

The Influence of Market Competition, Environmental Uncertainty, and Technological Innovation on SME Performance: The Mediating Role of Strategic Management Accounting in Culinary SMEs in South Tangerang City

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ABSTRACT

Small and Medium Enterprises (SMEs) are vital to Indonesia's economic growth, with the culinary sector in South Tangerang expanding rapidly amid intense competition, uncertainty, and technological change. Preliminary observations of 15 culinary SME owners revealed rising competition and reliance on manual financial recording. This study examines the influence of market competition, environmental uncertainty, and technological innovation on SME performance, with Strategic Management Accounting (SMA) as an intervening variable. A quantitative approach sampled 129 owners/managers of culinary SMEs operating ≥ 2 years with ≥ 5 employees, selected via purposive sampling across seven subdistricts. Data were collected using five-point Likert scales and analyzed with PLS-SEM in SmartPLS 4. All indicators met validity and reliability criteria. Results show environmental uncertainty and technological innovation positively affect SMA, while market competition does not. Market competition and technological innovation positively affect SME performance, while environmental uncertainty does not. SMA positively affects performance, fully mediating environmental uncertainty's effect and partially mediating technological innovation's effect, but not market competition's. SMA serves as a strategic mechanism translating uncertainty and innovation into improved performance, supporting Contingency Theory and the Resource-Based View.

Keywords: Competitive Market, Environmental Uncertainty, SME Performance, Strategic Management Accounting, Technological Innovation

1. INTRODUCTION

Small and Medium-sized Enterprises (SMEs) are one of the key pillars of development, economic empowerment, job creation and industrialisation in Indonesia (Krisdiyawati & Maulidah, 2024). Data from the Indonesian Ministry of Cooperatives shows that SMEs' contribution to the national Gross Domestic Product (GDP) stands at 61 per cent, equivalent to Rp9,580 trillion, whilst their share of employment stands at 97 per cent (ASEAN Investment Report, 2022; Krisdiyawati & Maulidah, 2024). This strategic role is also reflected in the City of South Tangerang, which in 2023 recorded growth of 5.36 per cent, higher than the Banten Province average of 4.81 per cent and the national average of 5.05 per cent (South Tangerang City Department of Communications and Information Technology, 2024).

The culinary sector is one of the key pillars of South Tangerang's economy. Data from the South Tangerang City Central Statistics Agency (2024) records 1,544 restaurants and eateries spread across seven sub-districts, with the highest concentration in Pondok Aren Sub-district at 329 establishments or 21.31 per cent, followed by Serpong with 276 establishments or 17.88 per cent, North Serpong with 255 establishments or 16.50 per cent, Ciputat with 220 establishments or 14.25 per cent, Pamulang with 184 establishments or 11.91 per cent, East Ciputat with 176 establishments or 11.40 per cent, and Setu with 104 establishments or 6.74 per cent. The characteristics of a heterogeneous, urban population with relatively high purchasing power make this city a potential market for the food and beverage sector whilst simultaneously intensifying competition amongst business operators (Astria et al., 2026).

Amidst these opportunities, culinary SMEs face three main challenges. Firstly, the emergence of new SMEs has intensified market competition (Harjadi et al., 2020), meaning that businesses unable to compete on price, quality and product innovation risk losing customers and market share (T. H. Nguyen et al., 2023; Porter, 1985). The author's initial observations in June 2026 of 15 food and beverage SMEs revealed that 12 out of 15 respondents reported an increase in the level of business competition. Secondly, SMEs face environmental uncertainty due to changing economic conditions, technological developments, shifts in consumer preferences, and government policies (García-Pérez & Yanes-Estévez, 2022). The results of the observations showed that 7 out of 15 business owners experienced a decline in turnover, 5 remained stagnant, and 3 saw an increase in turnover over the past year. Thirdly, technological innovation demands that business owners have the capacity to adopt new tools, instruments, and processes in a competitive market (Phornlaphatrachakorn, 2019), whilst 8 out of 15 business owners observed still keep their financial records manually and around 60 per cent of SMEs in South Tangerang City have not yet made optimal use of digitalisation (Aisha, 2025).

These conditions indicate that the implementation of Strategic Management Accounting (SMA) among some SMEs is still sub-optimal, even though SMA serves to provide and analyse financial and non-financial information regarding the market, competitors' costs, and strategic monitoring to support more effective strategy formulation and decision-making (Remali, 2020). Drawing on the Resource-Based View, this study also applies Contingency Theory (Chenhall, 2003). According to this latter perspective, the degree to which a management system proves effective is directly determined by its compatibility with the unique operational factors that the organization encounters (Barney, 1991), which explains that competitive advantage and organisational performance are determined by internal capabilities that are valuable, rare, difficult to imitate, and not easily substituted.

Findings from prior investigations remain mixed. A number of studies indicate that competitive market forces, unpredictable environmental conditions, and advances in technology serve to enhance not only the implementation of Strategic Management Accounting (SMA) but also overall corporate performance (Lan et al., 2025; T. H. Nguyen et al., 2023; Tran, 2023), whilst other studies have found that market competition has no effect on management accounting practices or organisational performance (Andayani et al., 2022); that environmental uncertainty does not have a significant effect on performance, although it does influence the adoption of management accounting systems (Khanna & Verma, 2023); and that management accounting systems do not mediate the effect of technological innovation on firm performance (Aprinovita et al., 2023). These differing findings indicate the existence of a research gap that requires further investigation, particularly in the context of culinary SMEs in Indonesia.

Based on the above, this study aims to analyse the influence of market competition, environmental uncertainty, and technological innovation on the performance of culinary SMEs in South Tangerang City, with Strategic Management Accounting serving as the intervening variable. This study is novel in that it integrates these three contingency factors into a single model, positions Strategic Management Accounting as an explanatory mechanism, and focuses on culinary SMEs in South Tangerang City, whose competitive and business environment characteristics differ from those of previous studies, which generally focused on manufacturing or banking firms in other countries. This study is anticipated to offer value on two distinct fronts. From a theoretical standpoint, it will extend the existing strategic management accounting scholarship concerning small and medium enterprises. On a practical level, the results should provide useful guidance for business owners and regional authorities as they work to design more impactful policies for SME growth.

2. LITERATURE REVIEW

Market competition is the level of competitive intensity faced by business actors in attracting customers, maintaining market share, and improving advantage over competitors, which includes the threat of new entrants, the power of suppliers and customers, substitute products, and rivalry among firms (Porter, 1990). From the perspective of Contingency Theory, market competition is an external factor that influences the design and use of Strategic Management Accounting (SMA), because an increasingly competitive environment drives organizations to need more complete financial and non-financial information to formulate adaptive strategies (Ojra et al., 2021). Market competition can be reflected through the number of SMEs in the industry, technological change, product diversity and quality, competitive pricing, and changes in consumer taste

(Rachmawati et al., 2024). Increasing competition drives companies to obtain information about competitors, customers, costs, and strategic position through SMA practices such as benchmarking and competitor pricing (Ojra et al., 2021), while competitive strategy orientations, such as differentiation and cost leadership, can improve SME market outcomes (Keelson et al., 2024; Svobodova et al., 2023). A number of studies show that market competition intensity has a positive effect on the implementation of SMA (Andayani et al., 2022; Bui et al., 2021; Do & Tran, 2024; Lan et al., 2025; T. A. Nguyen, 2025; Soa et al., 2022), although Andayani et al. (2022) also found that market competition does not always drive the implementation of SMA because business actors can rely more on management experience and intuition. This difference in findings indicates a research gap, particularly in the context of SMEs in Indonesia. Based on the theoretical foundation and the majority of empirical findings showing a positive relationship, this study proposes the hypothesis that market competition has a positive effect on the implementation of Strategic Management Accounting (SMA).

H1: Market Competition has a positive effect on Strategic Management Accounting.

Environmental uncertainty reflects the difficulty organizations face in predicting changes in business conditions, customer behavior, technology, the economy, government policy, and competition (García-Pérez & Yanes-Estévez, 2022; Khanna & Verma, 2023), the level and source of which can differ according to the country context in which SMEs operate. Gordon and Narayanan (1984) explain that environmental uncertainty includes market, technological, economic, and competitive uncertainty, which is seen from the difficulty business actors face in predicting changes in consumer taste and economic conditions due to fast-moving external dynamics (Rashid et al., 2024). Under such conditions, Strategic Management Accounting (SMA) becomes important because it provides strategic information, both internal and external, including cost and risk information, thereby helping SMEs plan strategy, recognize opportunities and threats, and adapt to environmental change. In line with this, the studies of Andayani et al. (2022); Do and Tran (2024); Khanna and Verma (2023); Lan et al. (2025); T. H. Nguyen et al. (2023); as well as Tran (2023) show that environmental uncertainty has a positive effect on the implementation of SMA. Tran (2023) affirms that SMA helps managers respond to potential risks and minimize the impact of environmental uncertainty on business success. Thus, the higher the environmental uncertainty faced by SMEs, the greater the need for strategic information through the implementation of SMA. Therefore, the hypothesis proposed is:

H2: Perceived Environmental Uncertainty has a positive effect on Strategic Management Accounting.

Technological innovation reflects a company's ability to apply and develop new technology to support business activities and decision making (Verdu et al., 2012). For SMEs, innovative technology helps them adapt to business change and obtain information more quickly and accurately (Aisha, 2025; Setiawan & Iskak, 2023). From the perspective of Contingency Theory, technology is a situational factor that influences the design of information systems, so that the higher the technological innovation, the greater the need for strategic information through Strategic Management Accounting (SMA). A number of studies show that innovation or technological development has a positive effect on the implementation of SMA (Aprinovita et al., 2023; Khanna & Verma, 2023; Lan et al., 2025; T. A. Nguyen, 2025; T. H. Nguyen et al., 2023; T. M. Nguyen & Nguyen, 2021; Phornlaphatrachakorn, 2019; Soa et al., 2022). Thus, the higher the technological innovation used by SMEs, the higher the implementation of SMA. Therefore, the hypothesis proposed is:

H3: Technological Innovation has a positive effect on Strategic Management Accounting.

Increasingly tight market competition drives SMEs to improve efficiency, quality, innovation, and strategy in order to retain customers and build competitive advantage (Porter, 1990). From the perspective of Contingency Theory, the level of competition is an external factor that influences an organization's control system and performance (Chenhall, 2003). High competition can drive SMEs to improve strategy and increase operational effectiveness, thereby impacting improved performance (Lan et al., 2025). However, Andayani et al. (2022) show that competition does not directly determine performance, but rather depends on the response of business actors through strategy, innovation, and management information systems. This difference in findings indicates a research gap that needs further study, particularly among SMEs in Indonesia. Therefore, the hypothesis proposed is:

H4: Market competition has a positive effect on SME performance.

Environmental uncertainty is a condition in which a company finds it difficult to predict changes in technology, the economy, regulation, consumer behavior, and competition (Duncan, 1972). From the

perspective of Contingency Theory, companies need to adjust their strategy and management systems to environmental conditions in order to achieve optimal effectiveness and performance (Donaldson, 2001). For SMEs, changes in consumer taste, raw material prices, technology, competitors, and regulation demand the ability to adapt, innovate, and be efficient in order to retain customers, increase sales, and maintain business continuity. The ability to adapt to environmental uncertainty has been shown to improve the competitiveness, sustainability, and performance of SMEs (Lan et al., 2025). However, Khanna and Verma (2023) show that the inability to adapt to environmental change can have a negative impact on performance. This difference in findings indicates a research gap that needs further study, particularly among SMEs in Indonesia. Therefore, the hypothesis proposed is:

H5: Environmental Uncertainty has a positive effect on SME Performance.

Technological innovation includes the process of developing, applying, and utilizing new technology to improve operational effectiveness, resource efficiency, and a company's ability to adapt to business change. For SMEs, the application of innovative technology can improve efficiency, quality, service, and decision making, and create competitive advantage that ultimately supports improved performance. SMEs that are able to adopt technology effectively also find it easier to respond to market changes, increase sales, and expand their business reach. The studies of Aprinovita et al. (2023) and Lan et al. (2025) show that technological innovation has a positive effect on company performance because it supports the effective utilization of information and technology. However, Khanna and Verma (2023) found that technological innovation has no significant effect on performance because the benefits of technology depend on the utilization of information in strategic decision making. This difference in findings indicates a research gap that needs further study. Based on theory and the majority of research results showing a positive effect, this study proposes the following hypothesis:

H6: Technological innovation has a positive effect on SME Performance.

Strategic Management Accounting (SMA) is the application of management accounting techniques that provide financial and non-financial information, both internal and external, to support strategic decision making (Cadez & Guilding, 2008). From the perspective of Contingency Theory, SMA helps SMEs adjust strategy to environmental conditions through information regarding the market, customers, competitors, costs, and performance. The implementation of SMA has been shown to have a positive effect on organizational performance (Anisman et al., 2023; Bui et al., 2021; Cadez & Guilding, 2008; Do & Tran, 2024; Khanna & Verma, 2023; Lan et al., 2025; T. A. Nguyen, 2025; Phornlaphatrachakorn, 2019; Tiara et al., 2023). However, Aprinovita et al. (2023) found that SMA does not always improve performance because its effectiveness depends on management's ability to use that information in decision making. This difference in findings indicates a research gap that needs further study. Based on the majority of empirical findings showing a positive effect, this study proposes the following hypothesis:

H7: Strategic Management Accounting has a positive effect on SME Performance.

Increasingly tight market competition increases a company's need for strategic information regarding customers, competitors, costs, and market conditions to support decision making (Cadez & Guilding, 2008). From the perspective of Contingency Theory, companies need to adjust their information systems and management to environmental conditions, so that SMEs in high competition tend to need SMA to respond to market pressure and improve the effectiveness of business strategy. Thus, SMA not only plays a role in improving performance, but can also become a mechanism that bridges the influence of market competition on SME performance. Lan et al. (2025) show that SMA helps SMEs respond to competitive pressure through strategic information regarding costs, customers, competitors, and performance. However, Andayani et al. (2022) found that SMA is not able to mediate the effect of market competition on organizational performance. This difference in findings indicates a research gap that needs further study. Based on Contingency Theory and the majority of theoretical arguments, this study proposes the following hypothesis:

H8: Market Competition has an effect on SME Performance through Strategic Management Accounting as an intervening variable.

According to Duncan (1972), environmental uncertainty occurs when managers have limited information to predict changes in the market, competition, technology, the economy, and regulation. From the perspective of Contingency Theory, this condition increases an organization's need for broad and accurate information, so

that SMA plays a role in processing strategic information regarding customers, competitors, costs, and market opportunities to support decision making. Thus, SMA can become a mechanism that bridges the influence of environmental uncertainty on SME performance. Cadez and Guilding (2008) as well as Khanna and Verma (2023) show that SMA supports improved organizational capability, although this mediating relationship still needs further study. Therefore, the hypothesis proposed is:

H9: Perceived Environmental Uncertainty affects SME Performance through Strategic Management Accounting as an intervening variable.

Technological innovation drives SMEs to use information systems and digital technology to improve efficiency, obtain information, and support strategic decision making. From the perspective of Contingency Theory, technological development influences the need for and use of a management accounting system capable of providing information accurately and relevantly (Chenhall, 2003). However, the data generated by technology needs to be processed into strategic information in order to provide benefits for performance, so that SMA plays a role as a mechanism that bridges the influence of technological innovation on SME performance. Khanna and Verma (2023) as well as Lan et al. (2025) show that technology supports the provision of better information, while Aprinovita et al. (2023) found that SMA is not able to mediate the effect of technological innovation on organizational performance. This difference in findings indicates a research gap that needs further study. Therefore, the hypothesis proposed is:

H10: Technological Innovation affects SME Performance through Strategic Management Accounting as an intervening variable

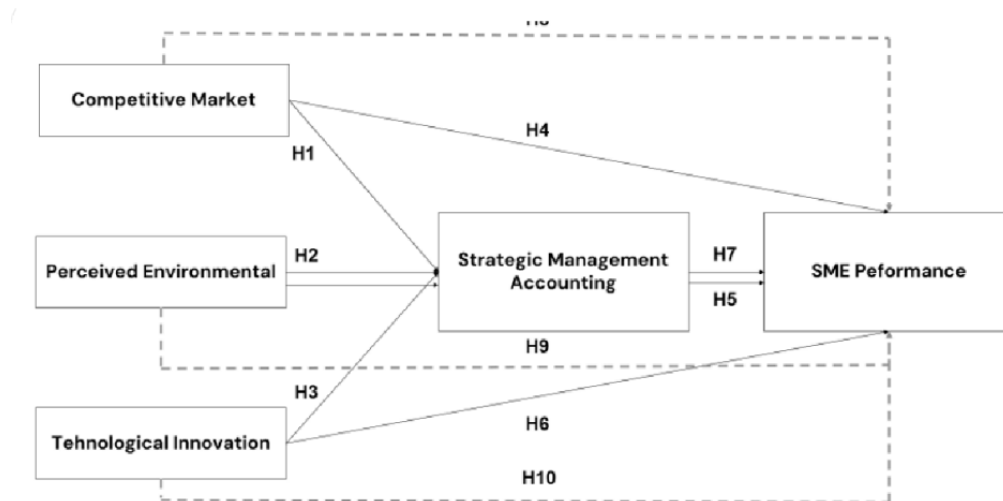


Figure 1. Conceptual Framework

3. RESEARCH METHODS

A quantitative methodology is adopted for this research. The focus of analysis centres on small and medium-sized enterprises (SMEs) within the food and beverage industry that are currently active in South Tangerang City, which is located in Banten Province. The units of observation are owners, managers, or those directly involved in business decision-making. The research was conducted from January to July 2026, covering the stages of preparation, data collection, data processing, data analysis, and report writing.

The total population for this study encompassed every culinary SME located in South Tangerang City. Sample size determination was performed through G*Power, where the specified parameters included an effect size set at 0.15, a Type I error rate of 0.05, a desired power level of 0.95, and four independent predictors. These inputs produced a required minimum of 124 cases. In anticipation of possible incomplete responses, the research gathered data from 129 individuals. The sampling technique employed purposive sampling with the following criteria: owners or managers of SMEs operating in South Tangerang City, having been in operation for at least two years, employing at least five staff, involved in business decision-making, and willing to complete the research questionnaire. The sample was distributed proportionally across seven sub-districts using Cochran's (1977) proportional allocation formula, as presented in Table 1.

Table 1. Distribution of the Research Sample

Sub-district	Number of Restaurants	Percentage	Sample
Pondok Aren	329	21.31%	31
Serpong	276	17.88%	22
Serpong Utara	255	16.50%	21
Ciputat	220	14.25%	18
Pamulang	184	11.91%	15
Ciputat Timur	176	11.40%	14
Setu	104	6.74%	8
Total	1544	100%	129

This study utilises five variables: Market Competition (X1), Environmental Uncertainty (X2) and Technological Innovation (X3) as independent variables; Strategic Management Accounting (Z) as the intervening variable; and SME Performance (Y) as the dependent variable. Market Competition is measured using indicators of price competition intensity, the number of competitors, competitors' promotional activities, and competitors' innovation. Environmental Uncertainty is measured using market, economic, regulatory, and competitive uncertainty. Technological Innovation is measured through the adoption and utilisation of digital technology in operations and marketing. The measurement of Strategic Management Accounting encompassed five dimensions, namely strategic costing, planning and performance measurement, strategic decision-making, competitor accounting, and customer accounting. As for SME Performance, it was assessed across four areas: sales growth, customer growth, customer satisfaction, and operational efficiency. A five-point Likert scale was applied to all indicators, with response options extending from 1, denoting strong disagreement, through to 5, indicating strong agreement (Sugiyono, 2013).

Data were collected via a questionnaire comprising five sections, covering respondent identity, business profile, and respondents' perceptions of the five research variables. The data obtained were analysed using the Structural Equation Modelling–Partial Least Squares (SEM-PLS) method with the SmartPLS 4 software, which was selected because it is suitable for relatively small sample sizes and predictive research models with highly complex relationships between variables (Hair & Alamer, 2022).

Assessment of the outer model comprised convergent validity checks through factor loadings and AVE, discriminant validity verification via the Fornell-Larcker criterion, cross-loadings, and HTMT, along with reliability testing using Cronbach's Alpha and Composite Reliability. Multicollinearity was diagnosed with the VIF statistic. Turning to the inner model, the analysis incorporated R-Square, F-Square, Q-Square Predict, and goodness-of-fit measures such as SRMR and NFI. To test the hypotheses, the study applied bootstrapping as specified by Hair and Alamer (2022), adopting the conventional thresholds where a t-statistic greater than 1.96 and a p-value less than 0.05 indicate statistical significance.

4. RESULTS AND DISCUSSION

The respondents in this study comprised 129 operators of food and beverage SMEs in South Tangerang City. In terms of job role, the majority of respondents were managers or administrators, totalling 107 people (83.59 per cent), whilst 21 people (16.41 per cent) were business owners, out of a total of 128 respondents who provided information on their job roles. All respondents (100 per cent) held a business licence. In terms of the length of time in business, the majority of respondents had been operating for 2 to 4 years (82.17 per cent), followed by 5 to 7 years (12.40 per cent), more than 10 years (3.10 per cent), and 8 to 10 years (2.33 per cent). Based on the number of employees, 126 respondents (97.67 per cent) had between 5 and 19 employees, whilst 3 respondents (2.33 per cent) had between 20 and 99 employees. All respondents had an annual turnover ranging from Rp300 million to Rp2.5 billion and assets ranging from Rp50 million to Rp500 million, indicating a relatively homogeneous business scale; consequently, the observed differences in performance were more influenced by the research variables than by differences in business scale.

4.1. Evaluation of Measurement Models (Outer Model)

Table 2. Outer Loading Values - Measurement Model Results

Indicator	(X1) Market Competition	(X2) Environmental Uncertainty	(X3) Technology Innovation	(Y) SME Performance	(Z) Strategic Management Accounting
X1.1	0.894				
X1.2	0.888				
X1.3	0.895				
X1.4	0.84				
X1.5	0.851				
X2.1		0.85			
X2.2		0.878			
X2.3		0.804			
X2.4		0.871			
X3.1			0.812		
X3.2			0.817		
X3.3			0.878		
X3.4			0.864		
X3.5			0.827		
Y1				0.899	
Y2				0.937	
Y3				0.883	
Y4				0.789	
Z1					0.870
Z2					0.868
Z3					0.781
Z4					0.832
Z5					0.888
Z6					0.845
Z7					0.839
Z8					0.841
Z9					0.748

Source: Processed using SmartPLS 4, 2026

Convergent validity testing produced satisfactory outcomes. Every indicator recorded factor loadings exceeding the 0.7 threshold, with values ranging from a minimum of 0.748 for indicator Z9 to a maximum of 0.937 for indicator Y2. These results confirmed the validity of all indicators (Hair et al., 2022).

Table 3. Average Variance Extracted (AVE) Values

Variable	Average Variance Extracted (AVE)
(X1) Market Competition	0.764
(X2) Environmental Uncertainty	0.724
(X3) Technology Innovation	0.706
(Y) SME Performance	0.772
(Z) Strategic Management Accounting	0.698

Source: Processed using SmartPLS 4, 2026

The Average Variance Extracted (AVE) values for all variables were above 0.5, namely Market Competition at 0.764, Environmental Uncertainty at 0.724, Technological Innovation at 0.706, SME Performance at 0.772, and Strategic Management Accounting at 0.698; thus, the requirements for convergent validity were met.

Table 4. Fornell-Larcker Criterion Values

Variable	(X1) Market Competition	(X2) Environmental Uncertainty	(X3) Technology Innovation	(Y) SME Performance	(Z) Strategic Management Accounting
(X1) Market Competition	0.874				
(X2) Environmental Uncertainty	0.354	0.851			
(X3) Technology Innovation	0.461	0.473	0.84		
(Y) SME Performance	0.431	0.492	0.519	0.879	
(Z) Strategic Management Accounting	0.498	0.516	0.672	0.584	0.836

Source: Processed using SmartPLS 4, 2026

Discriminant validity was evaluated through the Fornell-Larcker approach. The findings indicated that each variable's AVE square root exceeded its inter-construct correlations, with all such values spanning from 0.836 to 0.879. This pattern supported the distinctness of each construct from the others.

Table 5. Cross Loading Values

Indicator	(X1) Market Competition	(X2) Environmental Uncertainty	(X3) Technology Innovation	(Y) SME Performance	(Z) Strategic Management Accounting
X1.1	0.894	0.28	0.378	0.334	0.431
X1.2	0.888	0.232	0.381	0.389	0.415
X1.3	0.895	0.323	0.47	0.421	0.483
X1.4	0.84	0.363	0.334	0.431	0.361
X1.5	0.851	0.347	0.443	0.304	0.481
X2.1	0.387	0.85	0.416	0.486	0.536
X2.2	0.259	0.878	0.379	0.398	0.366
X2.3	0.235	0.804	0.404	0.332	0.3
X2.4	0.289	0.871	0.409	0.424	0.492
X3.1	0.376	0.379	0.812	0.394	0.612
X3.2	0.349	0.387	0.817	0.449	0.469
X3.3	0.366	0.45	0.878	0.439	0.535
X3.4	0.323	0.403	0.864	0.402	0.484
X3.5	0.492	0.369	0.827	0.483	0.678
Y1	0.311	0.485	0.486	0.899	0.47
Y2	0.404	0.495	0.513	0.937	0.566
Y3	0.425	0.413	0.441	0.883	0.527
Y4	0.375	0.321	0.373	0.789	0.488
Z1	0.393	0.455	0.551	0.63	0.87
Z2	0.455	0.451	0.564	0.543	0.868
Z3	0.32	0.447	0.567	0.439	0.781
Z4	0.349	0.43	0.557	0.367	0.832
Z5	0.39	0.433	0.643	0.536	0.888
Z6	0.39	0.409	0.618	0.561	0.845
Z7	0.556	0.436	0.54	0.497	0.839
Z8	0.507	0.452	0.52	0.482	0.841
Z9	0.38	0.359	0.483	0.243	0.748

Source: Processed using SmartPLS 4, 2026

The cross-loading results also showed that all indicators had the highest loading values on the variables they measured, whilst the Heterotrait-Monotrait Ratio (HTMT) values for all variable pairs were below 1, thus fulfilling the criteria for discriminant validity.

Table 6. Heterotrait-Monotrait Ratio (HTMT) Values

Variable	(X1) Market Competition	(X2) Environmental Uncertainty	(X3) Technology Innovation	(Y) SME Performance
(X2) Environmental Uncertainty	0.382			
(X3) Technology Innovation	0.496	0.535		
(Y) SME Performance	0.472	0.537	0.571	
(Z) Strategic Management Accounting	0.531	0.545	0.717	0.619

Source: Processed using SmartPLS 4, 2026

Table 7. Cronbach's Alpha

Variable	Cronbach's alpha
(X1) Market Competition	0.923
(X2) Environmental Uncertainty	0.875
(X3) Technology Innovation	0.896
(Y) SME Performance	0.9
(Z) Strategic Management Accounting	0.946

Source: Processed using SmartPLS 4, 2026

Table 8. Composite Reliability Values

Variable	Composite reliability (rho_a)
(X1) Market Competition	0.925
(X2) Environmental Uncertainty	0.896
(X3) Technology Innovation	0.901
(Y) SME Performance	0.91
(Z) Strategic Management Accounting	0.951

Source: Processed using SmartPLS 4, 2026

Table 9. Variance Inflation Factor (VIF) Values

Variable	(Y) SME Performance	(Z) Strategic Management Accounting
(X1) Market Competition	1.397	1.31
(X2) Environmental Uncertainty	1.432	1.328
(X3) Technology Innovation	1.959	1.475
(Z) Strategic Management Accounting	2.141	—

Source: Processed using SmartPLS 4, 2026

The study proceeded to evaluate internal consistency and collinearity. For reliability, Cronbach's Alpha produced values between 0.875 and 0.946, while Composite Reliability yielded scores from 0.896 to 0.951. Both sets of estimates exceeded the 0.7 cutoff, leading to the conclusion that every variable demonstrated adequate reliability according to Hair and Alamer (2022). Regarding multicollinearity, the Variance Inflation Factor remained below 5 in all instances. The largest VIF was 2.141, observed for the relationship between Strategic Management Accounting and SME Performance, indicating that the model was not affected by problematic collinearity.

4.2. Evaluation of Structural Models (Inner Model)

Table 10. R-squared values

Variables	R-Square
SME Performance (Y)	0.420
Strategic Management Accounting (Z)	0.533

Source: Processed using SmartPLS 4, 2026

Table 11. F-Square Values

Variable	(Y) SME Performance	(Z) Strategic Management Accounting
(X1) Market Competition	0.022	0.066
(X2) Environmental Uncertainty	0.056	0.078
(X3) Technology Innovation	0.02	0.327
(Z) Strategic Management Accounting	0.075	—

Source: Processed using SmartPLS 4, 2026

Table 12. PLS Predict Values

Variable	Q ² predict
(Y) SME Performance	0.328
(Z) Strategic Management Accounting	0.473

Source: Processed using SmartPLS 4, 2026

Table 13. Model Fit

	Saturated model	Estimated model
SRMR	0.083	0.083
d_ULS	2.585	2.585
d_G	1.759	1.759
Chi-square	1145.452	1145.452
NFI	0.685	0.685

Source: Processed using SmartPLS 4, 2026

The R-squared value for SME performance, at 0.420, indicates that market competition, environmental uncertainty and technological innovation collectively account for 42.0 per cent of the variation in SME performance, whilst the remaining 58.0 per cent is explained by other variables outside the model. The R-squared value for Strategic Management Accounting of 0.533 indicates that these three independent variables account for 53.3 per cent of the variation in Strategic Management Accounting. The F-Square value indicates that Technological Innovation has a moderate influence on Strategic Management Accounting (0.327), whilst the influence of other variables is classified as weak (0.020 to 0.078). The model's predictive power was demonstrated by the Q-Square values, which stood at 0.328 for SME Performance and 0.473 for Strategic Management Accounting. These figures indicated satisfactory predictive relevance. In terms of overall model fit, the SRMR statistic was calculated at 0.083. Given that this value was less than the 0.10 upper limit, the model satisfied the fit requirements specified by Hair and Alamer (2022).

4.3. Hypothesis Testing

Table 14. Results of Hypothesis Testing

Hypothesis	Route	Coefficient	T-Statistic	P-Value	Decision
H1	Market Competition -> SMA	0.201	1.898	0.058	Rejected
H2	Environmental Uncertainty -> SMA	0.220	3.221	0.001	Accepted
H3	Technological Innovation -> SMA	0.475	5.331	0.000	Accepted
H4	Market Competition -> SME Performance	0.133	1.774	0.076	Rejected
H5	Environmental Uncertainty -> SME Performance	0.216	1.883	0.060	Rejected
H6	Technological Innovation -> SME Performance	0.150	2.262	0.024	Accepted
H7	SMA -> SME Performance	0.306	3.385	0.001	Accepted
H8	Market Competition -> SMA -> SME Performance	0.062	1.951	0.051	Rejected
H9	Environmental Uncertainty -> SMA -> SME Performance	0.067	2.553	0.011	Accepted
H10	Technological Innovation -> SMA -> SME Performance	0.145	2.515	0.012	Accepted

Note: SMA = Strategic Management Accounting

The test results show that Market Competition has no significant effect on Strategic Management Accounting ($\beta = 0.201$; t-statistic = 1.898; p-value = 0.058), and so H1 is rejected. This finding suggests that the majority of SME operators remain focused on operational activities and experience-based decision-making, meaning that competitive pressures have not yet been translated into a need for strategic information. These

results are consistent with those of Andayani et al. (2022), but differ from those of Do and Tran (2024); Lan et al. (2025); T. H. Nguyen et al. (2023); T. M. Nguyen and Nguyen (2021); as well as Soa et al. (2022). Environmental uncertainty has a positive and significant effect on Strategic Management Accounting ($\beta = 0.220$; t-statistic = 3.221; p-value = 0.001), thus H2 is accepted, supporting Khanna and Verma (2023); T. H. Nguyen et al. (2023); Ramirez and Sang Lim (2021); as well as Tran (2023) that environmental uncertainty increases an organisation's need for strategic information. Technological Innovation exerted a positive and significant influence on Strategic Management Accounting, as evidenced by the coefficient of 0.475, a t-statistic of 5.331, and a p-value of 0.000. Hypothesis H3 was therefore supported. This outcome corroborates the conclusions drawn by Aprinovita et al. (2023); Khanna and Verma (2023); Lan et al. (2025); T. H. Nguyen et al. (2023); as well as Soa et al. (2022), all of whom reported that digital tools improve the calibre of strategic information used in organisational decisions.

With regard to SME performance, market competition had no significant effect ($\beta = 0.133$; t-statistic = 1.774; p-value = 0.076), so H4 was rejected, indicating that competitive pressure is not yet capable of improving performance without the support of the company's internal capabilities, in line with Andayani et al. (2022). Environmental uncertainty also has no significant effect on SME performance ($\beta = 0.057$; t-statistic = 0.718; p-value = 0.473), so H5 is rejected, supporting Khanna and Verma (2023) that the influence of the environment on performance depends more on internal organisational mechanisms. Conversely, Technological Innovation has a positive and significant effect on SME performance ($\beta = 0.150$; t-statistic = 2.262; p-value = 0.024), so H6 is accepted, supporting Aprinovita et al. (2023); Bangun et al. (2025); Do and Tran (2024); Lan et al. (2025); and OECD (2023). The analysis revealed that Strategic Management Accounting exerts a significant positive influence on SME performance, as shown by $\beta = 0.306$, t-statistic = 3.385, and p-value = 0.001. Hypothesis H7 was consequently accepted. This outcome corroborates the evidence presented in earlier studies, including those by Andayani et al. (2022); Do and Tran (2024); Khanna and Verma (2023); Lan et al. (2025); as well as Tiara et al. (2023).

In the mediation test, Strategic Management Accounting does not mediate the effect of Market Competition on SME Performance ($\beta = 0.062$; t-statistic = 1.951; p-value = 0.051), and so H8 is rejected, indicating that competitive pressure has not yet been able to drive the utilisation of strategic information as a mechanism for improving performance, in line with Harjadi et al. (2020) and Siahaan et al. (2025). Conversely, Strategic Management Accounting fully mediates the effect of Environmental Uncertainty on SME Performance ($\beta = 0.067$; t-statistic = 2.553; p-value = 0.011), thus H9 is accepted, supporting Khanna and Verma (2023); as well as Lan et al. (2025) that environmental uncertainty enhances performance through the utilisation of strategic information. Furthermore, Strategic Management Accounting was found to partially mediate the link from Technological Innovation to SME Performance, with an indirect effect of $\beta = 0.062$, t-statistic = 2.359, and p-value = 0.019. Hypothesis H10 was therefore confirmed. The result suggests that technological advances yield maximum performance gains when the intelligence they produce is actively incorporated into strategic deliberations, a conclusion that echoes the work of Lan et al. (2025); OECD (2023); and Sharma et al. (2014).

Overall, the research findings demonstrate that Strategic Management Accounting is a strategic capability that plays a role in enhancing the performance of culinary SMEs in South Tangerang City. In addition to exerting a direct influence on performance, Strategic Management Accounting also serves as a mechanism that explains how environmental uncertainty and technological innovation can be translated into improved business performance. The results offer empirical support for two theoretical perspectives. First, they reinforce Contingency Theory by underscoring the necessity of matching management information systems with evolving environmental conditions. Second, they lend weight to the Resource-Based View (RBV), which contends that an organisation's capacity to harness strategic information serves as a valuable resource that drives superior performance outcomes.

5. CONCLUSION

This study examines the influence of market competition, environmental uncertainty, and technological innovation on the performance of culinary SMEs in South Tangerang City, with Strategic Management Accounting (SMA) as a mediating variable. Using PLS-SEM on data from 129 SME operators, the findings are as follows. First, market competition does not significantly affect SMA. Second, environmental uncertainty positively and significantly affects SMA. Third, technological innovation positively and significantly affects

SMA. Fourth, market competition positively and significantly affects SME performance. Fifth, environmental uncertainty does not significantly affect SME performance. Sixth, technological innovation positively and significantly affects SME performance. Seventh, SMA positively and significantly affects SME performance. Eighth, SMA does not mediate the relationship between market competition and SME performance. Ninth, SMA fully mediates the effect of environmental uncertainty on SME performance. Tenth, SMA partially mediates the effect of technological innovation on SME performance.

Overall, this study demonstrates that Strategic Management Accounting is a strategic factor that plays a crucial role in enhancing the performance of culinary SMEs in South Tangerang, both directly and as a mechanism explaining how environmental uncertainty and technological innovation can be translated into improved business performance. These findings reinforce Contingency Theory, which states that organisational effectiveness is influenced by the fit between management information systems and business environmental conditions, and support the Resource-Based View, which explains that an organisation's capability to utilise strategic information is a source of competitive advantage and improved corporate performance.

Theoretically, this study enriches the literature on the relationship between business environmental factors, technological innovation, strategic management accounting, and SME performance, whilst demonstrating that not all contingency factors possess the same capacity to drive changes in management information systems within SMEs. The findings carry clear implications for practitioners. Culinary SME operators are advised to enhance their use of Strategic Management Accounting in a more organised fashion, paying particular attention to unpredictable business conditions and the adoption of new technologies. Doing so will better equip them to make informed strategic choices and improve their market position. The South Tangerang City Government is also advised to formulate policies and capacity-building programmes that encourage the adoption of strategic management accounting and digital technology literacy amongst culinary SME operators, in order to support the creation of a business ecosystem that is more adaptable to changes in the business environment.

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