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Strategic capabilities and export performance of Indonesian SMEs: An empirical investigation of technological capacity, network competence, and market knowledge

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Abstract

This study examines the impact of strategic capabilities on export performance among 174 Indonesian SMEs and investigates whether environmental uncertainty moderates these relationships. Drawing on resource-based view theory, we analyze how technological capacity, network competence, and market knowledge influence export success in emerging economies. Using PLS-SEM analysis, our findings reveal that all three strategic capability factors significantly enhance export performance, with market knowledge demonstrating the strongest effect ($\beta = 0.434$, $p<0.05$), followed by technological capacity ($\beta = 0.383$, $p<0.05$) and network competence ($\beta = 0.271$, $p<0.05$). Contrary to theoretical expectations, environmental uncertainty did not significantly moderate these relationships, suggesting that internal capabilities are more critical determinants of export success than adaptability to external conditions. Our model explains 67.4% of the variation in export performance, offering strong explanatory power. These findings provide valuable insights for Indonesian SMEs seeking to enhance their international competitiveness and for policymakers designing export promotion programs. This study contributes to international business literature by clarifying the relative importance of different strategic capabilities for SME internationalization in emerging economies.

Keywords: Emerging economies, Environmental uncertainty, Export performance, Indonesian SMEs, Market knowledge, Network competence, Strategic capabilities, Technological capacity.

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1. Introduction

Globalization has fundamentally transformed the competitive landscape for small and medium enterprises (SMEs), creating unprecedented opportunities for international expansion while simultaneously introducing complex challenges [1, 2]. Through significant export activities, SMEs contribute substantially to economic development, job creation, and innovation across developing economies [3, 4]. Exporting represents a critical strategic pathway that can enhance firm growth, revenue generation, and long-term survival in today's dynamic business environment. As a relatively low-risk entry mode for international markets, exporting often constitutes the initial phase of SMEs' internationalization process [2, 5].

The dramatic growth of export-oriented SMEs has resulted in an exponential increase in globalizing small businesses [6, 7], with scholars increasingly recognizing the importance of SME internationalization as a vital research domain [1, 8, 9]. Despite their economic significance, SMEs face substantial barriers when expanding internationally, including resource constraints, liability of foreignness, and institutional challenges [2, 10]. Firm performance in international markets is determined by the complex interplay between internal capabilities and external environmental factors [11, 12], necessitating that SMEs develop robust strategic capabilities to meet international standards, satisfy customer demands, and maintain competitiveness [8, 13].

The Indonesian context provides a particularly compelling setting for examining SME export performance. As Southeast Asia's largest economy, with abundant natural resources and a population exceeding 270 million, Indonesia offers entrepreneurs substantial opportunities. The country has the highest number of entrepreneurs in ASEAN [14], with SMEs accounting for approximately 90% of Indonesia's economic development [15, 16]. However, despite numerous support mechanisms and stimulus packages provided to domestic SMEs, the export contribution of Indonesian SMEs (15.8% of GDP in 2015) remains significantly lower than that of neighboring countries such as Thailand (30-40%), Vietnam (20-29%), the Philippines (20-26%), Singapore (16%), and Malaysia (15-19%) [17, 18].

The underperformance of Indonesian SMEs in export markets can be attributed to multiple factors. First, these firms often struggle with technology adoption and digital transformation [19, 20]. Technology is widely recognized as a critical strategic capability for enhancing performance [21], yet Indonesian SMEs frequently face difficulties in effectively implementing technological innovations [14, 22]. Second, Indonesia suffers from a shortage of experienced entrepreneurs capable of mentoring new business owners [23] potentially stemming from insufficient business knowledge and skills among Indonesian entrepreneurial firms [8, 24]. Third, firms operating in foreign markets encounter significant challenges due to knowledge gaps and capability deficiencies [25, 26] leading Indonesian entrepreneurs to struggle with market adaptation, product quality, and overall performance [23, 27].

Drawing on the resource-based view (RBV) and dynamic capabilities perspective, this study examines how strategic capabilities—specifically technological capacity, network competence, and market knowledge—impact the export performance of Indonesian SMEs. Additionally, we investigate whether environmental uncertainty moderates these relationships, addressing a critical gap in the literature regarding the contingent nature of capability-performance linkages in emerging economy contexts. By analyzing these relationships, we address the fundamental question of how strategic decisions by firms and decision-makers influence the export activities of Indonesian SMEs.

This research makes several important contributions. First, it enhances our understanding of the relative importance of different strategic capabilities for SME export performance in emerging economies. Second, it empirically tests the moderating effect of environmental uncertainty, providing insights into the contingent value of strategic capabilities. Third, it offers practical guidance for Indonesian SMEs seeking to enhance their international competitiveness and for policymakers designing export promotion programs. Finally, it extends internationalization theory by examining capability-performance relationships in an understudied emerging market context.

The remainder of this paper is organized as follows: First, we review relevant literature and develop hypotheses regarding the relationships between strategic capabilities, environmental uncertainty, and export performance. Next, we describe our research methodology, including sampling procedures, measurement development, and analytical

techniques. We then present our findings and discuss their theoretical and practical implications. Finally, we acknowledge limitations and suggest directions for future research.

I will enhance the Literature Review and Hypotheses Development section, focusing on strengthening the theoretical framework and hypothesis development.

2. Literature Review and Hypotheses Development

2.1. Strategic Capability and Export Performance

The relationship between strategic capabilities and firm performance has been a central focus in strategic management research for decades Barney [28] and Teece, et al. [29]. Größler [30] defines strategic capability as a firm's ability to consistently identify business opportunities and effectively deploy its resources in a continuously changing environment. This conceptualization aligns with dynamic capabilities theory, which emphasizes a firm's capacity to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments [29]. Strategic capability also encompasses a firm's ability to systematically incorporate experiences and information to formulate comprehensive strategies [31] that enable effective competition in dynamic business environments [30, 32].

For SMEs in emerging markets like Indonesia, developing and leveraging strategic capabilities is particularly critical for successful internationalization [5]. Prior research has demonstrated that strategic capabilities enable firms to outperform competitors by facilitating knowledge acquisition regarding market conditions, identification and exploitation of opportunities, and effective execution of competitive strategies [33-35]. According to Parlakgul and Selekler-Goksen [36] firms can leverage strategic capabilities to develop valuable, rare, inimitable, and non-substitutable resources that create sustainable competitive advantages in international markets, consistent with the resource-based view [28].

Building on this theoretical foundation, we examine three dimensions of strategic capability—technological capacity, network competence, and market knowledge—as potential determinants of export performance for Indonesian SMEs. These capabilities represent interconnected yet distinct resources that may drive international success in emerging economy contexts.

2.2. Technological Capacity

Technological capacity has emerged as a critical driver of competitive advantage in increasingly globalized and technology-oriented markets [37, 38]. This capability encompasses a firm's ability to leverage technology effectively to enhance operational efficiency, improve product quality, and develop innovative offerings in response to evolving customer preferences [37, 39, 40]. For SMEs specifically, technological capacity enables the effective utilization of information and communication technologies to enhance productivity and market responsiveness [41].

In international contexts, technological capability allows firms to establish sustainable competitive advantages and achieve superior export performance [36] in markets characterized by greater volatility than domestic environments [42-44]. Although research on the relationship between firm size and technology-driven export performance has yielded inconsistent results [38] technological capacity is particularly significant in emerging economies where small enterprises face resource constraints [45].

In the Indonesian context, Suharti, et al. [46] found that technological capacity significantly influences SME effectiveness and competitiveness. Indonesian SMEs often struggle to expand internationally due to insufficient technological capabilities, while those equipped with more advanced technologies and machinery typically achieve higher export proportions [47]. Recent research by Maragheh, et al. [3] emphasizes that while competitive objectives have remained relatively stable over time, the instruments and criteria for building competitive strength have shifted dramatically toward technological capabilities.

Having sufficient technological knowledge and adaptive capacity can help SMEs compete globally by enhancing both physical and organizational capital resources [36]. Empirical studies consistently demonstrate significant positive relationships between technological capacity and firm performance across diverse contexts [48-51]. Based on this theoretical and empirical foundation, we propose:

H_1: Technological capacity positively influences Indonesian SMEs' export performance.

2.3. Network Competence

Network competence represents a firm's ability to develop and manage relationships with external stakeholders, including customers, suppliers, competitors, and institutional actors [52]. A substantial body of international entrepreneurship research examines network competence as a critical factor affecting firm performance [53-56], particularly for resource-constrained SMEs.

Johanson and Vahlne [57] revised the Uppsala model, emphasizing networks as essential drivers for acquiring knowledge about international markets and positioning network development as central to the internationalization process. This perspective suggests that a primary reason for increased international commitment stems from firms' efforts to join new networks that include foreign market actors, thereby incrementally building market knowledge. Consequently, network competence has been identified as instrumental for SME decision-making processes and

opportunity identification [58], with extensive networks enabling firms to capitalize on and dominate market opportunities [55, 59].

Networks help SMEs overcome size-related barriers to internationalization [60-63] enhance overall international competitiveness [64] and improve export-related performance Doole, et al. [65]. Torkkeli, et al. [52] empirically demonstrated that networks enable successful SME internationalization, with increased network competence strongly correlating with both internationalization propensity and international performance.

By demonstrating network competence, SMEs can mitigate size-related challenges in international markets, particularly resource limitations [35, 66]. Network competence facilitates access to resources, knowledge, market opportunities, and innovation in overseas markets [67-69]. Some scholars argue that developing network competence is more critical for global market operations than any other resource [60] with networks playing an essential role in enabling cross-border business activities [70, 71].

In Indonesia specifically, SMEs primarily access global markets through trade shows and exhibitions. Participation in these events represents an effective strategy for building business networks, developing network competence, and improving international market outcomes [72]. Based on both theoretical arguments and empirical evidence demonstrating positive relationships between network competence and export performance [73-75], we propose:

H_2: Network competence positively influences Indonesian SMEs' export performance.

2.4. Market Knowledge

Market knowledge plays a pivotal role in internationalization processes, as widely recognized in international business literature [76, 77]. This capability encompasses a firm's understanding of customers, competitors, suppliers, and regulatory authorities in target markets [78-81]. For internationalizing firms, maintaining a diverse knowledge base is essential for export success [82, 83] particularly given that knowledge deficiencies represent significant barriers to SME internationalization [84].

Casillas, et al. [85] identify three distinct levels at which knowledge influences international behavior: individual, firm, and network levels. At the individual level, entrepreneurs' and managers' experience critically shapes early internationalization decisions [86]. At the firm level, SMEs must rapidly acquire knowledge and skills for international expansion through participation in knowledge-sharing networks [87, 88]. Indonesian SMEs typically obtain market information and establish networks through trade shows and training programs. Österle, et al. [89] note that trade fair participation provides exporters with experiential knowledge that would otherwise be difficult or costly to obtain.

Exporting SMEs from emerging economies face numerous knowledge-related challenges, including insufficient understanding of foreign institutions and limited internationalization expertise [90]. Simultaneously, globalization has made customers more sophisticated, informed, and demanding [91] making market knowledge increasingly critical for effective competition. SMEs with limited international presence often lack necessary foreign business experience, exacerbating uncertainties when expanding abroad Chen and Martin [92]. Zhou [75] empirically demonstrated that acquiring foreign business knowledge enables and accelerates internationalization.

Despite extensive research on large firm internationalization strategies, studies examining the determinants of SME internationalization from emerging market perspectives remain relatively scarce [93-96]. Furthermore, knowledge about the specific impact of market knowledge on SME export performance remains inconclusive. Based on theoretical arguments and existing empirical evidence suggesting positive relationships between market knowledge and international performance [97, 98] we propose:

H_3: Market knowledge positively influences Indonesian SMEs' export performance.

2.5. Moderating Effect of Environmental Uncertainty

In strategic management research, examining moderating variables enhances the understanding of the contingent nature of relationships between organizational capabilities and performance outcomes [99]. Environmental uncertainty—characterized by unpredictability in customer demands, competitive actions, and technological developments—represents a critical contingency factor that may influence the effectiveness of strategic capabilities [100, 101].

Existing empirical studies have emphasized the moderating role of environmental uncertainty in the relationship between organizational strategies and performance Homburg, et al. [101] and Zehir and Balak [99]. Dimitratos, et al. [102] discovered that both foreign and domestic environmental factors influenced international success. Rapid and turbulent changes in business environments generate fierce competition in domestic and international markets [103, 104] necessitating that SMEs balance internal strengths against environmental constraints to achieve exceptional international performance.

When designing international business strategies, firms must consider environmental conditions [32, 105, 106]. Environmental uncertainty affects SMEs' ability to forecast the future and their performance under volatile conditions [107]. Consequently, SMEs are encouraged to adapt to uncertain environments [13, 105] and proactively pursue opportunities [32, 106]. Firms that effectively manage environmental uncertainty tend to be more agile in developing innovative business strategies [106, 108] enhancing their prospects for international success [107].

Previous research has established environmental uncertainty as a significant moderator of the relationship between entrepreneurial strategies and international performance [107, 109]. Building on this theoretical foundation, we propose that environmental uncertainty will moderate the relationships between strategic capabilities and export performance:

H_{1a}: Environmental uncertainty moderates the relationship between technological capacity and export performance of Indonesian SMEs.

H_{2a}: Environmental uncertainty moderates the relationship between network competence and export performance of Indonesian SMEs.

H_{3a}: Environmental uncertainty moderates the relationship between market knowledge and export performance of Indonesian SMEs.

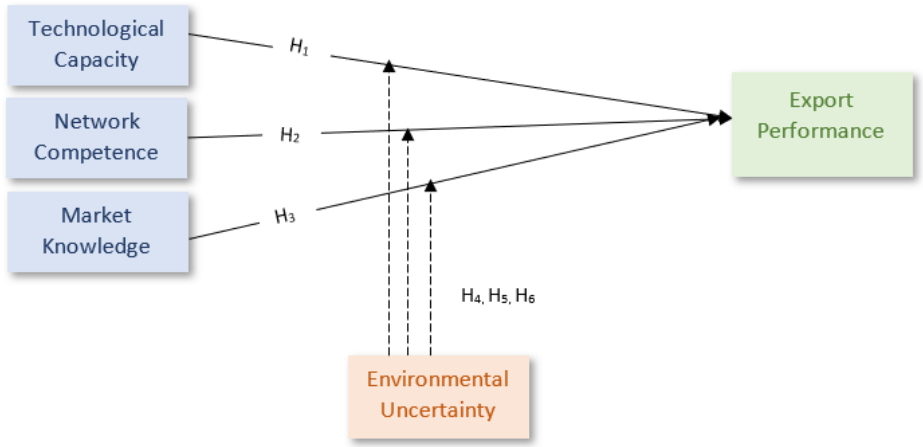

Figure 1.
Research Framework.

3. Research Methodology

3.1. Research Design and Instrument Development

To validate our proposed theoretical model (Figure 1), we employed a cross-sectional research design using a survey methodology. To ensure the validity and reliability of our constructs, we adopted previously validated measurement scales from the literature. Technological capacity was measured using items from Zhou, et al. [110] while network competence and market knowledge were assessed using scales from Zhou, et al. [111] and McKee, et al. [112] respectively. Environmental uncertainty was measured using Miller and Friesen's [113] established scale. Export performance was assessed using the EXPERF scale developed by Zou, et al. [114] which captures the extent to which Indonesian SMEs have successfully internationalized.

All items were measured on a seven-point Likert scale ranging from "extremely strongly disagree" (1) to "extremely strongly agree" (7). The decision to employ a seven-point scale was theoretically grounded in Macedo [115] research, which demonstrated that seven-point Likert scales exhibit superior psychometric properties compared to five-point, three-point, and eleven-point alternatives. This approach allows for greater variance in responses while maintaining reliability and validity.

Prior to full-scale implementation, we conducted a comprehensive pilot test to ensure instrument efficacy and identify potential issues. We distributed 35 questionnaires at the Indonesian Ministry of Cooperatives and SMEs' Export SMEs Festival. Participants included executives from various Jakarta-based SMEs with international operations. These respondents completed the questionnaire and provided feedback regarding item clarity, comprehensibility, and suggestions for improvement. This pilot testing procedure enhanced both face and content validity of our measurement instrument before the main data collection phase.

3.2. Sampling Procedure and Data Collection

The target population for this study consisted of Indonesian SME exporters. We constructed our sampling frame using the directory provided by the Indonesian Ministry of Trade, which contains comprehensive listings of exporting firms. Given our focus on key economic regions, we specifically targeted SMEs in three critical areas: Java, Sumatera, and Bali & Nusa Tenggara. According to the Indonesian export database, 558 SMEs from these regions had established international operations, constituting our study population.

To determine appropriate sample size, we consulted [116] recommendations, which indicated an optimal sample size of 234 for a population of 558 (rounded to 600). This target exceeds the minimum requirements for PLS-SEM analysis, which suggests 160 observations for the inverse square root approach and 146 for the gamma-exponential method [117, 118].

We implemented a multi-phase data collection strategy to maximize response rates. Initially, mail survey packages were distributed to all 558 SMEs in the sampling frame. After one week, only five complete questionnaires had been returned, necessitating additional follow-up measures. As a second approach, we personally delivered questionnaires to selected SMEs in the three target regions using addresses from the Indonesian Trade Ministry's Export Directory. This effort yielded 82 additional responses, though three were deemed unusable (one blank questionnaire and two from large multinational corporations rather than SMEs).

To further enhance the response rate, we employed two additional collection methods. First, researchers attended Indonesia's largest SME exhibition, the International Handicraft Trade Fair (INACRAFT), gathering 38 completed questionnaires during the three-day event. Second, we distributed 79 questionnaires at a training session for Indonesian SME exporters in Jakarta, yielding 52 completed surveys. After these multiple waves of data collection, we obtained 174 valid questionnaires, representing a response rate of approximately 31.2%.

To assess potential non-response bias, we conducted an independent sample t-test comparing early and late respondents, following established procedures [119, 120]. We selected 30 early and 30 late respondents and compared them across four demographic variables (job title, years of experience, region of residence, and personnel count) and one independent variable (technological capacity). As shown in Table 1, no statistically significant differences in mean scores ($p > 0.05$) were detected between early and late respondents, indicating that non-response bias was not a substantial concern in this study.

Table 1.
Test Analysis for Non-Response Bias.

	N	Mean	P-value
Job Title			
Early	30	2.93	0.235
Late	30	2.60	
Years of Experience			
Early	30	2.73	0.808
Late	30	2.70	
Percentage of Region			
Early	30	3.97	0.366
Late	30	3.40	
Number of Employees			
Early	30	2.43	0.063
Late	30	2.00	
Technological Capacity			
Early	30	4.18	0.229
Late	30	4.58	

3.3. Data Analysis

We employed a two-stage analytical approach using both descriptive and inferential statistical techniques. First, IBM SPSS version 26.0 was used to analyze respondent demographics and assess the reliability and validity of measurement items for each construct. Second, we utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 3.3.3 to examine hypothesized relationships between strategic capabilities and export performance, as well as the moderating effect of environmental uncertainty.

PLS-SEM was selected as the primary analytical technique for several reasons: (1) it accommodates complex models with multiple constructs and relationships, (2) it performs well with relatively small sample sizes, (3) it does not require normal distribution assumptions, and (4) it effectively handles both reflective and formative measurement models [121]. Following recommended procedures [121, 122], we first assessed the measurement model by examining factor loadings, composite reliability (CR), average variance extracted (AVE), and discriminant validity. Subsequently, we evaluated the structural model by examining path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). To test the moderating effects of environmental uncertainty, we employed the product indicator approach in SmartPLS.

4. Results

4.1. Descriptive Analysis

From the 558 surveys distributed to managers and executives of Indonesian SMEs, we received 174 valid responses. The sample composition reflects diverse industries within the Indonesian export sector, with the largest representation from food and beverages (18.97%), fashion (15.52%), and garment and textile (13.79%) sectors. Most participating firms (n = 136) had been operating for six to ten years, followed by those in operation for one to five years (n = 36), and a small number operational for less than one year (n = 2). Regarding annual revenue, 34.5% of sampled SMEs reported between US$ 0 and US$ 1 million.

In terms of organizational hierarchy, respondents were relatively evenly distributed across management levels: junior managers (29.9%), middle managers (29.3%), senior managers (27.0%), and owner/CEO/director level (13.8%). This balanced representation across different management positions enhances the validity of our findings by capturing diverse perspectives within the organizational structure.

Regarding export destinations, most sampled SMEs exported to other Asian countries (40.8%), followed by the European Union (19.5%), mainland China (9.8%), and South & Central America (8.6%). This geographic distribution reflects the regional focus of many Indonesian SMEs while also demonstrating their engagement with more distant international markets. Employment data indicates that most firms in our sample (55.7%) employed between 51-99 employees, followed by those with 2-19 employees (28.7%) and 20-50 employees (15.5%). Comprehensive demographic information is presented in Table 2.

Table 2.
Descriptive Analysis of Respondents.

Variable	Classification of Variables	Frequency (N = 174)	Percent
Type of Industry	Food and Beverages	33	18.97
	Palm Oil	2	1.15
	Plastic	7	4.02
	Garment and Textile	24	13.79
	Handicraft	11	6.32
	Plywood, Furniture, Rattan	19	10.92
	Pharmacy and Medical Devices	8	4.59
	Coal	3	1.72
	Rubber and Abrasive	21	12.07
	Fashion	27	15.52
	Manufacture	13	7.47
	Leather	4	2.29
	Agriculture	2	1.15
Participants Profile	Owner/ CEO/ Manager Director	24	13.8
	Senior Manager	47	27.0
	Middle Manager	51	29.3
	Junior Manager	52	29.9
Export Destinations	EU	34	19.5
	Mainland China	17	9.8
	Middle East	10	5.7
	Eastern Europe	8	4.6
	Other Asian Countries	71	40.8
	Australia/ New Zealand	5	2.9
	North America	9	5.2
	South & Central America	15	8.6
	Africa	5	2.9
Number of Employees	2 – 19 employees	50	28.7
	20 – 50 employees	27	15.5
	51 – 99 employees	97	55.7

4.2. Measurement Model Assessment

Following established protocols for PLS-SEM analysis, we evaluated the measurement model by examining internal consistency reliability, convergent validity, and discriminant validity. As shown in Figure 2 and detailed in Table 3, all reflective constructs demonstrated composite reliability values exceeding 0.80 (ranging from 0.817 to 0.959), substantially above the recommended threshold of 0.70, indicating high internal consistency and reliability.

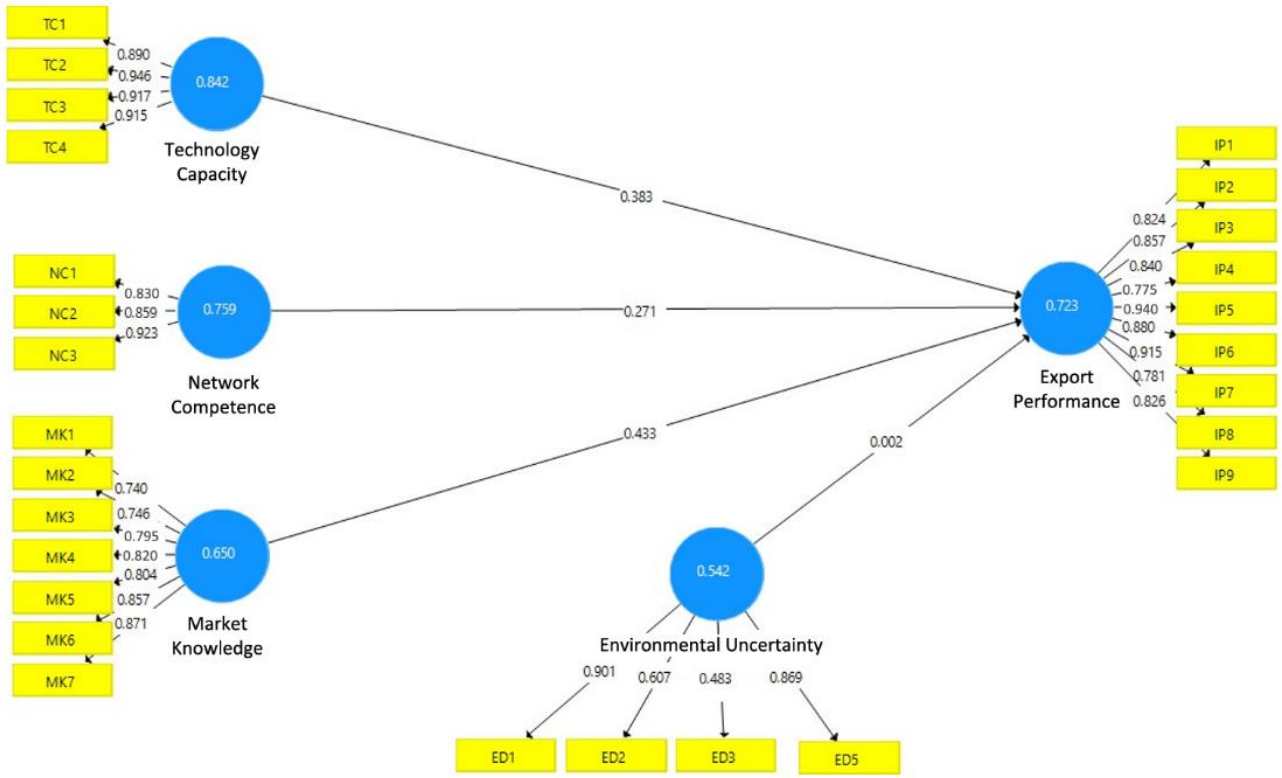

Figure 2.
Assessment of Measurement Model.

Table 3.
Measurement of Constructs Validity and Reliability.

Variable	Items	Loadings	Composite reliability (CR)	Average Variance Extracted (AVE)
Technology Capacity	TC1	0.890	0.955	0.842
	TC2	0.946		
	TC3	0.917		
	TC4	0.915		
Network Competence	NC1	0.830	0.904	0.759
	NC2	0.859		
	NC3	0.923		
Market Knowledge	MK1	0.740	0.928	0.650
	MK2	0.746		
	MK3	0.795		
	MK4	0.820		
	MK5	0.804		
	MK6	0.857		
	MK7	0.871		
Environmental Uncertainty	UC1	0.901	0.817	0.542
	UC2	0.607		
	UC3	0.483		
	UC5	0.869		
Export Performance	EP1	0.824	0.959	0.723
	EP2	0.857		
	EP3	0.840		
	EP4	0.775		
	EP5	0.940		
	EP6	0.880		
	EP7	0.915		
	EP8	0.781		
	EP9	0.826		

For convergent validity assessment, we examined both factor loadings and average variance extracted (AVE). All items exhibited loadings above 0.70, with only two exceptions (UC2 = 0.607 and UC3 = 0.483) that remained above the minimum

acceptable threshold. The AVE values for all constructs exceeded 0.50 (ranging from 0.542 to 0.842), demonstrating that each construct captures more variance in its associated indicators than measurement error, thus confirming convergent validity.

Discriminant validity was assessed using the Fornell-Larcker criterion and cross-loadings examination. As presented in Table 4, the square root of each construct's AVE (diagonal values) exceeds its correlation with any other construct in the model, satisfying the Fornell-Larcker criterion. Additionally, each indicator's loading on its designated construct was higher than its cross-loadings on all other constructs (not shown in tables for brevity), further confirming discriminant validity. These results collectively demonstrate that our measurement model exhibits satisfactory reliability and validity, providing a solid foundation for structural model assessment.

Table 4.
Fornell-Lacker Criterion.

	EU	EP	MK	NC	TC
EU	0.736				
EP	-0.075	0.850			
MK	0.009	0.691	0.806		
NC	-0.065	0.608	0.592	0.871	
TC	-0.165	0.550	0.254	0.211	0.917

Source: Structural Model: Hypothesis Testing.

4.3. Structural Model Assessment

Following Hair, et al. [121] recommendations, we conducted a comprehensive five-step procedure to evaluate our structural model: (1) assessment of lateral collinearity, (2) examination of path coefficients, (3) evaluation of coefficient of determination (R^2), (4) assessment of effect size (f^2), and (5) examination of predictive relevance (Q^2).

Lateral collinearity was assessed through the examination of Variance Inflation Factor (VIF) values. As shown in Table 5, all inner VIF values were substantially below the conservative threshold of 3.3 and the more lenient threshold of 5.0, indicating the absence of significant multicollinearity concerns in our structural model.

Table 5.
Collinearity Statistics of Structural Model (Inner VIFs).

	Export Performance
Technology Capacity	1.075
Network Competence	1.548
Market Knowledge	1.581

To evaluate our direct hypotheses (H1, H2, and H3), we examined path coefficients, t-statistics, and p-values generated through the SmartPLS bootstrapping procedure with 5,000 resamples. As illustrated in Figure 3 and detailed in Table 6, all three strategic capability dimensions demonstrated statistically significant positive relationships with export performance: technological capacity ($\beta = 0.383$, $t = 9.263$, $p < 0.001$), network competence ($\beta = 0.271$, $t = 3.994$, $p < 0.001$), and market knowledge ($\beta = 0.434$, $t = 6.068$, $p < 0.001$). These results provide strong support for hypotheses H1, H2, and H3, confirming that all three strategic capabilities significantly enhance the export performance of Indonesian SMEs. Among these capabilities, market knowledge exhibited the strongest effect on export performance, followed by technological capacity and network competence.

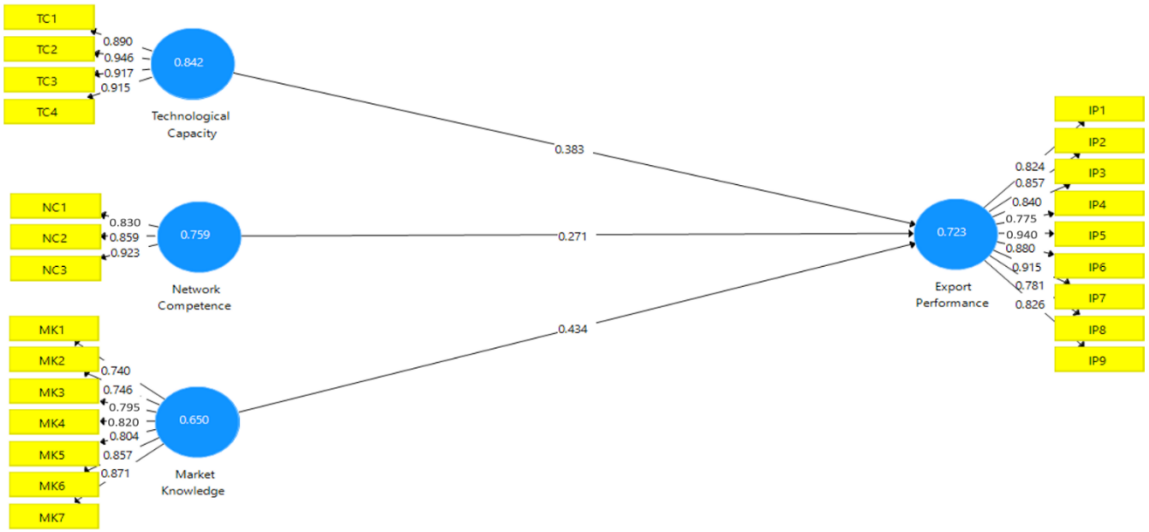

Figure 3.
Assessment of Structural Model.

Table 6.
Structural Model Assessment.

	Relationship	Direct Effect (β)	Std. Error	T - Statistics	P-Value	Decision	R^2	f^2	Q^2
H_1	Technological Capacity →Export Performance.	0.383	0.041	9.263	0.000	Supported	0.674	0.418	0.472
H_2	Network Competence → Export Performance.	0.271	0.068	3.994	0.000	Supported		0.145	
H_3	Market Knowledge → Export Performance.	0.434	0.071	6.068	0.000	Supported		0.365	

The coefficient of determination (R^2) for our model was 0.674, indicating that the combined effect of all strategic capability dimensions explains 67.4% of the variance in export performance. This R^2 value exceeds the threshold of 0.50 recommended for social science research, suggesting substantial explanatory power. To further assess the relative impact of each predictor variable, we calculated effect sizes (f^2). Market knowledge demonstrated the largest effect size ($f^2 = 0.365$), followed by technological capacity ($f^2 = 0.418$) and network competence ($f^2 = 0.145$). According to Cohen [123] guidelines, these values indicate large, large, and medium effects, respectively.

To evaluate the model's predictive relevance, we calculated the Stone-Geisser Q^2 value through a blindfolding procedure with an omission distance of 7. The resulting Q^2 value was 0.472, substantially above zero, indicating that our model possesses strong predictive relevance beyond mere statistical association.

4.4. Moderation Analysis

To test our moderation hypotheses (H1a, H2a, and H3a), we examined the interaction effects between environmental uncertainty and each strategic capability dimension. As illustrated in Figure 4 and detailed in Table 7, the results revealed non-significant interaction effects: technological capacity × environmental uncertainty (β = -0.101, t = 0.985, p = 0.325), network competence × environmental uncertainty (β = 0.200, t = 0.998, p = 0.319), and market knowledge × environmental uncertainty (β = -0.089, t = 0.489, p = 0.625). With t-values below 1.645 and p-values exceeding 0.05, these findings indicate that environmental uncertainty does not significantly moderate the relationships between strategic capabilities and export performance among Indonesian SMEs. Consequently, hypotheses H1a, H2a, and H3a were not supported.

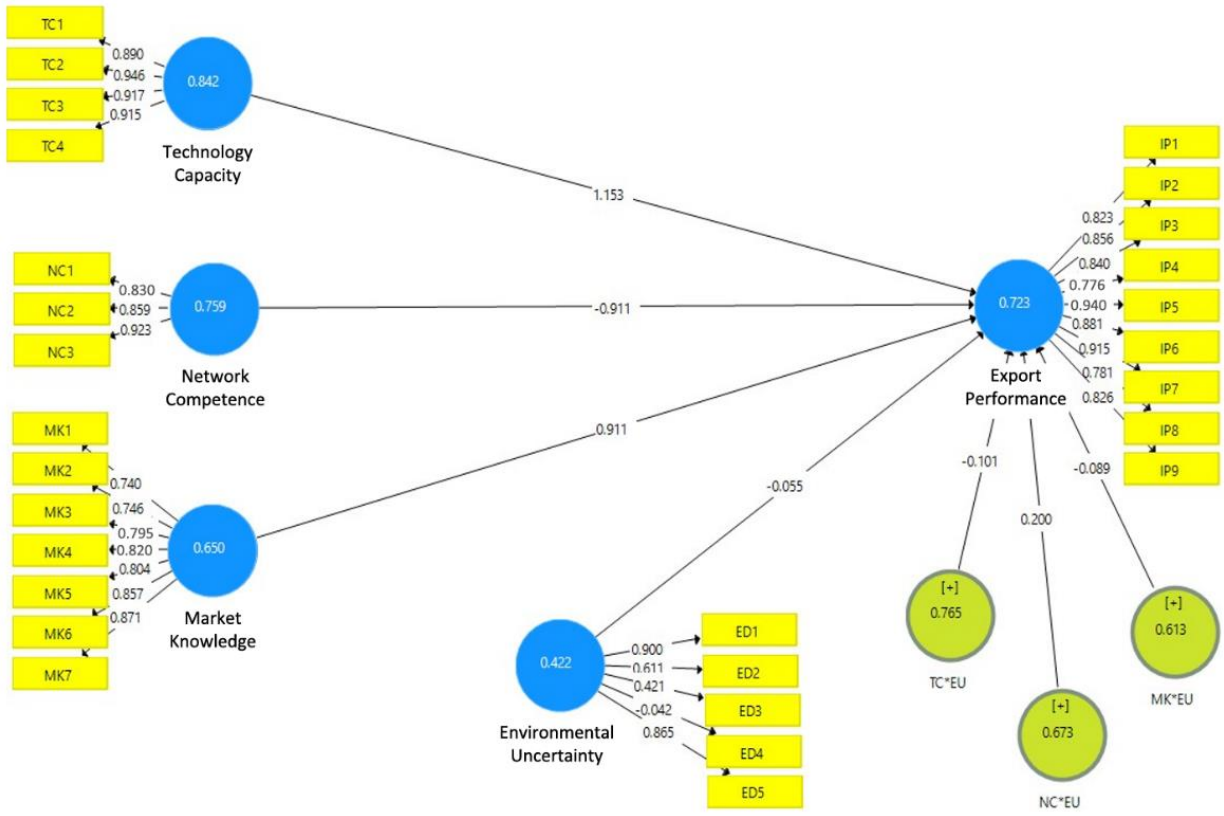

Figure 4.
Assessment of Moderating Effect (Environmental Uncertainty).

Table 7.
Moderator Assessment.

	Relationship	β	St. Error	T-statistic	P-Value	Result
H_4	TC*UC → EP	-0.101	0.102	0.985	0.325	Not Supported
H_5	NC*UC → EP	0.200	0.200	0.998	0.319	Not Supported
H_6	MK*UC → EP	-0.089	0.181	0.489	0.625	Not Supported

These non-significant moderation effects suggest that the positive impact of technological capacity, network competence, and market knowledge on export performance remains consistent across varying levels of environmental uncertainty. This finding contradicts our theoretical expectation that environmental dynamism would amplify or attenuate the effectiveness of strategic capabilities in international markets.

5. Discussion

This study investigated the impact of strategic capabilities on the export performance of Indonesian SMEs and examined whether environmental uncertainty moderates these relationships. Our findings reveal that all strategic capability dimensions—technological capacity, network competence, and market knowledge—significantly enhance export performance, while environmental uncertainty does not moderate these relationships. These results offer important theoretical and practical insights for international entrepreneurship research and SME internationalization in emerging economies.

5.1. Strategic Capabilities and Export Performance

The empirical evidence from our study demonstrates that technological capacity significantly enhances the export performance of Indonesian SMEs. Interestingly, technological capability emerged as the second most influential factor among all dimensions examined. This finding aligns with previous research that established positive relationships between technological capabilities and export performance (Flor and Oltra [124]; Lee, et al. [125]; Radicic and Djalilov [51] and Tolstoy [126]). Parlakgul and Selekler-Goksen [36] identified technological capacity as a critical resource for enhancing export performance in emerging economies, while Wengel and Rodriguez [47] specifically found that Indonesian SMEs with more advanced technology demonstrated better international performance due to increased productivity.

The significance of technological capacity for Indonesian SMEs likely stems from its role in enhancing operational efficiency, product quality, and market responsiveness. Our qualitative insights from interviews with SME owners in the souvenir and coffee production sectors revealed that technology plays a crucial role in helping these firms compete globally. For agricultural and mineral product exporters, which constitute a substantial portion of Indonesian exports, packaging technology is particularly important for preserving product authenticity while enhancing market appeal. As noted by Radicic and Djalilov [51] technological capacity improves export performance by lowering marginal costs, providing SMEs with crucial cost advantages in competitive international markets.

It is worth noting that previous research on Indonesian SMEs has yielded inconsistent results regarding the impact of technological capacity. Kusumawardhani [127] found no significant relationship between technological capacity and performance in certain industries, such as furniture and textiles, suggesting that the importance of technology may vary across sectors. This discrepancy highlights the need for industry-specific analyses in future research to better understand how technological requirements differ across export-oriented sectors.

Our results also confirm a strong positive relationship between network competence and export performance, consistent with previous findings [52, 128]. Network competence enables SMEs to identify and capitalize on market opportunities while expanding their knowledge base, leading to significant market expansion and wealth creation globally. Indonesian SMEs leverage network competence to build cooperative relationships with overseas clients, demonstrating adaptability and constructive problem-solving capabilities that enhance survival and growth in international markets.

Kusumawardhani [127] emphasized the particular importance of network competency for Indonesian SMEs in Central Java, noting that participants benefited substantially from long-term relationships with international customers. These networks facilitate information exchange with other sellers and potential business partners, helping Indonesian SMEs overcome resource limitations [129] especially when government support is insufficient. This finding aligns with Human and Naude [130] assertion that firm performance ultimately depends on network reliability, regardless of other strategic capabilities. Network competence enables SMEs to engage effectively with foreign suppliers, customers, and institutions, accelerating internationalization while strengthening entrepreneurial orientation and export performance.

Market knowledge emerged as the strongest predictor of export performance in our study, highlighting its critical role in international success. This capability enables firms to understand foreign market conditions, customer preferences, and regulatory requirements, essential knowledge for SMEs venturing into international markets [131]. Our findings corroborate [126] research demonstrating that firms can overcome market obstacles by effectively utilizing market knowledge, thereby enhancing their global expansion and export performance.

The pronounced effect of market knowledge likely reflects the challenges Indonesian SMEs face in accessing and interpreting international market information. Kusumawardhani [127] and Kristiansen [132] noted that Indonesian SMEs typically have limited access to market information, resulting in substantial losses, operational downscaling, or even business termination. Given Indonesian SMEs' resource constraints and limited international experience, acquiring comprehensive market knowledge before export engagement is crucial for survival and success in competitive global environments.

5.2. Environmental Uncertainty as a Moderator

Contrary to our theoretical expectations, environmental uncertainty did not significantly moderate the relationship between strategic capabilities and export performance. This finding aligns with Lu and Ramamurthy [133] research, which shows that environmental dynamism had no effect on the relationship between technological capacity and performance. One possible explanation is that intensive technology application in highly dynamic environments may be prohibitively expensive for resource-constrained SMEs. Rather than adopting every new technology, Indonesian SMEs may need to optimize existing technological resources, regardless of environmental conditions.

Similarly, our finding that environmental uncertainty does not moderate the network competence-export performance relationship corresponds with Torkkeli, et al. [52] research on Finnish SMEs. They suggested that environmental uncertainty might limit SMEs' willingness to perform internationally despite demonstrating network competence. Tambunan [17] observed that while Indonesian SMEs successfully penetrated international markets through relationships with foreign buyers, the dynamic foreign market environment—characterized by strict quality controls—did not enhance their ability to serve these markets effectively. This suggests that resource constraints limit Indonesian SMEs' capacity to leverage networks and meet international market requirements, regardless of environmental conditions.

The non-significant moderating effect on the market knowledge-export performance relationship aligns with Jaworski and Kohli [134] and Martinez-Conesa, et al. [135] who found that environmental uncertainty did not influence the relationship between market knowledge and firm performance. This may be attributed to Indonesian SMEs possessing only basic market knowledge that remains equally effective (or limited) across different environmental conditions. Roshetko and Purnomosidhi [136] observed that Indonesian SMEs could acquire sufficient market knowledge for current products but struggled to adapt when market demands evolved toward higher-quality offerings. Rather than adopting production methods, they maintained existing practices, negatively affecting business outcomes regardless of environmental dynamism.

Collectively, these findings suggest that Indonesian SMEs operate with similar effectiveness in both stable and dynamic environments. The consistency of capability-performance relationships across environmental conditions indicates that internal resources and capabilities are more critical determinants of export success than adaptive responses to environmental uncertainty. This perspective aligns with the resource-based view's emphasis on firm-specific capabilities as primary drivers of competitive advantage.

5.3. Theoretical Implications

Our research contributes to international entrepreneurship theory in several important ways. First, we advance the understanding of the relative importance of different strategic capabilities for SME export performance in emerging economies. By empirically demonstrating that market knowledge exerts the strongest influence, followed by technological capacity and network competence, we provide nuanced insights into capability prioritization for internationalizing SMEs from developing countries.

Second, our finding that environmental uncertainty does not moderate capability-performance relationships challenges conventional wisdom regarding contingency effects in international business. This suggests that theoretical models developed primarily in Western contexts may require adaptation for emerging economies, where resource constraints and institutional factors may create different dynamics between capabilities, environmental conditions, and performance outcomes.

Third, our research extends the application of both the resource-based view and dynamic capabilities perspectives to SME internationalization in emerging economies. While these theoretical frameworks emphasize the importance of distinctive resources and adaptation capabilities, our findings suggest that certain fundamental capabilities maintain their value regardless of environmental dynamism, at least in the Indonesian context.

5.4. Practical Implications

For Indonesian SMEs seeking to enhance export performance, our findings offer several actionable insights. First, developing comprehensive market knowledge should be prioritized, as this capability demonstrates the strongest impact on export success. SMEs should systematically gather information about target markets, customer preferences, competitive landscapes, and regulatory requirements before and during internationalization. Participation in trade shows, industry exhibitions, and government-sponsored training programs represents effective mechanisms for acquiring such knowledge.

Second, technological capacity development should be emphasized, particularly in areas that enhance productivity, quality control, and market responsiveness. For agricultural and resource-based exporters, investments in packaging technology can significantly improve product presentation and preservation, enhancing international market appeal while maintaining product authenticity.

Third, network competence remains critical for overcoming resource limitations and accessing foreign market opportunities. Indonesian SMEs should strategically develop relationships with international buyers, suppliers, and institutional actors, leveraging these connections to gain market access, acquire knowledge, and navigate regulatory challenges.

For policymakers and export promotion agencies, our findings highlight the need for targeted support programs that enhance SMEs' strategic capabilities. Government initiatives should focus on facilitating market knowledge acquisition through market research assistance, trade mission sponsorship, and information dissemination. Additionally, technology adoption programs, innovation grants, and digital transformation initiatives could enhance the technological capacity of export-oriented SMEs. Network development could be facilitated through trade show subsidies, buyer-seller matching programs, and industry cluster development.

5.5. Limitations and Future Research

While this study contributes significantly to our understanding of strategic capabilities and export performance, several limitations should be acknowledged when interpreting the findings. First, our research focused exclusively on Indonesian SMEs because of their critical role in the country's economic development. Future studies could extend this investigation to large enterprises to develop a more comprehensive picture of Indonesian businesses across different organizational scales. Comparative analyses between SMEs and large firms could reveal whether the relative importance of strategic capabilities varies with firm size and resource availability.

Second, geographical constraints limited our sample to three major regions of Indonesia (Java, Sumatra, and Bali & Nusa Tenggara). While these regions represent significant economic centers, they may not fully capture the diversity of Indonesian SMEs across all regions. Future research should examine export performance determinants across all Indonesian territories, including less-studied areas like Kalimantan, Sulawesi, and Papua, to enhance the generalizability of findings and identify potential regional variations in capability-performance relationships.

Third, our finding that environmental uncertainty does not moderate the relationship between strategic capabilities and export performance warrants further investigation. Future studies could examine alternative moderators, particularly government-related factors such as export promotion programs, regulatory support, and institutional quality. These factors may exert more significant moderating effects than environmental uncertainty in the Indonesian context, where government intervention plays a substantial role in economic development.

Fourth, our cross-sectional research design captures relationships at a single point in time, limiting our ability to establish causal relationships or examine how capabilities evolve over time. Longitudinal studies tracking the development of strategic capabilities and export performance would provide more robust evidence regarding causality and reveal how these relationships evolve throughout different stages of internationalization.

Fifth, while our quantitative approach enabled systematic hypothesis testing, it may not capture the rich contextual nuances that influence SME internationalization. Future researchers should consider qualitative or mixed methods approaches to generate distinct themes and insights that complement our quantitative findings. In-depth case studies of successful Indonesian exporters could uncover the processes through which strategic capabilities are developed and deployed to enhance international performance.

Finally, our conceptualization of strategic capabilities was limited to three dimensions: technological capacity, network competence, and market knowledge. While these represent critical capabilities for internationalizing SMEs, future research could expand this framework to include additional capabilities such as entrepreneurial orientation, organizational learning capacity, adaptive capability, digital competence, and sustainable innovation capability. Examining how these extended capabilities influence export performance would provide a more comprehensive understanding of SME internationalization in emerging economies.

6. Conclusion

This study examined the impact of strategic capabilities on export performance among Indonesian SMEs and investigated whether environmental uncertainty moderates these relationships. Our findings demonstrate that all three strategic capability dimensions—technological capacity, network competence, and market knowledge—significantly enhance export performance, with market knowledge exerting the strongest influence, followed by technological capacity and network competence. Contrary to theoretical expectations, environmental uncertainty did not moderate these relationships, suggesting that the value of strategic capabilities for export performance remains consistent across varying levels of environmental dynamism.

These findings contribute to international entrepreneurship theory by clarifying the relative importance of different capabilities for SME internationalization in emerging economies and challenging conventional wisdom regarding contingency effects. From a practical perspective, our results highlight the need for Indonesian SMEs to prioritize market knowledge acquisition, technological capacity development, and network competence building to enhance their international competitiveness.

The underperformance of Indonesian SMEs in export markets compared to neighboring countries underscores the importance of strategic capability development for improving national export contributions. By systematically enhancing their strategic capabilities, Indonesian SMEs can overcome resource constraints, navigate international market complexities, and achieve sustainable competitive advantages in global markets. Government export promotion programs should be designed to address capability gaps through targeted training, financial support, and network facilitation initiatives.

In conclusion, this research enhances our understanding of how strategic capabilities drive export performance in emerging economy contexts, providing valuable insights for scholars studying SME internationalization and practitioners seeking to enhance international competitiveness. As globalization continues to create both opportunities and challenges for SMEs, strategic capability development represents a critical pathway for achieving export success in increasingly competitive international markets.

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