadequate accounting infrastructure, and a shortage of qualified personnel. The application of management accounting in Vietnamese SMEs remains at an early stage compared with larger enterprises, and empirical evidence on the factors that drive MA adoption and its association with business performance in this context remains limited.

Prior research on MA has largely focused on either the adoption of MA practices or their direct performance effects, without adequately explaining the mechanisms through which MA is associated with firm outcomes (Abu Afifa & Saleh, 2021; Bui et al., 2023). Studies on ERM typically treat it as an independent predictor of performance rather than as a mechanism that translates MA information into improved decision-making and firm outcomes (Saeidi et al., 2021; Anton & Nucu, 2020). Business ethics, while recognised as a governance and cultural factor, has rarely been linked empirically to MA systems in SME contexts. Moreover, Vietnamese SMEs have distinct characteristics that limit the generalisability of findings from developed economies: their MA systems remain underdeveloped, resources are constrained, and risk management practices tend to be informal rather than systematic. Given these gaps, this study explored the indirect associations among MA adoption, BE, and SME performance in Vietnam, analysing the mediating role of ERM and the moderating effect of business type.

Specifically, this study addressed three research questions: (1) Is BE positively associated with perceived firm outcomes through the mediating role of MA? (2) Does business type moderate the BE to MA association? (3) Is MA positively associated with perceived firm outcomes through ERM?

This study makes three contributions to the literature. First, it extends research on MA, BE, and ERM by examining their integrated associations within the Vietnamese SME context, where empirical evidence remains limited. Second, unlike prior studies that examined direct relationships, this study analysed the mediating role of ERM in the MA to FO association and the moderating effect of business type, providing a more detailed understanding of how these factors interact. Third, the findings offer practical guidance for SME managers and policymakers on promoting MA adoption and risk management practices in the Vietnamese SME context. The remainder of this paper is organised as follows. Section 2 presents the

theoretical framework and hypotheses development. Section 3 describes the research methodology. Section 4 reports and discusses the results. Section 5 concludes with implications and limitations.

2. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 Foundation Theories and Key Constructs

Building on previous studies, this study drew on several theories as the core framework for the model, in line with its aim of examining the associations among MA, ERM, BE, and perceived firm outcomes (FO), which are understood as the degree to which a business achieves goals such as profit growth, innovation, and improved reputation (Alawattegama, 2018). Attaining FO requires strategies that align internal strengths with external conditions.

Contingency Theory

The Contingency Theory posits that no single organisational structure or management practice is universally optimal; rather, the effectiveness of management systems depends on the fit between internal characteristics and external environmental conditions (Chenhall, 2003). In the context of management accounting, the Theory suggests that the adoption and effectiveness of MA practices depend on contextual factors such as firm size, industry type, technological complexity, and the competitive environment. This perspective provides the basis for examining whether the relationship between business ethics and management accounting varies across manufacturing and non-manufacturing enterprises (H1b), as these enterprise types differ in operational complexity, cost structures, and regulatory requirements.

Agency Theory

The Agency Theory describes economic relationships between two parties with divergent goals (such as owners and employees, managers and shareholders) (Jensen & Meckling, 1976). The primary objective is to specify contracts and optimal conditions to decrease adverse outcomes. Based on the assumption that individuals are self-interested and risk-averse, the theory explains why conflicts of interest can lead to unethical practices, making the role of BE, defined as the principles and standards guiding organisational behaviour (Chun, 2005; Kaptein, 2011), essential in promoting transparency and reducing conflicts.

Resource-Based View Theory (RBV)

The Resource-based View (RBV) holds that enterprise resources are important in achieving and sustaining competitive advantage (Barney, 1991). Competitive advantage goes to the firm possessing the best resources or capabilities (Lubis, 2022). In management accounting, defined as the process of collecting, processing, and analysing financial and non-financial information to support planning and decision-making, the information generated represents a unique and valuable resource (Nguyen, 2018; Liem & Hien, 2020). Similarly, ERM, defined as a structured process for identifying, assessing, and monitoring risks (Anton & Nucu, 2020), helps align risk responses with strategic objectives. Knowledge Management (KM), the process of creating, sharing, and applying knowledge (Byukusenge & Munene, 2017), complements ERM by ensuring timely information flow.

An integrated research framework

This study integrated the Agency Theory, Contingency Theory, and the Resource-based View as complementary perspectives, each explaining a different segment of the proposed model (Figure 1). The Agency theory provides the logic for the link between business ethics and management accounting. In SMEs, information asymmetry and self-interested behaviour can weaken the reliability of budgeting, cost reporting, and internal performance evaluation; a stronger ethical climate reduces opportunistic behaviour and improves the credibility of internal accounting information, thereby supporting the adoption and use of management accounting practices (Chun, 2005; Kaptein, 2011; Leelhaphunt & Suntrayuth, 2020).

The RBV explains why management accounting and enterprise risk management contribute to perceived firm outcomes. Management accounting generates financial and non-financial information that supports planning, monitoring, and decision-making, but this information becomes more valuable when it is embedded in enterprise risk management, through which firms identify, assess, and respond to operational and strategic risks. In this sense, management accounting and enterprise risk management represent complementary organisational capabilities, and management accounting is expected to be associated with perceived firm outcomes both directly and indirectly through enterprise risk management (Nguyen, 2018; Anton & Nucu, 2020; Saeidi et al., 2021).

The Contingency Theory provides the basis for treating business type as a boundary condition. Because the effectiveness of a management accounting system depends on its fit with the firm's operating context, the association between business ethics and management accounting is expected to be stronger in manufacturing SMEs, which face more complex production processes, cost structures, inventory systems, and supply chains than non-manufacturing firms, and for which transparent reporting and ethical control are therefore more critical.

Taken together, these perspectives imply that business ethics is indirectly associated with perceived firm outcomes through MA, consistent with the Agency Theory; that management accounting is associated with perceived firm outcomes both directly and through enterprise risk management, consistent with the RBV; and that the strength of the BE to MA link is contingent on business type, consistent with the Contingency Theory. Figure 1 summarises the framework, and Table 1 maps each hypothesised path to the theory from which it is derived. KM was initially considered as a parallel resource-based mediator between management accounting and perceived firm outcomes; as reported in Section 4.2, it was removed after the discriminant validity assessment (HTMT with enterprise risk management = 0.985) and is therefore not shown in the final research model in Figure 1.

Table 1. Theoretical foundations of the hypothesised paths

Theory	Role in the framework	Model path(s)	Hypothesis
Agency theory	Ethical climate curbs opportunism and information asymmetry, raising the reliability of internal MA information	BE → MA; BE → MA → FO	H1a
Resource-based view	MA information is a valuable resource, converted into outcomes when deployed through ERM (a complementary capability)	MA → ERM → FO; MA → FO (direct)	H3
Resource-based view	Knowledge management initially considered as a parallel resource-based mediator; removed after the discriminant validity assessment	MA → KM → FO	H2
Contingency theory	Effectiveness of the MA system depends on fit with operating context (business type)	Business type moderates BE → MA	H1b

Source: compiled by the authors.

2.2 Proposed Research Model Hypotheses

Based on the Agency Theory, Contingency Theory, and the RBV, this study developed a model linking business ethics, management accounting, enterprise risk management, and perceived firm outcomes. The Agency Theory suggests that ethical standards may reduce opportunistic behaviour and improve the reliability of internal information. The Contingency Theory indicates that the effectiveness of management accounting may vary across organisational contexts, including manufacturing and non-manufacturing settings. The RBV view further suggests that management accounting information can become a valuable organisational resource when it is integrated with risk management processes. These theoretical perspectives jointly supported the hypotheses developed below.

Business ethics, management accounting, and firm outcomes: the moderating role of business type

Ethical behaviour and leadership may improve the reliability of internal reporting because employees are less likely to manipulate budgeting, cost reporting, and performance evaluation information for self-interested purposes. However, managerial ethical leadership requires an informal control mechanism to shape and supervise the organisation's ethical culture. This enables leaders to guide and influence their subordinates effectively, ensuring alignment with organisational goals (Leelhaphunt & Suntrayuth, 2020). Corporate ethics is therefore not merely a set of standards; it also helps promote a professional and secure working environment, particularly for risk management, and supports perceived firm outcomes.

According to the Agency Theory, employers and employees often have divergent goals. The employer aims to maximise the value and productivity of employees to enhance the company's value, while the employee seeks to maximise personal benefits or compensation. This disparity can result in unethical practices, such as fraudulent accounting and lack of transparency in reporting, ultimately undermining the business's performance and reputation. To address this, businesses must establish clear ethical standards, implement incentive policies, and introduce deterrent measures to encourage employee compliance. In addition, companies should develop a strong ethical framework that promotes a sound working environment and improves business efficiency.

In an increasingly complex business environment, BE is an important factor in the formation of the MA system. The strength of this association may vary depending on the type of enterprise. Manufacturing enterprises are more likely to strengthen the association between BE and MA than non-manufacturing enterprises, due to the more complex nature of management accounting systems in manufacturing, which require higher transparency in areas such as cost management and supply chain operations.

H1a: Business ethics is positively associated with perceived firm outcomes indirectly through MA.

H1b: The BE to MA association is stronger among manufacturing firms than among non-manufacturing firms.

Management accounting, knowledge management, and firm outcomes

KM was initially considered as an additional mediator, on the expectation that knowledge creation, sharing, and application help firms transform management accounting information and risk management processes into better decisions and outcomes (Byukusenge & Munene, 2017; Ode & Ayavoo, 2020; Saeidi et al., 2024). However, because KM did not achieve discriminant validity from enterprise risk management (HTMT = 0.985), it was excluded from the final structural model. Hypothesis H2 was therefore retained to document the original theoretical expectation but could not be tested in the final structural model.

H2: Knowledge management mediates the positive association between management accounting and perceived firm outcomes.

Management accounting and firm outcomes: the mediating role of ERM

When MA information is integrated with risk management processes, firms may be better positioned to identify emerging risks, assess their financial implications, and respond in a timely manner. Accordingly, ERM was expected to mediate the association between MA and perceived firm outcomes.

H3: Enterprise risk management mediates the positive association between management accounting and perceived firm outcomes.

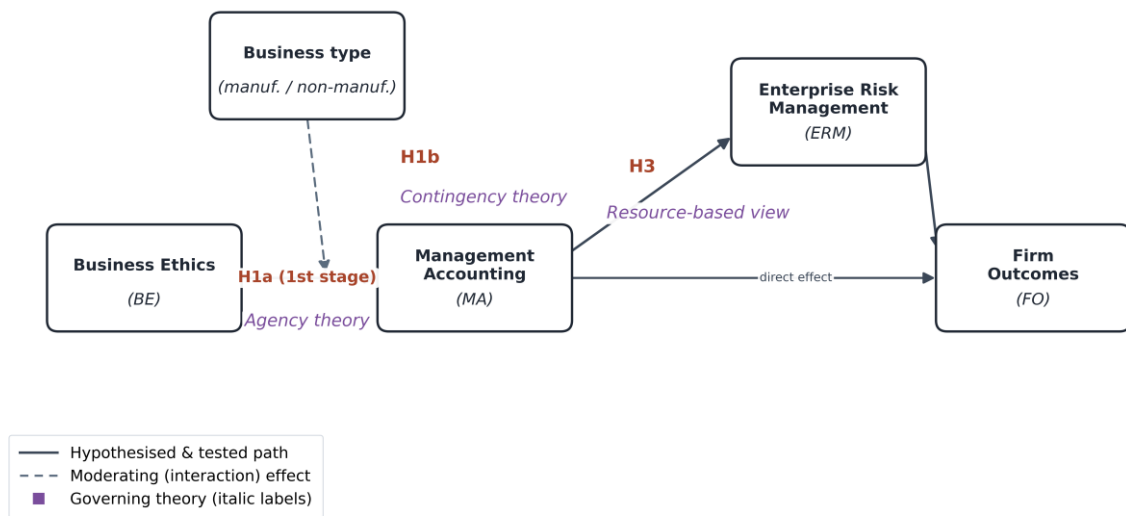


Fig. 1. Research model

Note: Solid arrows denote the hypothesised paths tested in the final model; the dashed arrow denotes the moderating (interaction) effect of business type (H1b); italic labels indicate the governing theory. Source: compiled by the authors.

3. RESEARCH METHODOLOGY

3.1 Sampling Method and Sample Size

This study targeted employees working in accounting, finance, internal control, internal audit, and risk-management-related functions in Vietnamese SMEs, with the aim of examining associations among business ethics, management accounting, enterprise risk management, and perceived firm outcomes.

Vietnam was selected as the empirical context for three reasons. First, SMEs constituted the dominant form of business organisations in Vietnam, accounting for approximately 97% to 98% of operating enterprises (General Statistics Office of Vietnam, 2023) and contributing close to half of national employment and over one third of value added (OECD, 2021), yet many still operated with limited accounting infrastructure, informal internal controls, and resource constraints. This combination of economic weight and low management accounting maturity made SMEs an appropriate and consequential setting in which to examine the adoption and use of MA and ERM. Second, as a developing economy in which formal governance and risk management institutions are still evolving, Vietnam was a setting in which informal controls such as business ethics are expected to play a comparatively larger role in shaping reliable internal information and managerial decision-making than in developed economies with stronger external monitoring, which motivates the central position of business ethics in the model. Third, enterprise risk management in Vietnamese SMEs tended to be informal rather than systematic, so the role of management accounting as a channel into risk management was of direct practical relevance in this context.

Ho Chi Minh City was selected as the primary survey location for three further reasons. First, it was widely recognised as Vietnam's largest commercial and financial centre and hosts a large concentration of enterprises, which provided the volume and accessibility of respondents in finance, accounting, and risk-related roles that this study requires. Second, and importantly for the research design, the city had an unusually diverse economic base that combined a dominant service sector with a substantial presence of manufacturing and industrial parks, which ensured adequate representation of both manufacturing and non-manufacturing firms and therefore supported the test of the moderating effect of business type (H1b). Third, concentrating data collection in a single, economically important metropolitan area holds the broader institutional and regulatory environment reasonably constant across respondents, which reduces a source of unobserved heterogeneity that a geographically dispersed sample would introduce. The concentration of the sample in a single city nonetheless limits the geographical generalisability of the findings, a point acknowledged in Section 5.3.

Following the commonly used 10-times rule in PLS-SEM (Hair et al., 2022), the minimum sample size should exceed ten times the largest number of structural paths directed at any endogenous construct or the largest number of indicators used to measure a construct. The survey was distributed to employees in accounting, finance, and risk-related roles in Vietnamese SMEs through email and social media platforms. After screening for completeness and eligibility, 304 valid responses were retained for analysis, a sample that exceeds this minimum requirement and is adequate for the proposed PLS-SEM analysis. In addition, 304 responses exceeded the sample size required to detect medium-sized effects at conventional statistical power in PLS-SEM (Hair et al., 2022).

The data for this research were collected through an online survey conducted from September 6, 2024, to December 6, 2024. The survey was distributed to employees working in accounting, finance, internal control, internal audit, and risk-management-related functions within SMEs in Vietnam, primarily in the Ho Chi Minh City area. SMEs were identified following the official Vietnamese size classification, which defined SMEs by sector, average number of employees, and total capital or annual revenue. The unit of analysis was the individual respondent, whose perceptions served as proxies for firm-level practices, a common approach in management accounting survey research when firm-level archival data were unavailable for SMEs (Abu Afifa & Saleh, 2021). One response per firm was targeted to minimise within-firm clustering; because the survey was administered online and anonymously, however, the absence of duplicate firm responses could not be fully verified, and this is acknowledged as a limitation. To reduce common method bias, respondent anonymity was assured and items were presented in a structured but non-identifying format (Podsakoff et al., 2003). However, because all constructs were measured using the same 5-point Likert scale from the same respondents at one point in time, common method variance remained a concern. A post-hoc Harman's single-factor test indicated that the first unrotated factor explained 78.7% of the variance, exceeding the 50% threshold, and the full collinearity VIF values ranged from 5.02 to 31.56 (Kock, 2015). These results indicated that common method variance and high inter-construct correlation were present in the data, likely reflecting the perceptual, single-respondent, and cross-sectional nature of the measures. This limitation was acknowledged throughout the analysis, and discriminant validity was therefore assessed using HTMT inference with bootstrap confidence intervals, as discussed in Section 4.2.

3.2 Measurement Scale

Drawing on prior studies (Abu Afifa & Saleh, 2021; Saeidi et al., 2019, 2021; Darroch, 2003; Ogbari et al., 2016; Tseng & Lee, 2014), this study adapted established constructs, scales, and indicators to the Vietnamese SME context before constructing the survey instrument. BE was measured using 5 items adapted from Ogbari et al. (2016), capturing dimensions of ethical leadership, transparency, and compliance. MA was measured using 7 items adapted from Abu Afifa and Saleh (2021), covering cost analysis, budgeting, performance evaluation, and decision support. ERM was measured using 10 items adapted from Saeidi et al. (2019, 2021), covering risk identification, assessment, response, and monitoring. KM was measured using 7 items adapted from Darroch (2003) and Tseng and Lee (2014), capturing knowledge creation, sharing, and application. FO were measured using 5 items adapted from Alawattagama (2018), including profitability growth, innovation, reputation, and overall performance. All items were measured on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Kaptein (2011) and Leelhaphunt and Suntrayuth (2020) informed the theoretical role of business ethics, and Byukusenge and Munene (2017) informed the theoretical expectation for KM whereas the corresponding measurement items were operationalised from Ogbari et al. (2016) for BE and from Darroch (2003) and Tseng and Lee (2014) for KM and adapted to the Vietnamese SME context. The full questionnaire is available from the corresponding author upon reasonable request.

The questionnaire was adapted rather than directly adopted. All measurement items were drawn from established, previously validated instruments, but their wording was contextualised to fit Vietnamese SMEs and the practical language used in accounting, internal control, and risk management activities; no new construct was developed. Table 2 summarises the constructs, the number of items, and their sources. KM was subsequently removed from the final structural model because it did not achieve adequate discriminant validity from enterprise risk management (Section 4.2).

Table 2. Measurement constructs, items and sources

Construct	Code	Items	Source(s)
Business Ethics	BE	5	Ogbari et al. (2016)
Management Accounting	MA	7	Abu Afifa & Saleh (2021)
Enterprise Risk Management	ERM	10	Saeidi et al. (2019, 2021)
Knowledge Management	KM	7	Darroch (2003); Tseng & Lee (2014)
Perceived Firm Outcomes	FO	5	Alawattagama (2018)

Note: All constructs were measured on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree).

Source: compiled by the authors.

After data cleaning, 304 valid responses were retained and analysed using the PLS-SEM method in SmartPLS 3.2.8, supplemented by Cronbach's Alpha reliability analysis, measurement model assessment, discriminant validity assessment, and structural model testing.

3.3 Data Analysis Methods

This study implemented the PLS-SEM method through SmartPLS 3.2.8 software. The testing procedure included: descriptive statistics; measurement model evaluation (outer loading, Cronbach's Alpha, composite reliability, AVE, discriminant validity via Fornell-Larcker and HTMT); structural model evaluation (VIF, path coefficients, R^2 , f^2); bootstrapping for mediation testing; and multi-group analysis (MGA) for the moderating effect of business type.

PLS-SEM was selected over covariance-based SEM (CB-SEM) for several reasons. First, PLS-SEM is suitable for exploratory research that aims to develop theoretical frameworks rather than confirm established theories. Second, PLS-SEM performs well with relatively small sample sizes and does not require data to follow a normal distribution. Third, PLS-SEM is appropriate for complex models involving multiple mediating and moderating relationships and prediction-oriented objectives. Given the exploratory nature of this study, the sample size of 304, and the complexity of the proposed model, PLS-SEM was the most appropriate analytical approach (Hair et al., 2022). Because the analysis was oriented toward prediction among latent constructs rather than strict model-fit comparison, PLS-SEM was well suited to this study.

4. RESULTS AND DISCUSSION

The results as in Table 3 show that 37.17% of respondents were male and 62.83% female. The majority of respondents (80.59%) were aged between 18 and 34 years.

Table 3. Demographic Characteristics of Respondents

Characteristics	Items	Numbers	Percentage
Gender	Male	113	37.17%
	Female	191	62.83%
Age Group	18 to 24 years old	149	49.01%
	25 to 34 years old	96	31.58%
	35 to 45 years old	36	11.84%
	Above 45 years old	23	7.57%

Source: compiled by the authors.

Table 4 reports the descriptive statistics for the study constructs. The mean values ranged from 3.13 to 3.44 on a five-point scale, and the skewness and kurtosis values fell within the conventional thresholds, indicating no severe departure from normality. KM is reported descriptively because it was included in the initial questionnaire, although it was excluded from the final structural model after the discriminant validity assessment.

Table 4. Descriptive Statistics of Constructs

Construct	Mean	SD	Skewness	Kurtosis
MA	3.129	1.202	-0.554	-0.789
ERM	3.437	1.566	-0.516	-1.290
KM	3.311	1.443	-0.386	-1.601
BE	3.417	1.089	-0.759	-1.010
FO	3.443	1.277	-0.614	-1.364

Note: SD = standard deviation. KM is reported for descriptive purposes only, having been excluded from the final structural model after the discriminant validity assessment.

Source: compiled by the authors.

4.1 Assessment of Measurement Model

The initial measurement model included five latent variables. All measurement scales met the required reliability thresholds: Cronbach's Alpha ranged from 0.933 to 0.992 and Composite Reliability from 0.950 to 0.993, exceeding the threshold of 0.7 (Hair et al., 2022). All outer loading coefficients exceed 0.7 and AVE values surpassed 0.5, with the highest at 0.931 (ERM) and lowest at 0.791 (BE). Detailed indicator-level results are presented in Appendix A. The measurement model therefore showed acceptable reliability and convergent validity, whereas discriminant validity remained a key limitation because several constructs exhibited high HTMT values, as detailed below.

According to the results in Table 5, the HTMT value between the KM and ERM variables was quite high ($0.985 > 0.9$), indicating a high likelihood that these two variables did not achieve discriminant validity. This suggested that the indicator sets for KM and ERM were highly similar. Accordingly, the KM construct was removed and the model re-estimated, with the updated results presented in Table 6.

Table 5. Heterotrait-Monotrait Ratio (HTMT) coefficient before removing the KM variable

	BE	ERM	FO	KM	MA
BE					
ERM	0.859				
FO	0.937	0.966			
KM	0.890	0.985	0.967		
MA	0.844	0.760	0.875	0.842	

Note: HTMT = heterotrait-monotrait ratio; BE = business ethics; ERM = enterprise risk management; FO = perceived firm outcomes; KM = knowledge management; MA = management accounting. Values below 0.90 indicate adequate discriminant validity.

Source: compiled by the authors.

Table 6. Heterotrait-Monotrait Ratio (HTMT) Coefficient After Removing the KM Variable.

	BE	ERM	FO	MA
BE				
ERM	0.859			
FO	0.937	0.966		
MA	0.844	0.760	0.875	

Note: HTMT = heterotrait-monotrait ratio; abbreviations are as defined in Table 5. Values below 0.90 indicate adequate discriminant validity; pairs above this threshold are assessed further using HTMT inference in Table 7.

Source: compiled by the authors.

According to the results in Table 6, the HTMT values for BE-FO (0.937) and ERM-FO (0.966) exceeded the conservative 0.90 threshold, indicating that several constructs were highly correlated. To assess discriminant validity under these conditions, HTMT inference was conducted using bootstrap confidence intervals based on 5,000 resamples (Table 7). For all construct pairs, the upper bound of the 95% confidence interval was below 1.0, which provided evidence consistent with discriminant validity under the HTMT-inference criterion (Henseler et al., 2015). Although this HTMT-inference result supported discriminant validity because the confidence intervals did not include 1.0, the high point estimates indicated substantial conceptual proximity among ERM, BE, and perceived firm outcomes, so the findings should be interpreted cautiously as associations among perceptual constructs. For example, the ERM-FO interval was [0.937, 0.990] and the BE-FO interval was [0.889, 0.978]. The Fornell-Larcker criterion provided only marginal support, because the ERM-FO correlation approaches the square root of AVE for FO, so discriminant validity rests primarily on the HTMT bootstrap inference. The high HTMT point estimates, together with the Harman's single-factor result as reported in Section 3.1, indicated substantial common method variance and conceptual proximity among the constructs. The HTMT value of 0.966 between ERM and FO suggested particularly strong overlap, which may partly explain the high R^2 value (0.933) reported for FO. These measurement-model concerns were acknowledged as key limitations, and future research should refine the FO and ERM scales by reviewing item content for potential redundancy and incorporate objective performance indicators.

Table 7. HTMT Inference: Bootstrap 95% Confidence Intervals

Construct pair	HTMT	95% CI lower	95% CI upper
ERM and FO	0.966	0.937	0.990
BE and FO	0.937	0.889	0.978
MA and FO	0.875	0.858	0.893
BE and ERM	0.859	0.800	0.912
BE and MA	0.844	0.796	0.888
ERM and MA	0.760	0.725	0.793

Note: CI = confidence interval. A 95% CI upper bound below 1.0 supports discriminant validity under the HTMT-inference criterion (Henseler et al., 2015).

Source: compiled by the authors (5,000 bootstrap resamples).

4.2 Assessment of Structural Model

After confirming measurement scale reliability, the structural model was evaluated using SmartPLS bootstrapping and the PLS-SEM algorithm to examine relationships between latent variables.

Based on the structural model evaluation results in Table 8, all VIF values for the independent variables were below 3, with the smallest value being 1 and the highest at 2.344. These results suggested that structural predictor multicollinearity was not severe in the final model. However, this should be distinguished from the full collinearity VIF results reported in Section 3.1, which indicated potential common method variance.

Table 8. VIF

	BE	ERM	FO	MA
BE				1.000
ERM			2.344	
FO				
MA		1.000	2.344	

Note: VIF = variance inflation factor. Values below 3 indicate that collinearity among the predictor constructs is not a concern.

Source: compiled by the authors.

The path coefficients and p-values used to assess the estimated coefficients were obtained through bootstrapping and are presented in Table 9, with the structural model illustrated in Figure 2.

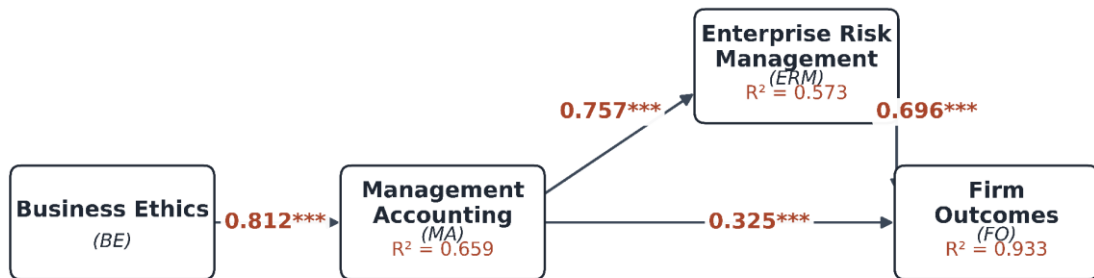
The results indicated that all relationships in the model were positive and statistically significant. At the 5% significance level, all path coefficients were statistically significant. Specifically, for the endogenous variable FO, the path coefficient of ERM to FO (0.696) was greater than that of MA to FO (0.325), suggesting that risk management showed a stronger association with perceived firm outcomes compared to management accounting practices.

Table 9. Statistical Significance Assessment of Structural Path Relationships

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
BE to MA	0.812	0.812	0.022	36.133	<.001
ERM to FO	0.696	0.698	0.035	19.975	<.001
MA to ERM	0.757	0.758	0.016	46.568	<.001
MA to FO	0.325	0.323	0.032	10.122	<.001

Note: O = original sample estimate; M = sample mean; STDEV = standard deviation; T = t-statistic; P = p-value. Estimates are standardised path coefficients obtained from 5,000 bootstrap resamples.

Source: compiled by the authors.



*** $p < 0.001$. Path coefficients are standardised; R^2 reported for endogenous constructs.

Fig. 2. Bootstrap results

Source: created by the authors using SmartPLS 3 software.

The coefficient of determination (R^2) and adjusted R^2 are used to assess the model's explanatory power.

The results as in Table 10 indicated that the explanatory power (R^2) for the three endogenous variables, ERM, FO, and MA, was 57.3% (moderate), 93.3% (high), and 65.9% (fairly high), respectively. The adjusted R^2 values of 0.572, 0.932, and 0.658 were consistent with a high level of explained variance in the endogenous variables. Because these constructs were perceptual and measured from the same respondents,

the high explained variance, particularly the R^2 of 0.933 for FO, was likely inflated by common method variance and should be interpreted with caution (see Section 4.2).

Table 10. R^2 , Adjusted R^2

	R^2	R^2 Adjusted
ERM	0.573	0.572
FO	0.933	0.932
MA	0.659	0.658

Note: Following Hair et al. (2022), R^2 values of 0.25, 0.50, and 0.75 represent weak, moderate, and substantial explanatory power, respectively.

Source: compiled by the authors.

The f-square coefficient was used to assess the effect size of the independent variables on the dependent variables. As presented in Table 11, all the independent variables in the model had effect sizes greater than 0.35, indicating large effects on the dependent variables.

In addition, the Stone-Geisser Q^2 values obtained through blindfolding procedures are 0.526 (ERM), 0.785 (FO), and 0.571 (MA), all substantially above zero, suggesting that the model had adequate predictive relevance for all endogenous constructs.

Table 11. f^2

	BE	ERM	FO	MA
BE				1.934
ERM			3.064	
FO				
MA		1.344	0.668	

Note: f^2 = effect size. Values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively.

Source: compiled by the authors.

4.3 Evaluating the Mediating Relationships Using the Bootstrapping Method

To assess the mediating effects, bootstrapping was conducted in SmartPLS to examine the total and specific indirect effects of the mediating variables on the relationships between the independent and dependent variables.

From the results in Table 12, it was observed that the standardised regression coefficients (Original Sample) of the mediating effects were all positive, indicating that the association between the independent variable and the mediator (X to M: coefficient a) and the association between the mediator and the dependent variable (M to Y: coefficient b) were both positive.

All specific indirect effects had a p-value of less than 0.05, which indicated that:

The results were consistent with MA serving as a mediator between business ethics and perceived firm outcomes. This was consistent with a positive association between business ethics and management accounting, and a positive association between management accounting and perceived firm outcomes. The results were consistent with ERM serving as a mediator in the association between MA and FO. This meant that MA was positively associated with ERM, and ERM was positively associated with FO. KM was excluded from the final structural model because it did not demonstrate discriminant validity from enterprise risk management. Therefore, no mediation path involving KM was interpreted in the final model.

Table 12. Specific Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
BE to MA to ERM	0.615	0.616	0.026	23.67	<.001
MA to ERM to FO	0.527	0.53	0.032	16.292	<.001
BE to MA to ERM to FO	0.428	0.43	0.03	14.102	<.001
BE to MA to FO	0.264	0.262	0.027	9.705	<.001

Note: O = original sample estimate; M = sample mean; STDEV = standard deviation; T = t-statistic; P = p-value. Estimates are based on 5,000 bootstrap resamples.

Source: compiled by the authors.

From the results in Table 13, the aggregated indirect effects from BE to FO and MA to FO both had a $p < 0.001$, indicating statistical significance. This was consistent with the existence of indirect relationships within the research model.

Table 13. Total Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
BE to ERM	0.615	0.616	0.026	23.67	<.001
BE to FO	0.692	0.692	0.024	29.27	<.001
MA to FO	0.527	0.53	0.032	16.292	<.001

Note: O = original sample estimate; M = sample mean; STDEV = standard deviation; T = t-statistic; P = p-value. Estimates are based on 5,000 bootstrap resamples.

Source: compiled by the authors.

4.4 Evaluating the Moderating Role of Business Type

A multi-group analysis (MGA) was conducted in SmartPLS to evaluate whether the BE to MA association differed significantly between manufacturing and non-manufacturing enterprises.

The MGA results (Table 14) showed that the two-tailed MGA p-value for the BE to MA path difference was 0.591, indicating no statistically significant difference between manufacturing and non-manufacturing enterprises. Because measurement invariance across the two groups was not formally established (for example, through the MICOM procedure), this multi-group comparison should be regarded as exploratory.

Table 14. Differences in the BE to MA Path Between Business-Type Groups

Path	Path coefficient difference	p-value (one-tailed)	MGA p-value (two-tailed)
BE to MA	0.023	0.296	0.591

Note: The MGA p-value tests whether the standardised path coefficient differs between the two groups; a value above 0.05 indicates no statistically significant difference.

Source: compiled by the authors.

Table 15 shows that for the BE to MA relationship, the p-value for the non-manufacturing group was < 0.001, and for the manufacturing group, it was also < 0.001. In non-manufacturing enterprises, the BE to MA association had a standardised path coefficient of 0.824, while in manufacturing enterprises, the coefficient was 0.800. The coefficient was thus slightly higher for non-manufacturing firms, but the difference was not statistically significant; therefore, H1b was not supported.

Table 15. Individual Effects of Each Moderating Variable Group

Path	Non-manufacturing coefficient	Manufacturing coefficient	p-value, non- manufacturing	p-value, manufacturing
BE to MA	0.824	0.800	<.001	<.001

Note: In the original analysis, groups were coded as LOAIDN01 (non-manufacturing firms) and LOAIDN02 (manufacturing firms).

Source: compiled by the authors.

Based on the results presented above, the hypothesis testing results are summarised and presented in Table 16.

Table 16. Hypothesis Testing Results

Research Hypothesis	Result
H1a: Business ethics is positively associated with perceived firm outcomes indirectly through management accounting.	Supported
H1b: The BE to MA association is stronger among manufacturing enterprises than among non-manufacturing enterprises.	Not Supported
H2: Knowledge management mediates the positive association between management accounting and perceived firm outcomes.	Not tested
H3: Enterprise risk management mediates the positive association between management accounting and perceived firm outcomes.	Supported

Note: H2 could not be tested because knowledge management was removed from the final model owing to discriminant validity concerns with enterprise risk management.

Source: compiled by the authors.

The findings provided evidence that BE was indirectly associated with perceived firm outcomes through MA and ERM. The BE to MA path coefficient (0.812, $t = 36.133$) was directionally consistent with prior evidence that business ethics was associated with performance-related organisational outcomes (Leelhaphunt & Suntrayuth, 2020), although the coefficients were not directly comparable because the constructs and model paths differed across studies. This finding aligned with the Agency Theory, which predicted that establishing clear ethical standards reduces information asymmetry between managers and employees, thereby improving the quality and reliability of management accounting information. A strong ethical culture, supported by control mechanisms and leadership oversight, may support an environment in which transparent financial reporting and accurate performance measurement can thrive.

MA accounted for the indirect association between BE and FO, possibly because stronger ethical practices are associated with better financial information processes and lower perceived fraud risk. The indirect effect of BE on FO through MA was 0.264 ($p < 0.001$), suggesting that ethical guidelines, clear communication, and monitoring may support stronger MA systems, which were associated with better decision-making and perceived firm outcomes. The study found no significant difference between manufacturing and non-manufacturing firms in the BE to MA relationship (H1b not supported, $p = 0.591$). This result was inconsistent with our initial expectation based on the Contingency Theory that manufacturing firms, with their more complex cost structures, would exhibit a stronger BE to MA link. A

plausible explanation was that the regulatory environment in Vietnam applied similar accounting standards and ethical requirements across all enterprise types, and the convergence of governance practices through international integration may have narrowed industry-specific differences. This finding suggested that business ethics may be broadly associated with MA effectiveness, regardless of industry sector.

ERM provides a process for identifying, assessing, and responding to risks. MA information can support this process by helping managers evaluate cost implications, operational deviations, and performance risks before selecting appropriate responses. In SMEs, where risk management practices are often informal, MA information may therefore provide the informational basis for more systematic risk assessment and decision-making.

Regarding the removal of KM from the final model, the HTMT value between KM and ERM was 0.985, far exceeding the 0.90 threshold, indicating substantial overlap in measurement. This finding suggested that in the context of Vietnamese SMEs, KM and ERM functioned as a unified organisational capability rather than distinct constructs. This may reflect the reality that in smaller enterprises with limited resources, the processes of collecting, sharing, and applying knowledge are inseparable from the processes of identifying and managing risks. Future research should consider developing more discriminating measurement instruments to capture the unique dimensions of KM that are independent from ERM practices.

The BE to MA path coefficient (0.812) was directionally consistent with prior evidence that business ethics is associated with performance-related organisational outcomes (Leelhaphunt & Suntrayuth, 2020), although the coefficients were not directly comparable because the constructs and model paths differed across studies. The ERM mediation finding (indirect effect = 0.527) was directionally consistent with Abu Afifa and Saleh (2021) in Jordan and Saeidi et al. (2021) in the Malaysian context, both of whom found that ERM strengthened the MA to performance link. However, the R^2 of 0.933 in this study was considerably higher than the R^2 values reported in these prior studies (typically 0.30 to 0.60), which may partly reflect common method variance from self-reported measures as discussed above. The non-significant moderating effect of business type contrasted with the Contingency Theory predictions but was consistent with Alawattegama (2018), who also found that ERM effects on firm performance did not differ significantly across banking sub-sectors in Sri Lanka.

From a theoretical perspective, the findings were broadly consistent with the Agency Theory and the RBV while the Contingency-Theory expectation received only limited support. The findings were consistent with the Agency Theory, which suggested that ethical standards would be associated with reduced information asymmetry and more reliable MA outputs, as evidenced by the strong BE to MA path. The RBV was supported by the finding that MA information was associated with greater value for perceived firm outcomes when channelled through ERM, consistent with the prediction that complementary organisational capabilities are associated with combined benefits. Specifically, the non-significant moderating effect of business type suggested that the BE to MA association may be relatively stable across industry contexts in Vietnam, possibly because shared regulatory norms and cultural values reduce sector-specific variation.

In terms of practical significance, the R^2 value of 0.933 for FO indicated that MA and ERM together explained 93.3% of the variance in perceived firm outcomes. This explanatory power was high relative to typical PLS-SEM studies in the management accounting literature, where R^2 values for performance

constructs typically ranged from 0.30 to 0.60 (Bui et al., 2023, reported $R^2 = 0.45$ for firm performance). This high R^2 should be interpreted with considerable caution. All variables were measured through self-reported perceptual scales from the same respondents at the same point in time, and the Harman's single-factor test (78.7%) together with the elevated full collinearity VIF values indicated substantial common method variance. Conceptual overlap between constructs, particularly between ERM processes and perceived firm outcomes (HTMT = 0.966), was likely to inflate the observed associations and the explanatory power. The structural results should therefore be read as associations among perceptual measures rather than as estimates of causal effects, and future studies using multi-source or objective performance data are needed to validate them. The f^2 values (BE to MA = 1.934, ERM to FO = 3.064, MA to ERM = 1.344, MA to FO = 0.668) exceeded the 0.35 threshold for large effect sizes, but they should be interpreted in light of these common method and discriminant validity concerns.

The mechanism through which BE was associated with MA adoption in Vietnamese SMEs can be understood in terms of information quality and organisational trust. When ethical standards are in place, employees involved in budgeting, cost reporting, and performance evaluation are more likely to provide accurate and timely information. This reduces the need for excessive monitoring and allows management accounting systems to function as intended. In contrast, when ethical norms are weak, accounting information may be distorted by self-interested reporting, reducing the reliability of MA outputs. This interpretation is consistent with the agency-theoretic prediction that governance mechanisms (including ethics) reduce information asymmetry between managers and subordinates (Kaptein, 2011).

The ERM mediation pathway warrants further interpretation. The finding that the indirect effect of MA on perceived firm outcomes through ERM exceeded the direct effect suggested that MA information alone was not sufficient to improve perceived firm outcomes. Rather, value is realised when MA outputs are channelled into systematic risk identification and response. Vietnamese SMEs that use MA reports to inform risk assessment may be better positioned to anticipate operational disruptions and allocate resources to high-priority risks. This extends the work of Abu Afifa and Saleh (2021), who documented a similar mediation pattern in Jordanian firms but did not examine the specific mechanism in the SME context.

The non-significant moderating effect of business type (H1b, $p = 0.591$) deserves careful interpretation. One possible explanation is that the ethical foundations of MA adoption are not sector-specific in the Vietnamese context. Both manufacturing and non-manufacturing SMEs in Vietnam operated under similar accounting regulations, faced comparable tax-compliance pressures, and shared similar local business norms. These shared contextual factors may override the industry-specific differences predicted by the Contingency Theory. In addition, the sample composition (80.59% of respondents aged 18 to 34) may not fully capture the sector-specific management practices that would differentiate manufacturing from service firms, as younger employees may have less experience with industry-specific MA applications. Future research with a more senior respondent pool and larger industry sub-samples may detect moderating effects not observed here.

5. CONCLUSION AND IMPLICATIONS

The results supported H1a, indicating that business ethics is positively associated with perceived firm outcomes indirectly through management accounting. The results also supported H3, showing that enterprise risk management mediates the association between management accounting and perceived firm

outcomes. H1b was not supported because the BE to MA association did not differ significantly between manufacturing and non-manufacturing firms ($p = 0.591$). KM was excluded from the final model owing to discriminant validity concerns with enterprise risk management and is not treated as a formal hypothesis. Overall, the findings suggested that ethical standards, management accounting practices, and risk management processes were closely interrelated in Vietnamese SMEs.

The findings have several practical implications. For SME managers, the strong BE to MA path coefficient (0.812) indicated that investing in ethical culture may support better outcomes through stronger management accounting practices. Specifically, managers should implement formal codes of ethics with regular training programmes, integrate MA reports into quarterly risk assessments, and establish basic internal control and review routines, even in smaller organisations. The significant mediating role of ERM (indirect effect = 0.527) suggested that SMEs should not treat risk management as a separate compliance function but rather embed it within their management accounting systems, a practice associated with better perceived firm outcomes. For policymakers and SME support agencies, the emphasis should be on training programmes, advisory support, and practical guidelines that help SMEs integrate management accounting with their risk management practices, together with capacity-building programmes delivered through industry associations.

This study identified several limitations that suggested directions for future research. First, the sample of 304 respondents from SMEs mainly in Ho Chi Minh City may not represent all businesses in Vietnam; future studies should adopt stratified sampling across multiple provinces and include larger enterprises for comparison. Second, the cross-sectional design cannot establish causal relationships; longitudinal or panel data studies would provide stronger evidence of the dynamic effects of BE and MA on firm performance over time. Third, the sample composition skewed toward young employees (80.59% aged 18 to 34), which may not fully capture senior management perspectives; future research should target respondents in managerial positions to improve representativeness. Fourth, this study relied on perceptual, self-reported measures rather than objective financial indicators; future studies could incorporate objective indicators such as ROA, ROE, sales growth, or Tobin's Q, together with external factors (digital transformation, regulatory changes), to provide deeper insight into the determinants of firm performance. Fifth, and most importantly, the Harman's single-factor result (78.7%), the elevated full collinearity VIF values, and the high HTMT estimates (ERM-FO = 0.966, BE-FO = 0.937) indicated substantial common method variance and conceptual overlap among the constructs. Although the HTMT bootstrap confidence intervals did not include 1.0, these results mean the findings should be regarded as associations among perceptual measures rather than as causal effects. Future research should refine the FO and ERM measurement scales to reduce content redundancy, collect multi-source or time-separated data, and incorporate objective performance indicators to address common method bias and strengthen discriminant validity.

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7. CONFLICT OF INTEREST STATEMENT

The authors declare no personal, commercial, financial, or funder-related conflicts of interest.

8. AUTHORS' CONTRIBUTIONS

Nguyen Vinh Khuong: Conceptualisation, methodology, validation, supervision, writing – review and editing; **Diep Phan Hieu Ngan:** Methodology, formal analysis, data curation, writing – original draft; **Nguyen Phuong Anh:** Investigation, data curation, formal analysis; **Pham Thi Anh Hong:** Investigation, data curation, writing – original draft; **Bui Thi Ngoc Trinh:** Software, formal analysis, visualization; **Cao Phuong Uyen:** Investigation, resources, writing – original draft. All authors have read and agreed to the published version of the manuscript.

9. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

10. ETHICS STATEMENT

This study involved survey responses from human participants. Participation was voluntary, informed consent was obtained from all respondents prior to data collection, and all responses were anonymised. The study did not collect sensitive personal information. The survey procedures were conducted in accordance with the ethical standards of the 1964 Helsinki Declaration.

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APPENDIX A

Appendix Table A1. Measurement Scale Reliability and Validity

Construct	Indicator	Outer loading	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Business Ethics (BE)	BE1	0.955	0.933	0.950	0.791
	BE2	0.846			
	BE3	0.882			
	BE4	0.839			
	BE5	0.917			
Enterprise Risk Management (ERM)	ERM1	0.966	0.992	0.993	0.931
	ERM2	0.957			
	ERM3	0.972			
	ERM4	0.971			
	ERM5	0.962			
	ERM6	0.947			
	ERM7	0.969			
	ERM8	0.975			
	ERM9	0.968			
	ERM10	0.963			
Firm Outcomes	FO1	0.894	0.958	0.967	0.856
	FO2	0.940			
	FO3	0.890			
	FO4	0.939			
	FO5	0.959			

Knowledge Management (KM)	KM1	0.944	0.978	0.981	0.882
	KM2	0.948			
	KM3	0.894			
	KM4	0.936			
	KM5	0.970			
	KM6	0.929			
	KM7	0.951			
Management Accounting (MA)	MA1	0.946	0.977	0.980	0.878
	MA2	0.898			
	MA3	0.930			
	MA4	0.970			
	MA5	0.937			
	MA6	0.905			
	MA7	0.970			

Note: CR = composite reliability; AVE = average variance extracted. Outer loadings and Cronbach's alpha above 0.70, CR above 0.70, and AVE above 0.50 indicate adequate reliability and convergent validity.

Source: compiled by the authors.