

Driving MSME Sustainability through Self-Efficacy: The Dual Mediating Roles of Entrepreneurial Orientation and Pro-Environmental Behavior

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ABSTRACT

To support economic growth, job creation, and SDGs, understanding MSME sustainability is vital. Integrating Social Cognitive Theory and sustainable entrepreneurship, this study examines how self-efficacy drives MSME sustainability through the parallel mediation of entrepreneurial orientation (EO) and pro-environmental behavior (PEB). Survey data from 185 culinary MSMEs in South Tangerang, Indonesia, were analyzed using SEM-PLS. Results show self-efficacy significantly enhances sustainability directly and indirectly. Both EO and PEB act as partial mediators, with EO dominating while PEB's independent contribution remains low. Practically, MSMEs should foster mental resilience and social harmony. Meanwhile, local governments must intervene with financial incentives and green infrastructure to address low environmental commitment, securing comprehensive and sustainable MSME development.

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are strategic drivers of economic growth, job creation, and poverty reduction, fostering the sustainable improvement of socio-economic conditions (Azzahra et al., 2025; Tambunan, 2023). Yet, despite this pivotal macroeconomic role, these enterprises constantly face severe operational and longevity challenges (Wardhani & Widigdo, 2025). In emerging economies like Indonesia, a stark structural imbalance persists—manifested as the missing middle phenomenon—where micro-enterprises struggle to scale up due to productivity stagnation, thereby hindering sustainable development goals (Nursini, 2020). This phenomenon is empirically evident in South Tangerang, where the local government reported that the actual MSME scale-up rate during 2022–2024 was merely 2.83%, lagging far behind the 13.5% target (DINKOP UKM Kota Tangerang Selatan, 2024). Furthermore, a 2025 pre-survey revealed that 62.2% of local culinary MSMEs consistently failed to meet monthly sales targets, signaling operational instability that directly threatens business survival.

To secure long-term survival, modern MSMEs must achieve comprehensive sustainability by balancing economic, social, and environmental dimensions (AlKoliby et al., 2023; Nawangsari et al., 2023). While contemporary literature suggests that internal psychological assets like self-efficacy are crucial in driving business longevity (Broccia et al., 2022; Malenković & Slavec Gomezel, 2025; Srimulyani & Hermanto, 2022; Syafira et al., 2025; Velmurugan et al., 2023), empirical findings regarding its direct impact remain highly fragmented and contradictory. Some studies report a direct positive relationship (Alarjani et al., 2020), whereas others find no significant direct link (Eniola, 2020; Mubarokah et al., 2025). This glaring inconsistency indicates a critical knowledge gap concerning the exact behavioral mechanisms through which an entrepreneur's psychological beliefs actually translate into sustainable outcomes.

This paper provides a unique contribution to knowledge enrichment by integrating Social Cognitive Theory (Bandura, 2023) and sustainable entrepreneurship to unpack this black box. Unlike previous studies that examine these pathways in isolation, this research introduces a novel, dual parallel mediation framework using a unique niche sample of 185 culinary MSMEs in South Tangerang analyzed via Structural Equation Modeling-Partial Least Squares (SEM-PLS). We argue that self-efficacy does not automatically guarantee sustainability; rather, it must be channeled through twin strategic actions: Entrepreneurial Orientation (EO) to navigate market competitiveness, and Pro-Environmental Behavior (PEB) to address overlooked ecological responsibilities. Ultimately, this study aims to investigate the direct effect of self-efficacy on MSME sustainability, its influence on shaping both EO and PEB, the subsequent impacts of these mediators on business longevity, and the comprehensive dual-mediating mechanisms that bridge psychological beliefs and sustainable enterprise development.

THEORETICAL REVIEW

Self-Efficacy and MSME Sustainability

Grounded in Social Cognitive Theory, self-efficacy represents an individual's cognitive belief in their capability to organize and execute courses of action to achieve designated goals (Bandura, 2023). In entrepreneurship, empirical literature synthesizes self-efficacy as a core psychological resilience mechanism that empowers owner-managers to mobilize cognitive resources amid severe market uncertainties and resource constraints (Priyaadarshini & Jena, 2024). Under volatile market dynamics, a growing body of empirical research demonstrates that highly self-efficacious leaders exhibit superior problem-solving capacities, maintaining enterprise survival during economic shocks and actively identifying unexploited market opportunities (Poolsawat & Rinthaisong, 2025; Srimulyani & Hermanto, 2022; Syafira et al., 2025).

From a quantitative perspective, extant empirical studies broadly converge on the conclusion that leader self-efficacy serves as a vital internal catalyst for long-term firm performance and multi-dimensional MSME sustainability (Alarjani et al., 2020; Alshebami, 2023; Arifin et al., 2023; Malenković & Slavec Gomezel, 2025; Untari, 2022; Velmurugan et al., 2023). Rather than acting merely as passive optimism, internal self-conviction systematically prompts business owners to continuously optimize daily operational routines, improve structural efficiency, and sustain organizational endurance (Rohma & Khoirunnisa, 2024; Srisusilawati et al., 2022). Consequently, psychological capital directly underpins adaptive and sustainable enterprise outcomes.

H1: Self-efficacy has a positive and significant effect on MSME sustainability.

Entrepreneurial Orientation: The Strategic Pathway

Social Cognitive Theory posits that human behavior stems from triadic reciprocal interactions among cognitive factors, behavioral patterns, and environmental dynamics (Bandura, 2023). Within this triadic system, self-efficacy acts as the core cognitive engine determining an entrepreneur's persistence and effort expenditure when confronting structural market hurdles (Luthans et al., 2020). High self-efficacy alters an individual's risk perception, transforming volatile external environments from intimidating threats into actionable arenas for proactive innovation (Nson, 2025).

To operationalize this psychological conviction, firms adopt an Entrepreneurial Orientation (EO)—a strategic posture characterized by autonomy, innovativeness, proactiveness, competitive aggressiveness, and calculated risk-taking (Clark et al., 2025). Theoretical literature conceptualizes EO as a critical dynamic capability that enables small enterprises to construct and protect sustainable competitive advantages amid market turbulence (Ngo, 2023; Peng et al., 2023).

A synthesis of quantitative empirical research firmly establishes a two-fold consensus regarding EO. First, psychological capital—specifically self-efficacy—serves as a primary driver strengthening an entrepreneur's strategic posture (Madawala et al., 2023; Peng et al., 2023; Priyaadarshini & Jena, 2024; Stewart et

al., 2021). Second, empirical studies across diverse emerging market contexts consistently confirm that EO directly drives strategic execution, business growth, and long-term organizational viability (Al-Dhobee et al., 2025; Alshebami, 2023; Appiah et al., 2023; Arabeche et al., 2022; Baquero, 2025; Belva & Kurnia, 2025; Biron, 2025; Chelliah et al., 2023; Farani et al., 2024; Hanaysha et al., 2025; Hidayat et al., 2022; Hilmiana & Kartono, 2022; Katialem et al., 2025; Mahmoud et al., 2025; Mosonik et al., 2024; Neupane et al., 2025; Nson, 2025; Permata Rahmi et al., 2025; Poolsawat & Rinthaisong, 2025). Through the human agency lens, an entrepreneur's internal psychological conviction requires an operational conduit to deliver tangible outcomes. While self-efficacy anchors psychological resilience (Arifin et al., 2023; Srimulyani & Hermanto, 2022; Syafira et al., 2025), its translation into comprehensive firm sustainability relies on the active deployment of strategic entrepreneurial actions. Therefore, EO operates as an indispensable strategic mediator bridging cognitive beliefs with sustainable firm performance.

H2: Self-efficacy has a positive and significant effect on entrepreneurial orientation.

H4: Entrepreneurial orientation has a positive and significant effect on MSME sustainability.

H6: Self-efficacy has a positive and significant effect on MSME sustainability through the mediation of entrepreneurial orientation.

Pro-Environmental Behavior: The Ecological Pathway

Social Cognitive Theory emphasizes that human actions are governed by self-regulatory systems, where self-efficacy serves as the primary cognitive driver of future-oriented behaviors (Bandura, 2023). In ecological management, environmental self-efficacy reflects an owner's conviction in their capacity to mitigate operational footprints and execute green solutions (Alshebami, 2023). Pro-environmental behavior (PEB) represents deliberate firm-level actions aimed at minimizing ecological impacts through green service design, voluntary energy conservation, waste reduction, and eco-friendly sourcing (Appiah-Kubi et al., 2024; Ojo et al., 2022). For culinary MSMEs, integrating eco-friendly practices into daily operational routines is increasingly recognized as vital for long-term survival (Relawati et al., 2023).

Synthesizing ecological behavioral literature reveals that personal efficacy beliefs strongly shape eco-friendly behavioral choices (Mughal et al., 2022; Musaddiq et al., 2024; Vrselja et al., 2024; Zhang & Cao, 2025), as proactive adaptive responses to environmental challenges (Tian & Liu, 2022). Furthermore, empirical studies indicate that structurally embedded green practices yield comprehensive dividends – ranging from environmental footprint reduction and operational cost savings to enhanced social legitimacy and long-term business sustainability (Abubakar et al., 2022; Appiah-Kubi et al., 2024; Nur Fuad et al., 2025; Ojo et al., 2022).

Given that green practices often impose short-term financial and operational burdens on resource-constrained MSMEs, self-efficacy functions as a key self-regulatory mechanism that empowers leaders to view ecological

practices as innovative opportunities rather than financial costs (Alshebami, 2023). Extant research demonstrates that realized PEB bridges internal capacities with broad sustainability goals, illustrating that psychological commitment must be translated into behavioral execution to deliver structural impact (Appiah-Kubi et al., 2024; Nur Fuad et al., 2025). Consequently, PEB serves as a vital ecological conduit through which leader self-efficacy converts into realized enterprise sustainability.

H3: Self-efficacy has a positive and significant effect on pro-environmental behavior.

H5: Pro-environmental behavior has a positive and significant effect on MSME sustainability.

H7: Self-efficacy has a positive and significant effect on MSME sustainability through the mediation of pro-environmental behavior.

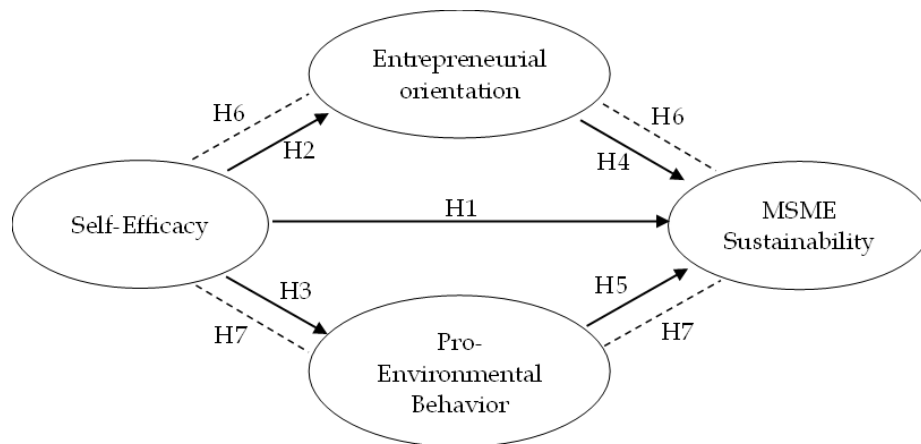


Figure 1. Conceptual Framework

METHODOLOGY

This study adopted a quantitative, causal-associative research design using a cross-sectional survey method. The target population comprised culinary MSMEs operating in the Ciputat and Pamulang districts of South Tangerang, Indonesia. A non-probability purposive sampling technique was applied based on three criteria: (1) primary decision-makers (owners or operational managers), (2) actively running a culinary business in the designated area during the study, and (3) having operated for a minimum of one year. A total of 185 valid responses were successfully gathered and analyzed.

Data were collected through face-to-face field surveys using printed (paper-based) self-administered questionnaires to maximize response authenticity and rate. All survey items were measured on a 5-point Likert scale (ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree"). The measurement instrument was developed based on established literature and comprised 21 total items distributed across four latent constructs: self-efficacy (6 items), MSME sustainability (6 items), entrepreneurial orientation (5 items), and pro-environmental behavior (4 items).

Data analysis was conducted using Structural Equation Modeling-Partial Least Squares (SEM-PLS) supported by SmartPLS 4 software. SEM-PLS was

specifically selected for three key methodological reasons: (1) The structural framework involves a complex model featuring dual parallel mediating pathways (EO and PEB) tested simultaneously; (2) As a non-parametric, component-based approach, SEM-PLS is exceptionally robust when handling primary survey data from small enterprise owners, which frequently exhibits non-normal multivariate distributions; and (3) Given that this study extends Social Cognitive Theory by introducing a novel dual strategic-ecological sustainability framework, SEM-PLS offers superior predictive power and high statistical flexibility for exploratory structural extensions (Hair et al., 2022).

RESULTS

Demographic and Business Profile of Respondents

A total of 200 questionnaires were distributed to culinary MSME decision-makers across the Ciputat and Pamulang districts. Of these, 187 questionnaires were returned, and 185 were deemed fully complete and usable for statistical analysis, representing a high effective response rate of 92.5%.

As summarized in Table 1, the sample is predominantly male (80.0%) and comprised overwhelmingly of business owners (95.7%) rather than hired managers. The majority of respondents fall within the prime working age brackets of 36–45 years (31.9%) and 26–35 years (27.6%), with senior high school (SMA) being the primary educational background (67.6%). In terms of enterprise characteristics, most culinary MSMEs have been operating for 1 to 5 years (72.4%) and are geographically concentrated in Ciputat (83.2%). Reflecting the typical structural profile of Indonesian micro-enterprises, 93.0% operate with zero formal employees (owner-operated).

Table 1. Demographic and Business Characteristics of Respondents (N=185)

Characteristic	Classification	Frequency (N)	Percentage (%)
Gender	Male	148	80.0
	Female	37	20.0
Position	Owner	177	95.7
	Manager	8	4.3
Age	19–25 years	32	17.3
	26–35 years	51	27.6
	36–45 years	59	31.9
	> 45 years	43	23.2
Education Level	Elementary School	8	4.3
	Junior High School	22	11.9
	Senior High School	125	67.6
	Diploma	20	10.8
	Bachelor's Degree	10	5.4
Business Operating Age	1–5 years	134	72.4
	6–10 years	43	23.2
	> 10 years	8	4.3
Business Location	Ciputat District	154	83.2
	Pamulang District	31	16.8
Number of Employees	0 employees (Owner only)	172	93.0
	1–5 employees	12	6.5

6–9 employees	1	0.5
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Convergent Validity

Construct validity was initially evaluated by assessing convergent validity through indicator outer loadings and Average Variance Extracted (AVE). According to established PLS-SEM criteria, outer loadings should ideally exceed 0.708, and the AVE for each latent construct must be greater than 0.500 to demonstrate that the construct explains more than half of its indicators' variance.

As summarized in Table 2, all indicator outer loadings exceeded the recommended threshold of 0.708, ranging from 0.710 to 0.882. The only minor exception was indicator SUS4 (0.668); however, it was retained in the model because its outer loading was well above the minimum exploratory baseline of 0.400 (Hair et al., 2022), and the overall AVE for MSME Sustainability (0.636) remained substantially higher than the 0.500 benchmark. Furthermore, the AVE values for all constructs ranged between 0.546 and 0.643, confirming robust convergent validity across all measured variables.

Table 2. Outer Loading and AVE

Construct	Item Code	Outer Loading	AVE	Validity Assessment
Self-Efficacy	SE1	0.771	0.620	Established
	SE2	0.796		Established
	SE3	0.757		Established
	SE4	0.796		Established
	SE5	0.807		Established
	SE6	0.795		Established
MSME Sustainability	SUS1	0.882	0.636	Established
	SUS2	0.834		Established
	SUS3	0.877		Established
	SUS4	0.668		Retained (AVE > 0.500)
	SUS5	0.775		Established
	SUS6	0.728		Established
Entrepreneurial Orientation	EO1	0.710	0.546	Established
	EO2	0.736		Established
	EO3	0.733		Established
	EO4	0.739		Established
	EO5	0.776		Established
Pro-Environmental Behavior	PEB1	0.777	0.643	Established
	PEB2	0.839		Established
	PEB3	0.803		Established
	PEB4	0.787		Established

Discriminant Validity

Discriminant validity was rigorously evaluated using the Heterotrait-Monotrait ratio of correlations (HTMT), which is widely acknowledged in modern PLS-SEM literature as a superior and more sensitive criterion compared to traditional cross-loadings or the Fornell-Larcker test. To establish discriminant

validity, pairwise HTMT values should be strictly below the liberal threshold of 0.900 for conceptually related behavioral constructs, or 0.850 for distinct domain constructs.

As presented in Table 3, all empirical HTMT values ranged from 0.237 to 0.852. The highest correlation ratio was observed between Self-Efficacy and MSME Sustainability (0.852), which remains well below the 0.900 ceiling value. All other construct pairs displayed substantially lower HTMT ratios (e.g., Pro-Environmental Behavior shared low ratios with both Self-Efficacy at 0.237 and Entrepreneurial Orientation at 0.240). These results confirm that each construct in the model possesses robust discriminant validity and represents a distinct empirical concept.

Table 3. Heterotrait-Monotrait Ratio (HTMT) Matrix

Latent Construct	[1]	[2]	[3]	[4]
[1] Self-Efficacy	–			
[2] MSME Sustainability	0.852	–		
[3] Entrepreneurial Orientation	0.794	0.772	–	
[4] Pro-Environmental Behavior	0.237	0.522	0.240	–

Construct Reliability

Following the confirmation of construct validity, internal consistency reliability was assessed. Standard PLS-SEM criteria mandate that Cronbach's alpha, Composite Reliability (ρ_a), and Composite Reliability (ρ_c) should all exceed the 0.700 threshold to establish adequate internal consistency, while remaining strictly below 0.950 to rule out item redundancy.

As detailed in Table 4, all latent constructs exhibited strong internal consistency reliability. Cronbach's alpha values ranged from 0.797 to 0.883, comfortably exceeding the 0.700 benchmark. Furthermore, both composite reliability metrics – ρ_a (ranging from 0.809 to 0.893) and ρ_c (ranging from 0.857 to 0.912) – consistently fell within the ideal 0.700-0.950 range. These results confirm that the measurement model possesses robust construct reliability across all latent variables, completing the outer model evaluation.

Table 4. Cronbach's alpha and Composite Reliability

Latent Construct	Cronbach's Alpha	Composite Reliability (ρ_a)	Composite Reliability (ρ_c)	Reliability Status
Self-Efficacy	0.878	0.881	0.907	Established
MSME Sustainability	0.883	0.893	0.912	Established
Entrepreneurial Orientation	0.797	0.809	0.857	Established
Pro-Environmental Behavior	0.815	0.821	0.878	Established

Model Fit

Prior to evaluating the structural paths, the goodness-of-fit was assessed using the Standardized Root Mean Square Residual (SRMR). Although PLS-SEM is fundamentally prediction-oriented rather than fit-oriented, reporting SRMR ensures that the theoretical framework is free from structural misspecifications.

In PLS-SEM methodology, an SRMR value below 0.080 signifies a strict fit, whereas values below 0.100 indicate an acceptable empirical fit.

As presented in Table 5, both the saturated model and the estimated model yielded an SRMR value of 0.095. Because this estimate satisfies the recommended threshold of $SRMR < 0.100$, the proposed structural model demonstrates a satisfactory fit with the empirical data, confirming its suitability for hypothesis testing and structural path evaluation.

Table 5. Model Fit

Fit Metric	Saturated Model	Estimated Model	Recommended Threshold	Fit Evaluation
SRMR	0.095	0.095	< 0.100	Acceptable Fit

Lateral Collinearity

Before evaluating the structural path-coefficients and testing the research hypotheses, a lateral collinearity assessment was conducted to ensure that the structural relationships among exogenous constructs were unbiased. In PLS-SEM methodology, collinearity is assessed using the Variance Inflation Factor (VIF). To rule out severe lateral collinearity, VIF values should ideally remain below 3.0, with values up to 5.0 considered acceptable (Hair et al., 2022).

As presented in Table 6, all inner VIF values ranged between 1.000 and 1.904, well below the stringent 3.0 threshold. Specifically, the highest VIF value was observed for the path from Self-Efficacy to MSME Sustainability (1.904), followed closely by Entrepreneurial Orientation to MSME Sustainability (1.880). These findings confirm that multicollinearity does not pose a threat to the structural model, enabling an unbiased estimation of the path coefficients and predictive capability.

Table 6. Inner VIF

Exogenous → Endogenous Construct	Inner VIF
Self-Efficacy → MSME Sustainability	1.904
Self-Efficacy → Entrepreneurial Orientation	1.000
Self-Efficacy → Pro-Environmental Behavior	1.000
Entrepreneurial Orientation → MSME Sustainability	1.880
Pro-Environmental Behavior → MSME Sustainability	1.043

Coefficient of Determination (R^2)

The explanatory power of the structural model was evaluated using the coefficient of determination (R^2), which measures the proportion of variance in the endogenous constructs explained by the exogenous constructs. Following the standard PLS-SEM thresholds proposed by Hair et al. (2021), R^2 values of 0.75, 0.50, and 0.25 represent substantial, moderate, and weak explanatory power, respectively.

As detailed in Table 7, the model demonstrates strong predictive capability for the primary endogenous variable. Specifically, MSME Sustainability achieved an R^2 value of 0.703, indicating that 70.3% of the variance in MSME sustainability

is jointly explained by Self-Efficacy, Entrepreneurial Orientation, and Pro-Environmental Behavior. This reflects a substantial-to-moderate explanatory power. Furthermore, Self-Efficacy explained 46.7% of the variance in Entrepreneurial Orientation ($R^2=0.467$, moderate power), but only 3.9% of the variance in Pro-Environmental Behavior ($R^2=0.039$, weak explanatory power).

Table 7. Coefficient of Determination

Endogenous Construct	R ²	R ² Adjusted	Explanatory Power Category
MSME Sustainability	0.703	0.698	Substantial / High
Entrepreneurial Orientation	0.467	0.464	Moderate
Pro-Environmental Behavior	0.039	0.034	Weak

Effect Size (f^2)

In addition to evaluating R^2 , the relative impact of each exogenous construct on the endogenous constructs was determined using the effect size (f^2). According to established guidelines by Hair et al. (2021), f^2 values of 0.020, 0.150, and 0.350 correspond to small, medium, and large effect sizes, respectively, while values below 0.020 indicate no substantial effect.

As detailed in Table 8, Self-Efficacy demonstrated a large effect size on both Entrepreneurial Orientation ($f^2=0.877$) and MSME Sustainability ($f^2=0.438$). Furthermore, Pro-Environmental Behavior ($f^2=0.277$) and Entrepreneurial Orientation ($f^2=0.152$) both exerted a medium effect size in predicting MSME Sustainability. Conversely, Self-Efficacy had a small effect size on Pro-Environmental Behavior ($f^2=0.041$). These metrics confirm that Self-Efficacy serves as the foundational driver in the structural framework, while both mediating constructs contribute meaningful explanatory weight to MSME sustainability.

Table 8. Effect Size

Exogenous → Endogenous Construct	f^2 Value	Effect Size Rating
Self-Efficacy → MSME Sustainability	0.438	Large
Self-Efficacy → Entrepreneurial Orientation	0.877	Large
Self-Efficacy → Perilaku Pro-Lingkungan	0.041	Small
Entrepreneurial Orientation → MSME Sustainability	0.152	Medium
Pro-Environmental Behavior → MSME Sustainability	0.277	Medium

Direct Effects Testing

The direct structural relationships were evaluated using a non-parametric bootstrapping procedure with 5,000 resamples in SmartPLS 4. Significance was assessed using two-tailed t-tests at a 5% significance level ($t>1.96$, $p<0.050$).

As presented in Table 9, all five hypothesized direct paths were statistically significant and aligned with the predicted positive directions. H1: Self-Efficacy significantly and positively impacts MSME Sustainability ($\beta=0.497$, $t=7.519$, $p<0.001$). H2: Self-Efficacy exerts a strong positive effect on Entrepreneurial Orientation ($\beta=0.684$, $t=14.429$, $p<0.001$). H3: Self-Efficacy positively influences Pro-Environmental Behavior ($\beta=0.198$, $t=2.865$, $p=0.004$). H4: Entrepreneurial Orientation positively drives MSME Sustainability ($\beta=0.292$, $t=4.749$, $p<0.001$).

H5: Pro-Environmental Behavior positively contributes to MSME Sustainability ($\beta=0.293$, $t=7.563$, $p<0.001$).

Table 9. Direct Relationships Hypothesis Testing

Hyp.	Direct Structural Path	Path Coeff. (β)	T Statistic	P Value	Decision
H1	SE $\rightarrow$ SUS	0.497	7.519	0.000	Supported
H2	SE $\rightarrow$ EO	0.684	14.429	0.000	Supported
H3	SE $\rightarrow$ PEB	0.198	2.865	0.004	Supported
H4	EO $\rightarrow$ SUS	0.292	4.749	0.000	Supported
H5	PEB $\rightarrow$ SUS	0.293	7.563	0.000	Supported

Note: SE = Self-Efficacy; SUS = MSME Sustainability; EO = Entrepreneurial Orientation; PEB = Pro-Environmental Behavior

Specific Indirect Effects Testing

As shown in Table 11, both indirect paths reached statistical significance. H6: Entrepreneurial Orientation significantly mediates the link between Self-Efficacy and MSME Sustainability ($\beta=0.199$, $t=3.965$, $p<0.001$). Because the direct effect (H1) and indirect effect (H6) are both positive and significant, Entrepreneurial Orientation acts as a complementary partial mediator.

H7: Pro-Environmental Behavior significantly mediates the relationship between Self-Efficacy and MSME Sustainability ($\beta=0.058$, $t=2.556$, $p=0.011$). Similarly, since both direct and indirect paths remain positive and significant, Pro-Environmental Behavior serves as a complementary partial mediator.

Table 10. Specific Indirect Relationships Hypothesis Testing

Hyp.	Indirect Structural Path	Indirect Coeff. (β)	T Statistic	P Value	Decision
H6	SE $\rightarrow$ EO $\rightarrow$ SUS	0.199	3.965	0.000	Supported
H7	SE $\rightarrow$ PEB $\rightarrow$ SUS	0.058	2.556	0.011	Supported

Note: SE = Self-Efficacy; SUS = MSME Sustainability; EO = Entrepreneurial Orientation; PEB = Pro-Environmental Behavior

DISCUSSION

This study investigated the structural interplay between Self-Efficacy, Entrepreneurial Orientation, Pro-Environmental Behavior, and MSME Sustainability. Synthesizing Social Cognitive Theory (Bandura, 2023) and the Sustainable Entrepreneurship framework (Ike, 2025; Ribeiro & Leitão, 2024), the empirical findings illuminate how an entrepreneur's internal psychological capital converts into strategic postures and eco-friendly actions to foster long-term organizational endurance.

The empirical confirmation of the direct relationship between Self-Efficacy and MSME Sustainability reinforces the core tenets of Social Cognitive Theory (Bandura, 2023). In small-business settings, owner-managers operate under continuous resource scarcity and high market vulnerability. Self-efficacy functions as a fundamental cognitive asset and psychological capacity that enhances human

agency, enabling leaders to set ambitious goals, maintain perseverance during economic crises, and navigate operational complexities. Rather than serving merely as passive optimism, high self-efficacy translates directly into problem-solving resilience, strategic adaptability, and organizational durability. This finding corroborates previous empirical evidence demonstrating that leader self-belief serves as a critical cornerstone for MSME survival and sustainable performance (Arifin et al., 2023; Malenković & Slavec Gomezel, 2025).

From a strategic perspective, self-efficacy acts as a primary antecedent to an enterprise's Entrepreneurial Orientation. An entrepreneurial posture – defined by autonomy, competitiveness, innovativeness, proactiveness, and risk-taking (Clark et al., 2025) – requires substantial psychological confidence to execute amidst market uncertainty (Stewart et al., 2021). Entrepreneurs who possess robust belief in their managerial capabilities are naturally more inclined to pioneer novel products, explore uncharted market niches, and accept calculated risks. This outcome reinforces the cognitive argument that internal self-conviction is prerequisite to triggering strategic initiative and proactive market searching.

In turn, pursuing an entrepreneurial orientation directly drives enterprise sustainability. Embracing strategic boldness enables MSMEs to capture competitive advantages, respond swiftly to shifting market demands, and secure economic and organizational longevity. This aligns with established literature emphasizing that entrepreneurial orientation – as strategic postures – are key drivers of MSME growth (Katialem et al., 2025; Mosonik et al., 2024) and sustainable firm performance (Appiah et al., 2023; Baquero, 2025; Hidayat et al., 2022).

Furthermore, the structural analysis confirmed that Entrepreneurial Orientation operates as a mediating mechanism between self-efficacy and enterprise sustainability. This finding confirms that psychological conviction must be operationalized through proactive strategic behaviors to yield tangible organizational value. Self-efficacy provides the cognitive foundation, while entrepreneurial orientation serves as the strategic execution bridge that converts internal motivation into sustained market viability.

Integrating the environmental dimension of Sustainable Entrepreneurship, this study demonstrates that self-efficacy directly encourages Pro-Environmental Behavior. Implementing eco-friendly practices – such as energy efficiency, waste minimization, and green input sourcing – often presents operational friction and initial cost barriers for small firms. Highly self-efficacious leaders possess the self-regulatory agency necessary to overcome these perceived hurdles, perceiving environmental stewardship not as a financial burden, but as an opportunity for strategic innovation.

Consequently, engaging in pro-environmental behaviors directly enhances MSME sustainability. Eco-responsible practices reduce operational waste, fulfill green consumer preferences, and safeguard the business against environmental regulatory risks. Crucially, Pro-Environmental Behavior was confirmed as a vital mediating conduit between self-efficacy and overall sustainability. Internal self-efficacy indirectly bolsters business durability by driving eco-friendly operational

decisions, demonstrating that green behavior transforms psychological capital into tangible ecological and economic endurance.

By synthesizing Social Cognitive Theory and Sustainable Entrepreneurship, this study establishes an integrated dual-pathway framework for MSME endurance. Self-efficacy operates as the central cognitive driver (Bandura, 2023), simultaneously activating a strategic pathway (via Entrepreneurial Orientation) and an ecological pathway (via Pro-Environmental Behavior). Rather than creating strategic trade-offs, market-oriented boldness and environmental responsibility operate synergistically under the guidance of self-efficacious leadership. This dual mechanism ensures that small enterprises achieve a balanced alignment across the economic, social, and environmental dimensions of sustainability, providing a robust path toward long-term organizational viability.

CONCLUSIONS AND RECOMMENDATIONS

Grounded in Social Cognitive Theory and Sustainable Entrepreneurship, this study provides a vital theoretical and empirical contribution by unpacking the behavioral black box that links leader psychological capital to long-term MSME endurance. The main contribution of this study lies in establishing an integrated dual-pathway framework, demonstrating that entrepreneurial self-efficacy does not operate in isolation; rather, it drives comprehensive enterprise durability through two complementary, operational conduits—the strategic pathway (Entrepreneurial Orientation) and the ecological pathway (Pro-Environmental Behavior).

Empirical results confirm that both Entrepreneurial Orientation and Pro-Environmental Behavior function as crucial partial mediators through which internal psychological self-belief is operationalized into tangible market competitiveness and environmental stewardship. Ultimately, this research contributes to the literature by proving that long-term enterprise viability in resource-constrained small businesses does not require a trade-off between strategic aggressiveness and ecological responsibility; instead, it relies on their synergistic integration guided by self-efficacious leadership.

Practically, MSME owners should cultivate psychological capital through leadership coaching and peer mentoring, while translating self-efficacy into action by embedding innovativeness, strategic risk-taking, and eco-friendly practices—such as waste reduction and green sourcing—into daily operations. To support this transition, policymakers and industry associations must provide holistic capacity-building programs and targeted financial incentives, such as green loans and tax credits, that lower the entry barrier for micro and small-scale eco-innovations.

FURTHER STUDY

Despite its contributions, this study is subject to several limitations that offer valuable directions for future research. First, the cross-sectional design captures variables at a single point in time, thereby limiting the capacity to track how self-efficacy, strategic orientation, and eco-friendly behaviors dynamically adapt during shifting economic phases. To address this, future scholars should

adopt longitudinal research designs to observe temporal developments, while incorporating mixed-methods approaches—integrating quantitative surveys with in-depth interviews or direct field observations—to mitigate the potential response bias associated with self-reported data.

Second, the structural framework of this study primarily focuses on internal, individual-level factors. Future investigations are encouraged to expand this model by integrating critical external contextual variables, such as government support mechanisms, financial capital accessibility, and enterprise digitalization. Furthermore, since the reliance on purposive sampling restricts statistical generalizability, future research should utilize probability sampling techniques across broader industry sectors and geographical regions to enhance the representativeness and robustness of the empirical findings.

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