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Exploring Entrepreneurial Characteristics and Skills in Sustainable Entrepreneurial Success: The Moderating Roles of Emotional Control and Market Turbulence

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ABSTRACT

Purpose – This study examines how entrepreneurial characteristics and skills influence sustainable entrepreneurial success and whether emotional control and market turbulence moderate these relationships.

Methodology – A quantitative cross-sectional survey was conducted with 263 established Generation Z entrepreneurs in Riau Province, Indonesia, whose businesses had been operating for more than 2 years. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM).

Findings – Six entrepreneurial determinants positively influence sustainable entrepreneurial success. Teamwork has the strongest contribution, followed by entrepreneurial self-efficacy, financial literacy, entrepreneurial mindset, creativity, and resource marshalling. Emotional control strengthens the relationship between entrepreneurial self-efficacy and sustainable entrepreneurial success but does not moderate the relationship involving entrepreneurial mindset. Market turbulence strengthens the relationships of creativity and resource marshalling with sustainable entrepreneurial success.

Originality/Novelty – This study integrates six entrepreneurial determinants and two moderating mechanisms to explain multidimensional sustainable entrepreneurial success, extending research beyond entrepreneurial intention and conventional business performance.

Implications – Entrepreneurship programs should develop entrepreneurial characteristics, practical skills, emotional regulation, and adaptive resource management, with particular emphasis on teamwork, financial literacy, creativity, and responses to changing market conditions.

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INTRODUCTION

Sustainable entrepreneurship has become increasingly important as business success is no longer determined solely by the ability to establish a venture, but also by the capacity to maintain its viability and performance over time (Wach et al., 2020; Chawla & Bhatia, 2021; Egieya et al., 2023; Abbas & Bulut, 2024). However, a persistent challenge in entrepreneurship is that establishing a business does not necessarily guarantee its long-term survival and sustainable performance. Entrepreneurs must continuously navigate resource constraints, intense market competition, technological developments, and changing customer preferences to maintain their business viability (Papp-Váry et al., 2023; Lopes et al., 2024; Sudaryanto & Sylvana, 2024). These challenges highlight the need to examine how entrepreneurial characteristics, skills, and internal and external contextual conditions contribute to sustainable entrepreneurial success. Consequently, understanding the determinants of sustainable entrepreneurial success has become an important concern in contemporary entrepreneurship research.

Entrepreneurial characteristics represent fundamental individual attributes that shape how entrepreneurs think, make decisions, identify opportunities, and respond to business challenges (Gunawan, 2024). In this study, entrepreneurial characteristics are examined through two distinct constructs: entrepreneurial self-efficacy (ESE) and entrepreneurial mindset. ESE refers to entrepreneurs' confidence in their ability to perform entrepreneurial tasks, overcome difficulties, and persist under uncertain conditions (Newman et al., 2019; Caliendo et al., 2023). Meanwhile, entrepreneurial mindset reflects a cognitive orientation characterised by opportunity recognition, continuous learning, adaptability, and proactive problem-solving (Daspit et al., 2021). Together, ESE and entrepreneurial mindset shape how entrepreneurs perceive opportunities, interpret challenges, and maintain commitment to business development. These characteristics provide important psychological and cognitive foundations for entrepreneurial action; however, they may not, on their own, guarantee sustainable business outcomes without complementary practical entrepreneurial skills.

Beyond individual characteristics, entrepreneurial skills represent practical abilities that enable entrepreneurs to translate their psychological and cognitive attributes into effective business activities (Magd et al., 2021; Pennetta et al., 2024). This study focuses on four essential entrepreneurial skills: creativity, resource marshalling, teamwork, and financial literacy. Creativity enables entrepreneurs to develop innovative solutions and adapt their products or services to changing market demands (Chang & Chen, 2020; Li et al., 2022). Resource marshalling involves identifying, acquiring, combining, and utilising available resources to exploit business opportunities (Hanlon & Saunders, 2007; Clough et al., 2019). Teamwork facilitates collaboration, knowledge sharing, and the integration of complementary abilities in managing business activities (Pazos et al., 2022; Petković, 2024). Meanwhile, financial literacy supports informed financial decision-making, cash flow management, and financial risk assessment (Affandi et al., 2024; Kurniasari et al., 2025). Collectively, these skills enable entrepreneurs to manage business resources and operations more effectively, thereby supporting business continuity and sustainable entrepreneurial success.

However, the effectiveness of entrepreneurial characteristics and skills may also depend on internal and external contextual conditions. Emotional control represents an internal self-regulatory capability that enables entrepreneurs to manage emotional responses, maintain

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composure, and make sound decisions when facing uncertainty, pressure, and business setbacks (He et al., 2018; Cock et al., 2019; Schmodde & Wehner, 2024). Meanwhile, market turbulence reflects external environmental conditions characterized by changes in customer preferences, competitive intensity, and market demands, which may require entrepreneurs to continuously adjust their business strategies (Arici & Gok, 2023; Sulaiman et al., 2024). These conditions may influence how effectively entrepreneurs translate their individual characteristics and practical skills into sustainable business outcomes.

Despite growing research on entrepreneurial characteristics, skills, and business sustainability, existing studies have predominantly focused on entrepreneurial intention, readiness, business creation, or conventional business performance rather than multidimensional sustainable entrepreneurial success. For instance, (Jiatong et al., 2021) examined the relationships of entrepreneurial education, mindset, and creativity with entrepreneurial intention, while (Sahid et al., 2024) focused on the role of entrepreneurial self-efficacy in business creation. Similarly, (Hasan, Tiara Hutamy, et al., 2024) investigated entrepreneurial readiness among Generation Z students, whereas (Affandi et al., 2024) examined digital adoption and financial literacy in relation to Indonesian MSME performance. Although these studies provide important insights into entrepreneurial development and business outcomes, they offer limited understanding of how individual entrepreneurial characteristics and practical skills jointly contribute to sustainable entrepreneurial success. Furthermore, although previous research has examined emotion regulation in entrepreneurial settings (He et al., 2018; Cock et al., 2019) and the contingent role of market turbulence in entrepreneurial performance (X. Li & Wang, 2021; Sulaiman et al., 2024), the integration of these internal and external contextual conditions within a framework of multidimensional sustainable entrepreneurial success remains insufficiently explored.

To address these gaps, this study examines six entrepreneurial determinants of sustainable entrepreneurial success: entrepreneurial self-efficacy, entrepreneurial mindset, creativity, resource marshalling, teamwork, and financial literacy. It also investigates the moderating effects of emotional control on the relationships involving entrepreneurial self-efficacy and entrepreneurial mindset, and market turbulence on those involving creativity and resource marshalling. Unlike previous studies focusing on entrepreneurial intention, business creation, or conventional performance, this study adopts a multidimensional perspective encompassing financial performance, business sustainability, innovation, market expansion, personal achievement and satisfaction, and social impact. By integrating entrepreneurial determinants and examining internal and external moderating factors, this study extends the understanding of sustainable entrepreneurial success among established Generation Z entrepreneurs in Riau Province, Indonesia, whose businesses have operated for more than two years.

Hypothesis Development

Entrepreneurial Self-Efficacy and Sustainable Entrepreneurial Success

Entrepreneurial self-efficacy (ESE) refers to an entrepreneur's belief in their ability to perform entrepreneurial tasks, identify opportunities, make business decisions, and overcome challenges (Newman et al., 2019). Drawing on Social Cognitive Theory, self-efficacy influences individual behaviour through motivation, effort, persistence, and the ability to cope with difficult situations (Stajkovic & Luthans, 2003). In entrepreneurial contexts, these

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beliefs shape how individuals respond to uncertainty and evaluate business opportunities. Entrepreneurs with stronger self-efficacy are more likely to view challenges as manageable rather than insurmountable obstacles, enabling them to maintain their commitment and take deliberate action toward business objectives (McGee & Peterson, 2019).

The relevance of ESE to sustainable entrepreneurial success lies in its ability to support consistent decision-making, persistence, and strategic adaptation over time (Taneja et al., 2024). Entrepreneurs who believe in their capabilities (high entrepreneurial self-efficacy) are more likely to recover from setbacks, pursue alternative opportunities, and sustain business development despite operational and resource constraints (Zhao & Wibowo, 2021). Previous studies have established positive associations between entrepreneurial self-efficacy and venture performance (Miao et al., 2016; Caliendo et al., 2023). Accordingly, ESE is expected to function as an important psychological resource for maintaining multidimensional entrepreneurial success. Therefore, the following hypothesis is proposed:
H1: Entrepreneurial self-efficacy positively influences sustainable entrepreneurial success.

Creativity and Sustainable Entrepreneurial Success

Creativity represents an entrepreneur's ability to generate original ideas and develop alternative solutions to business challenges (M. H. Chen et al., 2018). From a creativity and innovation perspective, this capability enables entrepreneurs to move beyond established approaches and explore new ways of creating value (Good, 2025). Its importance becomes particularly evident when existing products, services, or operational practices no longer adequately address customer expectations. Through creative thinking, entrepreneurs can recognise unmet market needs, develop differentiated offerings, and identify alternative approaches to business development (Samson & Umar, 2020). Creativity therefore functions not merely as an individual cognitive ability but also as a source of entrepreneurial adaptability and innovation (Chang & Chen, 2020; Shi et al., 2020).

Creativity contributes to sustainable entrepreneurial success by enabling businesses to maintain their relevance and competitiveness through continuous improvement and innovation (M. H. Chen et al., 2018). Entrepreneurs who generate and implement new ideas are better positioned to adjust their offerings, respond to emerging opportunities, and develop business models that remain relevant to changing market conditions (Heinonen et al., 2011). This process supports multiple dimensions of success, particularly innovation performance, market expansion, and business sustainability. Previous research demonstrates that founders' creativity contributes to business model innovation and venture growth (Y. Li et al., 2022), while entrepreneurial creativity is also associated with opportunity recognition and innovative behaviour (Shi et al., 2020). Therefore, creativity is expected to positively influence sustainable entrepreneurial success.
H2: Creativity positively influences sustainable entrepreneurial success.

Resource Marshalling and Sustainable Entrepreneurial Success

Resource marshalling refers to an entrepreneur's ability to identify, acquire, combine, and deploy available resources to exploit business opportunities and achieve organisational objectives (Hanlon & Saunders, 2007). Resource Orchestration Theory emphasises that organisational outcomes depend not only on resource ownership but also on how effectively resources are structured, bundled, and utilised (Clough et al., 2019; Song & Xiang, 2023). This perspective is particularly relevant to entrepreneurial ventures, which frequently operate

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under financial, human, and organisational constraints (Zahra, 2021; Steffens et al., 2023). Rather than relying exclusively on additional resources, entrepreneurs must recognise the potential of existing resources and combine them in ways that generate productive capabilities (Williams et al., 2021). Such resource integration enables businesses to transform limited inputs into operational and strategic advantages (Abid et al., 2023; Abukari et al., 2024).

The contribution of resource marshalling to sustainable entrepreneurial success occurs through improved resource utilisation, operational flexibility, and the ability to exploit emerging opportunities (Abid et al., 2023).Previous research highlights the importance of entrepreneurial resource mobilisation for opportunity exploitation (Clough et al., 2019) and venture performance in resource-constrained environments (Adegbile et al., 2024). Furthermore, resource orchestration has been associated with venture sustainability and organisational development (Song & Xiang, 2023). Accordingly, resource marshalling is expected to contribute positively to sustainable entrepreneurial success.

H3: Resource marshalling positively influences sustainable entrepreneurial success.

Teamwork and Sustainable Entrepreneurial Success

Teamwork represents the ability to collaborate with employees, business partners, and other relevant stakeholders through effective communication, coordination, knowledge sharing, and collective problem-solving (Pazos et al., 2022). From an entrepreneurial team perspective, business outcomes are influenced not only by individual competencies but also by the extent to which complementary knowledge and abilities are integrated into collective action. Entrepreneurs rarely possess all the expertise required to manage every aspect of their businesses independently. Consequently, teamwork provides a mechanism through which different competencies can be combined, responsibilities distributed, and business decisions improved through shared perspectives. Effective collaboration also facilitates organisational learning by allowing team members to exchange information and develop solutions based on their collective experiences (Krawczyk-Bryłka et al., 2020).

The contribution of teamwork to sustainable entrepreneurial success lies in its capacity to strengthen operational coordination, collective adaptability, and organisational problem-solving. By integrating complementary competencies, entrepreneurs can reduce dependence on individual capabilities, improve the execution of business activities, and respond more effectively to operational challenges. These collaborative processes are particularly important for maintaining business continuity while pursuing innovation and market development. Previous research indicates that teamwork competencies are associated with team performance in entrepreneurship education (Pazos et al., 2022), while the composition and complementary capabilities of entrepreneurial teams influence venture outcomes (Fuel et al., 2022). Thus, teamwork represents an important organisational capability through which individual knowledge and skills are converted into collective performance and sustainable entrepreneurial development.

H4: Teamwork positively influences sustainable entrepreneurial success.

Financial Literacy and Sustainable Entrepreneurial Success

Financial literacy refers to an entrepreneur's ability to understand and apply financial knowledge when making business decisions, managing cash flows, preparing budgets, evaluating investments, and assessing financial risks (Fadila et al., 2022; Affandi et al.,

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2024). From a human capital perspective, financial knowledge and competencies represent valuable capabilities that improve decision-making and organisational management (Rachapaettayakom & Sopanik, 2023). For entrepreneurs, these competencies are particularly important because financial decisions influence the availability and allocation of resources required for daily operations and future business development. An adequate understanding of financial information enables entrepreneurs to evaluate business conditions more accurately, distinguish between productive and unproductive expenditures, and anticipate potential financial difficulties before they threaten business continuity (Yakob et al., 2021; Chuquimia-Rivero et al., 2026).

Financial literacy contributes to sustainable entrepreneurial success by strengthening financial discipline, cash-flow management, budgeting practices, and informed business decision-making (Chewe et al., 2026). Entrepreneurs with stronger financial competencies are better equipped to monitor financial conditions, allocate available funds appropriately, maintain liquidity, and evaluate the financial consequences of business decisions (Chuquimia-Rivero et al., 2026). These capabilities help reduce financial vulnerability and provide a stronger foundation for business continuity and long-term development (Kurniasari et al., 2025) . Empirical studies have associated financial literacy with business performance among micro-entrepreneurs (Tumba et al., 2022), while research in Indonesia highlights its relevance to SMEs performance and sustainability (Affandi et al., 2024;Kurniasari et al., 2025). Therefore, financial literacy is expected to positively influence sustainable entrepreneurial success.

H5: Financial literacy positively influences sustainable entrepreneurial success.

Entrepreneurial Mindset and Sustainable Entrepreneurial Success

Entrepreneurial mindset refers to a cognitive orientation that enables individuals to recognise opportunities, approach challenges proactively, engage in continuous learning, and adapt to changing business environments (Daspit et al., 2021; Manafe et al., 2023). From an entrepreneurial cognition perspective, individual interpretations of information and business situations influence how opportunities are evaluated and strategic decisions are formulated (Daspit et al., 2021). Entrepreneurs with a strong entrepreneurial mindset are more likely to perceive uncertainty as an opportunity for learning and adjustment rather than merely as a business threat (Caputo et al., 2025). This orientation supports proactive thinking, encourages the exploration of alternative strategies, and enables entrepreneurs to maintain a forward-looking perspective when responding to business challenges.

The contribution of entrepreneurial mindset to sustainable entrepreneurial success occurs through continuous opportunity recognition, strategic learning, and adaptive decision-making (Pereiro & Dieguez, 2026). Entrepreneurs with an opportunity-oriented mindset are more likely to identify potential business developments, evaluate changing market conditions, and adjust their strategies to maintain business relevance (Daspit et al., 2021; Manafe et al., 2023). Previous research has associated entrepreneurial mindset with venture success and business development (Jemal et al., 2023; Manafe et al., 2023). Furthermore, research involving Generation Z entrepreneurs in Indonesia highlights its relevance to sustainable economic growth (Tan et al., 2025). Accordingly, entrepreneurial mindset is expected to contribute positively to sustainable entrepreneurial success.

H6: Entrepreneurial mindset positively influences sustainable entrepreneurial success.

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The Moderating Role of Emotional Control in the Relationship Between Entrepreneurial Self-Efficacy and Sustainable Entrepreneurial Success

Emotional control refers to an individual's ability to regulate emotional responses, manage frustration and anxiety, and maintain composure when facing stressful or uncertain situations (Kok, 2020; Schmodde & Wehner, 2024). Drawing on Self-Regulation Theory, goal-directed behaviour requires individuals to maintain control over their emotional responses while translating motivation and personal beliefs into consistent actions (Gross & John, 2003; O'Shea et al., 2017). In entrepreneurship, strong self-efficacy provides the confidence to pursue business opportunities and overcome difficulties, but confidence alone may not ensure appropriate responses under pressure (Caliendo et al., 2023). Entrepreneurs must also manage emotional reactions to financial uncertainty, operational setbacks, and the possibility of failure to maintain deliberate and goal-oriented decision-making.

Emotional control may therefore strengthen the relationship between ESE and sustainable entrepreneurial success by helping entrepreneurs translate their confidence into consistent and constructive business actions. Entrepreneurs with strong ESE may be motivated to pursue opportunities, while effective emotional regulation helps them maintain composure, evaluate alternatives, and avoid impulsive responses when encountering difficulties. This complementarity enables entrepreneurial confidence to be expressed through more disciplined and persistent behaviour. Previous studies demonstrate that emotion regulation influences entrepreneurs' ability to learn from failure and manage challenging entrepreneurial experiences (He et al., 2018; Cock et al., 2019). These findings suggest that emotional control can strengthen the contribution of entrepreneurial self-efficacy to sustainable business outcomes. Therefore, the following hypothesis is proposed:

H7: Emotional control positively moderates the relationship between entrepreneurial self-efficacy and sustainable entrepreneurial success.

The Moderating Role of Emotional Control in the Relationship Between Entrepreneurial Mindset and Sustainable Entrepreneurial Success

The relationship between entrepreneurial mindset and sustainable entrepreneurial success may also depend on entrepreneurs' ability to regulate their emotional responses. Entrepreneurial mindset reflects a cognitive orientation that shapes how individuals recognise opportunities, interpret challenges, and develop responses to changing business conditions (Daspit et al., 2021). However, the ability to recognise opportunities and formulate adaptive strategies does not necessarily guarantee their consistent implementation, particularly when entrepreneurs encounter uncertainty and operational pressure. Self-Regulation Theory suggests that effective goal-directed behaviour involves the interaction of cognitive processes, motivation, emotional responses, and action (O'Shea et al., 2017). Emotional control may therefore complement entrepreneurial mindset by helping entrepreneurs maintain focus and regulate emotional reactions when implementing business decisions.

Entrepreneurs with higher emotional control may be better positioned to translate opportunity-oriented thinking into consistent strategic actions by managing frustration, maintaining concentration, and responding constructively to business setbacks (He et al., 2018; Lianto et al., 2026). This capability may help prevent emotional reactions from disrupting the implementation of entrepreneurial ideas. Nevertheless, the contribution of emotional control may depend on the specific capabilities through which entrepreneurial mindset influences business outcomes (Pereiro & Dieguez, 2026). Previous research

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emphasises the importance of emotion regulation in entrepreneurial learning and responses to failure (He et al., 2018; Cock et al., 2019). Based on this complementary relationship, emotional control is expected to strengthen the positive relationship between entrepreneurial mindset and sustainable entrepreneurial success.

H8: Emotional control positively moderates the relationship between entrepreneurial mindset and sustainable entrepreneurial success.

The Moderating Role of Market Turbulence in the Relationship Between Creativity and Sustainable Entrepreneurial Success

Market turbulence refers to the extent of unpredictable changes in customer preferences, market demands, and competitive conditions (Zheng et al., 2026). The contribution of creativity to entrepreneurial success may vary according to the degree of market turbulence experienced by a business (Herbst et al., 2023). However, turbulent market conditions can accelerate changes in customer expectations and competitive requirements, increasing the need for entrepreneurs to reconsider established business approaches (Cheng et al., 2025). Under these circumstances, creativity becomes an important capability for identifying emerging opportunities, developing alternative solutions, and maintaining the relevance of business offerings (Bodlaj & Čater, 2019).

Market turbulence is therefore expected to strengthen the relationship between creativity and sustainable entrepreneurial success by increasing the strategic value of innovative thinking and adaptive business responses. Previous research indicates that environmental turbulence influences the importance of innovation and innovativeness in SMEs (Bodlaj & Čater, 2019). While market turbulence also shapes the effectiveness of entrepreneurial bricolage and marketing capabilities (X. Li & Wang, 2021). Thus, creativity is expected to become particularly valuable under turbulent market conditions, strengthening its contribution to sustainable entrepreneurial success.

H9: Market turbulence positively moderates the relationship between creativity and sustainable entrepreneurial success.

The Moderating Role of Market Turbulence in the Relationship Between Resource Marshalling and Sustainable Entrepreneurial Success

The contribution of resource marshalling to sustainable entrepreneurial success may become more important under conditions of high market turbulence. Resource Orchestration Theory emphasises that organisational outcomes depend on the ability to continuously structure, combine, and redeploy resources in response to changing circumstances (Clough et al., 2019; Yunus et al., 2025). When market conditions are relatively stable, existing resource allocations may remain adequate to support business operations. However, turbulent environments can alter customer demands, competitive pressures, and operational requirements, making previously effective resource configurations less suitable. Consequently, entrepreneurs must not only manage available resources efficiently but also recognise when and how those resources should be recombined or redirected to address emerging business needs.

Under conditions of high market turbulence, resource marshalling may have a stronger contribution to sustainable entrepreneurial success because entrepreneurs must respond more frequently to changes in resource requirements and business priorities. Previous research demonstrates the relevance of resource mobilisation to venture performance in resource-

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constrained environments (Adegbile et al., 2024), while studies have also highlighted the contingent role of market turbulence in shaping the effectiveness of entrepreneurial bricolage and marketing capabilities (X. Li & Wang, 2021; Sulaiman et al., 2024). Accordingly, market turbulence is expected to increase the strategic importance of resource marshaling, thereby strengthening its positive relationship with sustainable entrepreneurial success.
H10: Market turbulence positively moderates the relationship between resource marshaling and sustainable entrepreneurial success.

The conceptual model in Figure 1 illustrates the relationships among the six independent variables, one dependent variable, and two moderating variables.

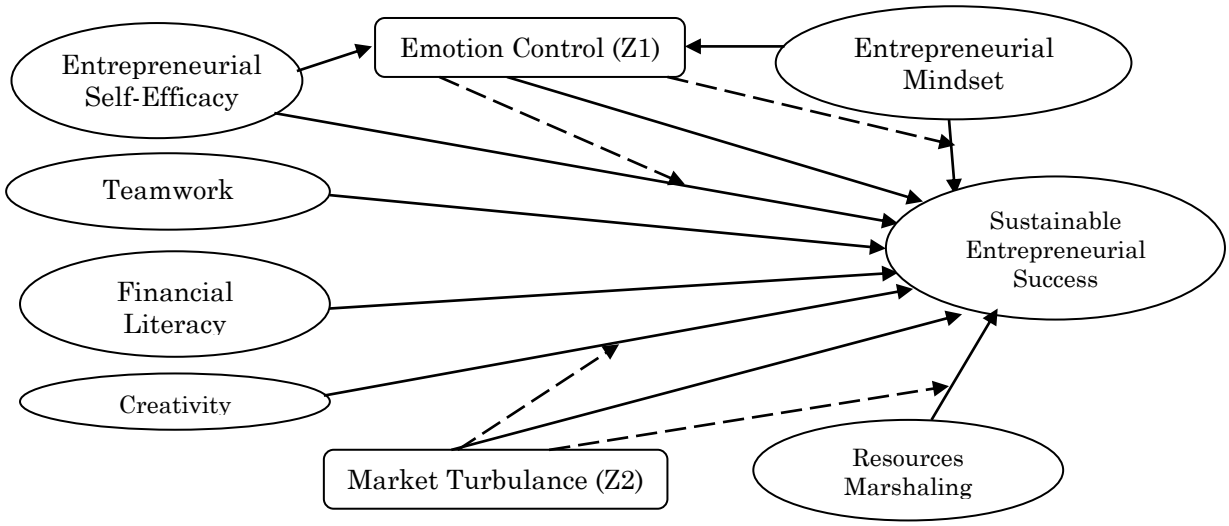


Figure 1. Conseptual Research Frame Work

METHOD

Research Design. This study employed a quantitative explanatory research design using a cross-sectional survey approach to examine the proposed relationships among the research constructs. Specifically, the study investigated six direct effects of entrepreneurial characteristics and skills on sustainable entrepreneurial success, as well as four moderating effects involving emotional control and market turbulence. This design was considered appropriate for empirically testing the proposed conceptual framework using Partial Least Squares Structural Equation Modelling (PLS-SEM).

Respondent Characteristics. The respondents were Generation Z entrepreneurs who owned and actively operated income-generating businesses across various industry sectors in Riau Province, Indonesia. Eligible respondents were required to have operated their businesses for more than two years to ensure sufficient entrepreneurial experience in managing business activities and facing operational challenges.

Sampling Techniques. This study employed a non-probability sampling strategy combining purposive and snowball sampling techniques. Purposive sampling was used to select respondents who met the predetermined eligibility criteria, including Generation Z

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membership, business ownership, active business operations, and a minimum business operating period of more than two years. Snowball sampling was subsequently employed to recruit additional eligible entrepreneurs through referrals from existing respondents and their business and entrepreneurial networks.

Research Instruments. Primary data were collected using a structured questionnaire comprising 55 measurement items adapted from previously established research instruments. The questionnaire covered nine research constructs, consisting of six independent variables, two moderating variables, and one dependent variable. The original sources of the measurement instruments are presented in Table 1. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The operational definitions, measurement indicators, item codes, and corresponding references for each research construct are presented in Table 1.

Table 1. Measurement Indicators of Research Constructs

Research Construct	Measurement Indicators / Operational Focus	Indicator Codes/Item	Sources
Entrepreneurial Self-Efficacy (ESE)	Confidence in identifying business opportunities, developing products and markets, performing entrepreneurial tasks, and managing business challenges.	ESE1–ESE6	(Newman et al., 2019; Chawla & Bhatia, 2021)
Creativity (C)	Ability to generate original ideas, develop innovative solutions, identify alternative approaches, and respond creatively to business challenges.	C1–C5	(Shi et al., 2020; Chang & Chen, 2020; Y. Li et al., 2022)
Resource Marshalling (RM)	Ability to identify, acquire, mobilise, combine, and deploy financial, human, social, physical, and informational resources to support business activities.	RM1–RM4	(Clough et al., 2019; Song & Xiang, 2023; Adegbile et al., 2024)
Teamwork (T)	Ability to collaborate, communicate, coordinate responsibilities, solve problems collectively, and utilise complementary knowledge and skills.	T1–T5	(Pazos et al., 2022; Fuel et al., 2022)
Financial Literacy (FL)	Financial knowledge and competencies related to financial planning, cash-flow management, budgeting, bookkeeping, and informed financial decision-making.	FL1–FL4	(Tumba et al., 2022; Hasan, Jannah, et al., 2024)
Entrepreneurial Mindset (EM)	Opportunity-oriented thinking, entrepreneurial commitment, proactive behaviour, adaptability, and continuous learning in business development.	EM1–EM6	(Daspit et al., 2021; Manafe et al., 2023; Pereiro & Dieguez, 2026)
Emotional Control (EC)	Ability to regulate emotional responses, maintain emotional stability, manage stress, and respond constructively to challenging entrepreneurial situations.	EC1–EC5	(Cock et al., 2019; (Arianti & Destiana, 2023; Schmodde & Wehner, 2024)
Market Turbulence (MT)	Perceived changes and unpredictability in customer preferences, customer demands, market conditions, and competitive	MT1–MT5	(Dayan et al., 2023; Sulaiman et al., 2024; Zheng et al., 2026)

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Research Construct	Measurement Indicators / Operational Focus	Indicator Codes/Item	Sources
	environments.		
Sustainable Entrepreneurial Success (SES)	Encompassing: Business Sustainability, Financial Performance, Innovation Performance, Market Expansion, Personal Achievement and Satisfaction and Social Impact	YBS3.1–YBS3.4, YFP1.1–YFP1.3, YIP4.1–YIP4.2, YME5.1–YME5.2, YPAS2.1–YPAS2.2, YSI6.1- YSI6.2	(Razmus & Laguna, 2018; (Wach et al., 2020; Abbas & Bulut, 2024)

Data Collection. Primary data were collected between January and June 2026 through an offline survey using printed questionnaires distributed to eligible Generation Z entrepreneurs in Riau Province, Indonesia. A total of 280 completed questionnaires were collected. Following the data screening process, 263 valid responses were retained for the final analysis, while 17 were excluded.

Data Analysis. The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS. The analysis consisted of two main stages: measurement model assessment and structural model assessment. The measurement model was evaluated using outer loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and the heterotrait-monotrait ratio (HTMT) to assess indicator reliability, internal consistency, convergent validity, and discriminant validity. The structural model was assessed using variance inflation factors (VIF), coefficients of determination (R^2), effect sizes (f^2), and path coefficients. The proposed direct and moderating hypotheses were tested using bootstrapping with 5,000 subsamples. Statistical significance was evaluated at the 5% significance level.

RESULTS

Respondent Characteristics

Table 2 summarises the demographic characteristics and business profiles of the respondents.

Table 2. Respondent Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	127	48.3
	Female	136	51.7
Business Type	Culinary / F&B	73	27.8
	Services	50	19.0
	Fashion	49	18.6
	Digital / Tech	49	18.6
	Agribusiness	30	11.4
	Other	12	4.6
Business Tenure	2–3 years	123	46.8
	4–5 years	95	36.1
	>5 years	45	17.1
Total		263	100

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The respondents comprised 48.3% males and 51.7% females, indicating a nearly even gender composition. Culinary/F&B businesses represented the largest category, followed by services, fashion, digital/technology, agribusiness, and other business sectors. Regarding business tenure, 46.8% of respondents had operated their ventures for 2–3 years, 36.1% for 4–5 years, and 17.1% for more than five years.

We present the measurement model results, including indicator loadings, Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE) for all constructs. These indicators were assessed to ensure that the measurement items met the required standards of reliability and convergent validity before proceeding to the structural model analysis.

Table 3. The Result of the Measurement Model

Construct /Item	Loading	Cronbach's α	Comp reliability (rho_a) ρA	Average variance extracted (AVE)
X1: ENTREPRENEURIAL SELF-EFFICACY (ESE)				
ESE1	0.874	0.917	0.921	0.708
ESE2	0.847			
ESE3	0.872			
ESE4	0.798			
ESE5	0.795			
ESE6	0.859			
X2: CREATIVITY (C)				
C1	0.809	0.891	0.893	0.697
C2	0.854			
C3	0.846			
C4	0.819			
C5	0.846			
X3: RESOURCES MARSHALING (RM)				
RM1	0.862	0.861	0.865	0.706
RM2	0.850			
RM3	0.823			
RM4	0.824			
X4: TEAMWORK (T)				
T1	0.804	0.896	0.899	0.707
T2	0.864			
T3	0.854			
T4	0.836			
T5	0.845			
X5: FINANCIAL LITERACY (FL)				
FL1	0.852	0.892	0.895	0.755
FL2	0.893			
FL3	0.865			
FL4	0.865			
X6: ENTREPRENEURIAL MINDSET (EM)				
EM1	0.819	0.908	0.909	0.684
EM2	0.834			
EM3	0.807			
EM4	0.821			
EM5	0.842			
EM6	0.839			
Z1: EMOTIONAL CONTROL (EC)				
EC1	0.830	0.888	0.894	0.690
EC2	0.863			
EC3	0.800			
EC4	0.799			
EC5	0.859			
Z2: MARKET TURBULENCE (MT)				
MT1	0.827	0.901	0.917	0.715
MT2	0.860			
MT3	0.854			
MT4	0.816			
MT5	0.871			

Y: SUSTAINABLE ENTREPRENEURIAL SUCCESS

Construct /Item	Loading	Construct/Item	Loading	Cronbach's α	Comp reliability (rho_a) ρA	Average variance extracted (AVE)
YFP1.1	0.768	YBS3.4	0.823	0.960	0.960	0.641
YFP1.2	0.833	YIP4.1	0.767			
YFP1.3	0.837	YIP4.2	0.776			
YPAS2.1	0.768	YME5.1	0.812			
YPAS2.2	0.806	YME5.2	0.824			
YBS3.1	0.828	YSI6.1	0.771			
YBS3.2	0.789	YSI6.2	0.800			
YBS3.3	0.805					

Note: ρ_A (rho_A) is the Dijkstra–Henseler consistent reliability coefficient; YBS: Business Sustainability, YFP: Financial Performance, YIP: Innovation Performance, YME: Market Expansion, YPAS: Personal Achievement / Satisfaction, YSI: Social Impact

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Table 3 summarises the measurement model assessment. All indicator loadings were above 0.70, demonstrating adequate indicator reliability. Cronbach's alpha and composite reliability values also exceeded 0.70 across all constructs, supporting satisfactory internal consistency. In addition, all Average Variance Extracted (AVE) values were greater than 0.50, providing evidence of acceptable convergent validity. Overall, the measurement model met the required reliability and convergent validity criteria.

Discriminant validity was examined using the Heterotrait-Monotrait Ratio (HTMT). As shown in Table 4, the HTMT values remained below the 0.90 criterion, indicating sufficient empirical distinction among the constructs of this research.

Table 4. Discriminant Validity - Heterotrait-Monotrait Ratio (HTMT) Matrix

	C	EC	EM	ESE	FL	MT	RM	SES	T	EC x ESE	EC x EM	MT x C
Creativity (C)												
Emotional Control (EC)	0.293											
Entrepreneurial Mindset (EM)	0.294	0.349										
Entrepreneurial Self-Efficacy (ESE)	0.266	0.358	0.210									
Financial Literacy (FL)	0.300	0.303	0.188	0.302								
Market Turbulence (MT)	0.104	0.125	0.114	0.250	0.194							
Resources Marshaling (RM)	0.306	0.323	0.286	0.215	0.269	0.112						
Sustainable Entrepreneurial Success (SES)	0.548	0.590	0.502	0.572	0.517	0.300	0.474					
Teamwork (T)	0.341	0.345	0.215	0.397	0.221	0.168	0.229	0.587				
Emotional Control (EC) x Entrepreneurial Self-Efficacy (ESE)	0.141	0.162	0.062	0.176	0.105	0.044	0.107	0.054	0.066			
Emotional Control (EC) x Entrepreneurial Mindset (EM)	0.035	0.155	0.039	0.046	0.034	0.028	0.084	0.037	0.045	0.297		
Market Turbulence (MT) x Creativity (C)	0.093	0.055	0.126	0.092	0.118	0.033	0.036	0.044	0.054	0.082	0.155	
Market Turbulence (MT) x Resources Marshaling (RM)	0.038	0.067	0.055	0.042	0.063	0.051	0.076	0.108	0.064	0.014	0.027	0.276

The HTMT values ranged from 0.014 to 0.587. Since the highest value remained well below the recommended threshold, no problematic overlap among the constructs was identified. Thus, the measurement model demonstrated satisfactory discriminant validity and was considered suitable for subsequent evaluation of the structural model.

The structural model was evaluated through PLS-SEM bootstrapping to determine the statistical significance of the proposed relationships. Figure 2 displays the estimated paths and their corresponding significance levels.

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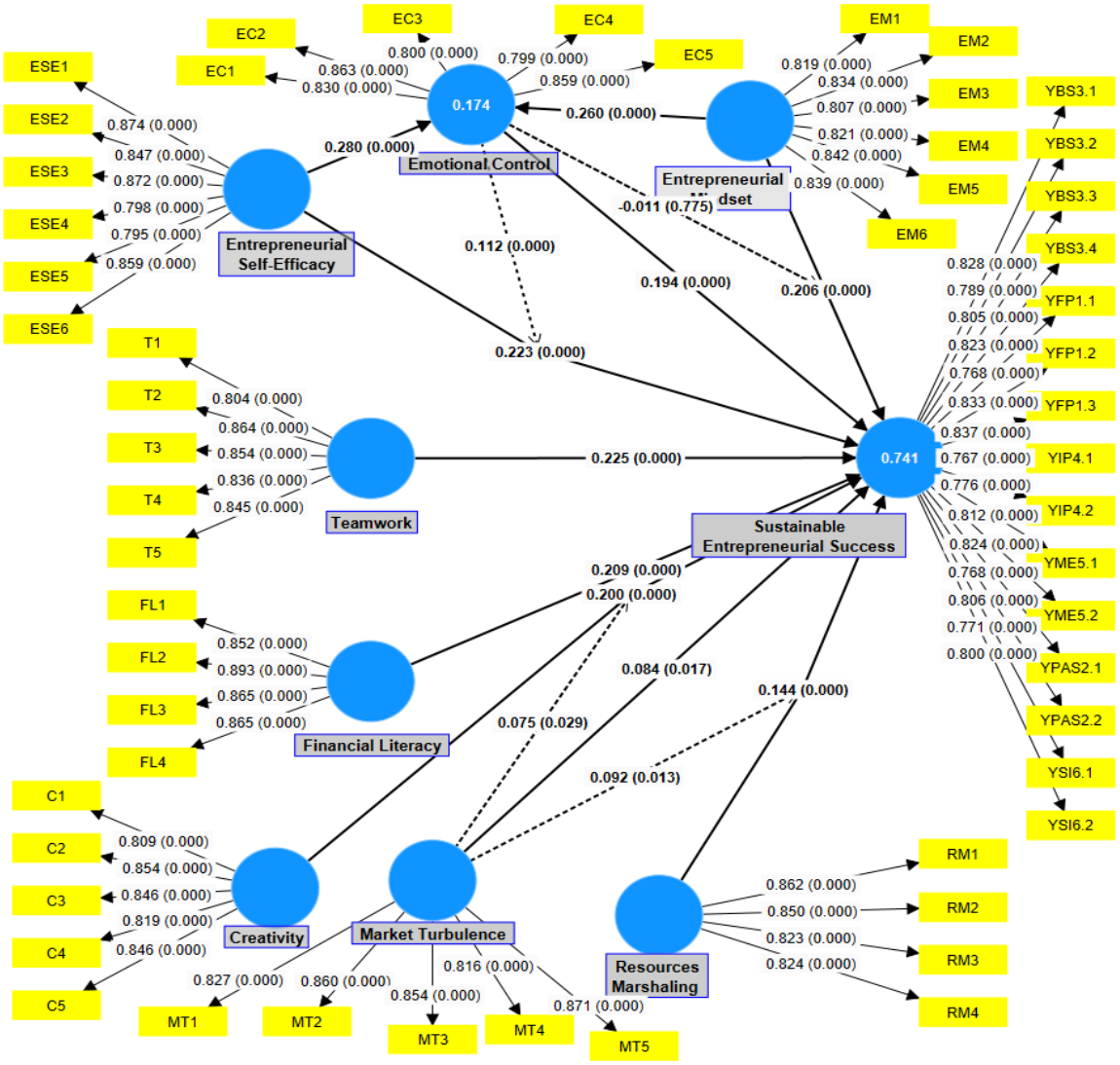


Figure 2. Structural Model Assessment Using PLS-SEM Bootstrapping

Table 4 summarizes the results of hypothesis testing, including the path coefficients, t-statistics, p-values, and decisions for the direct and moderating relationships.

Table 4. Results of hypothesis testing via bootstrapping

Hypothesis	Construct	Path Coefficient	Standard deviation (STDEV)	T statistics (|O/STDEV|)	f^2	P values	Decision
H1	Entrepreneurial Self-Efficacy → Sustainable Entrepreneurial Success	0.223	0.037	5.965	0.144	0.000	Supported
H2	Creativity → Sustainable Entrepreneurial Success	0.200	0.036	5.621	0.122	0.000	Supported
H3	Resource Marshalling → Sustainable Entrepreneurial	0.144	0.039	3.715	0.066	0.000	Supported

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	Success						
H4	Teamwork → Sustainable Entrepreneurial Success	0.225	0.038	5.866	0.152	0.000	Supported
H5	Financial Literacy → Sustainable Entrepreneurial Success	0.209	0.037	5.691	0.139	0.000	Supported
H6	Entrepreneurial Mindset → Sustainable Entrepreneurial Success	0.206	0.042	4.946	0.135	0.000	Supported
H7	Emotional Control x Entrepreneurial Self-Efficacy → Sustainable Entrepreneurial Success	0.112	0.031	3.609	0.042	0.000	Supported
H8	Emotional Control x Entrepreneurial Mindset → Sustainable Entrepreneurial Success	-0.011	0.038	0.286	0.000	0.775	Not Supported
H9	Market Turbulence x Creativity → Sustainable Entrepreneurial Success	0.075	0.034	2.183	0.019	0.029	Supported
H10	Market Turbulence x Resources Marshaling → Sustainable Entrepreneurial Success	0.092	0.037	2.472	0.030	0.013	Supported

Coefficients of determination (R^2)

Endogenous Construct	R-square	R-square adjusted
Emotional Control (EC)	0.174	0.167
Sustainable Entrepreneurial Success (SES)	0.741	0.728

Figure 2 and Table 4 present the structural model, which showed substantial explanatory power for sustainable entrepreneurial success, with an R^2 value of 0.741 and an adjusted R^2 of 0.728. This indicates that the predictors and interaction terms included in the model jointly explained 74.1% of the variance in sustainable entrepreneurial success. Emotional control had an R^2 of 0.174 and an adjusted R^2 of 0.167, indicating comparatively limited explanatory power.

All six direct relationships were positive and statistically significant. Teamwork produced the largest direct effect on sustainable entrepreneurial success ($\beta = 0.225$, $t = 5.866$, $p < 0.001$), followed by entrepreneurial self-efficacy ($\beta = 0.223$, $t = 5.965$, $p < 0.001$), financial literacy ($\beta = 0.209$, $t = 5.691$, $p < 0.001$), entrepreneurial mindset ($\beta = 0.206$, $t = 4.946$, $p < 0.001$), creativity ($\beta = 0.200$, $t = 5.621$, $p < 0.001$), and resource marshaling ($\beta = 0.144$, $t = 3.715$, $p < 0.001$). Accordingly, H1–H6 were supported, confirming that entrepreneurial self-efficacy, creativity, resource marshalling, teamwork, financial literacy, and entrepreneurial mindset each contribute positively to sustainable entrepreneurial success among Gen Z entrepreneurs.

The moderation analysis showed that emotional control significantly strengthened the relationship between entrepreneurial self-efficacy and sustainable entrepreneurial success ($\beta = 0.112$, $t = 3.609$, $p < 0.001$), providing support for H7. In contrast, the interaction between emotional control and entrepreneurial mindset was not significant ($\beta = -0.011$, $t = 0.286$, $p = 0.775$); therefore, H8 was not supported. Market turbulence significantly strengthened the

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relationship between creativity and sustainable entrepreneurial success (β = 0.075, t = 2.183, p = 0.029), supporting H9. It also strengthened the relationship between resource marshalling and sustainable entrepreneurial success (β = 0.092, t = 2.472, p = 0.013), supporting H10. Overall, nine out of ten hypotheses are supported, indicating that sustainable entrepreneurial success among Gen Z entrepreneurs is shaped not only by entrepreneurial competencies but also by internal emotional control and external market turbulence. These results confirm that the six entrepreneurial skills, together with the moderating roles of emotional control and market turbulence, possess strong explanatory and predictive power for long-term venture success among established Gen Z entrepreneurs in Riau.

Regarding effect sizes, teamwork has the largest contribution to sustainable entrepreneurial success (f^2 = 0.152), followed by entrepreneurial self-efficacy (f^2 = 0.144), financial literacy (f^2 = 0.139), entrepreneurial mindset (f^2 = 0.135), creativity (f^2 = 0.122), and resource marshalling (f^2 = 0.066). Based on Cohen's (1988) criteria, teamwork demonstrates a medium effect size, while the other direct effects are small. The interaction effects are generally small, with the creativity interaction (f^2 = 0.019) remaining below the conventional small-effect threshold.

Discussion

The Effect of Entrepreneurial Self-Efficacy on Sustainable Entrepreneurial Success

The findings demonstrate that entrepreneurial self-efficacy positively contributes to sustainable entrepreneurial success, indicating that entrepreneurs with greater confidence in their capabilities are better equipped to overcome challenges, maintain persistence, and pursue long-term business objectives. This finding is consistent with (Malenković & Gomezel, 2025), who identified entrepreneurial self-efficacy as an important mechanism supporting sustainability-oriented business practices, and (Magableh et al., 2026), who demonstrated its relevance to entrepreneurial success. These relationships support Social Cognitive Theory, which explains how self-efficacy influences motivation, persistence, and goal-directed behavior (Newman et al., 2019).

This study extends previous research by positioning entrepreneurial self-efficacy within a multidimensional framework of sustainable entrepreneurial success, encompassing financial performance, business sustainability, innovation, market expansion, personal achievement, and social impact. Theoretically, it strengthens the application of Social Cognitive Theory by demonstrating the relevance of psychological capabilities in explaining sustained entrepreneurial outcomes. Practically, entrepreneurship development programs should strengthen entrepreneurs' confidence through experiential learning, mentoring, and practical business problem-solving

The Effect of Creativity on Sustainable Entrepreneurial Success

The findings demonstrate that creativity positively contributes to sustainable entrepreneurial success, indicating that entrepreneurs who generate original ideas and develop innovative solutions are better equipped to identify opportunities, adapt to changing market demands, and maintain business competitiveness. This finding is consistent with (Karami et al., 2025), whose meta-analysis demonstrated that creativity contributes to entrepreneurial outcomes through opportunity recognition and entrepreneurial alertness. Similarly, (Hidayat et al., 2026) identified business creativity as an important contributor to

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sustainable competitive advantage and sustainable business performance among MSMEs in Indonesia and the Philippines. From the perspective of the Resource-Based View, creativity represents a valuable capability that enables businesses to develop distinctive offerings and sustain competitive advantage through innovation (Fatkhurahman et al., 2026).

This study extends previous research by demonstrating that creativity contributes not only to innovation and conventional business performance but also to multidimensional sustainable entrepreneurial success. Theoretically, it reinforces the Resource-Based View by highlighting creativity as a strategic entrepreneurial capability for generating sustainable business value. Practically, entrepreneurship development programs should encourage creative problem-solving, continuous experimentation, and customer-oriented innovation to strengthen entrepreneurs' adaptability and long-term competitiveness.

The Effect of Resource Marshaling on Sustainable Entrepreneurial Success

The findings reveal that resource marshaling positively contributes to sustainable entrepreneurial success, indicating that entrepreneurs who effectively identify, acquire, combine, and deploy available resources are better equipped to overcome resource constraints and sustain business development. This finding is consistent with (Adegbile et al., 2024), who demonstrated the importance of resource mobilization approaches for venture performance in resource-constrained environments. Similarly, (Scheidgen et al., 2025) highlighted how entrepreneurial resourcefulness and continuous resource mobilization support venture survival during crises. These findings support Resource Orchestration Theory, which emphasizes that entrepreneurial outcomes depend not merely on resource availability but also on how resources are structured, combined, and deployed (Clough et al., 2019).

This study extends previous research by establishing resource marshaling as a determinant of multidimensional sustainable entrepreneurial success rather than focusing exclusively on venture survival or conventional financial performance. Theoretically, it strengthens Resource Orchestration Theory by highlighting entrepreneurial resource management as an important capability for achieving sustained business outcomes. Practically, entrepreneurs should strengthen resource mapping, develop strategic business networks, and continuously evaluate resource allocation to ensure that available financial, human, social, and informational resources support long-term business development.

The Effect of Teamwork on Sustainable Entrepreneurial Success

The findings demonstrate that teamwork positively contributes to sustainable entrepreneurial success, highlighting the importance of collaboration, communication, knowledge sharing, and collective problem-solving in managing business activities. This finding is consistent with (Pazos et al., 2022), who emphasized the contribution of teamwork competencies to entrepreneurial team performance. Similarly, (Zhang & Murad, 2026) demonstrated that collaborative entrepreneurship contributes positively to venture performance through responsible innovation. From an entrepreneurial team perspective, integrating complementary knowledge and capabilities enables entrepreneurs to improve coordination and address business challenges more effectively.

This study extends previous research by identifying teamwork as the strongest contributing factor among the six entrepreneurial determinants examined. Theoretically, it

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emphasizes the collective dimension of sustainable entrepreneurial success, complementing explanations based on individual entrepreneurial characteristics and competencies. Practically, entrepreneurship development programs should prioritize collaborative problem-solving, effective communication, knowledge sharing, and the integration of complementary competencies to strengthen business continuity and long-term entrepreneurial success.

The Effect of Financial Literacy on Sustainable Entrepreneurial Success

The findings demonstrate that financial literacy positively contributes to sustainable entrepreneurial success, indicating that entrepreneurs with stronger financial knowledge are better equipped to manage cash flows, allocate resources, evaluate financial risks, and make informed business decisions. This finding is consistent with (Ratnawati et al., 2024), who demonstrated that financial literacy supports sustainable business performance through improved access to finance and financial technology adoption. Similarly, (Kurniasari et al., 2025) identified financial literacy as an important factor supporting SME performance and sustainability through financial technology adoption and access to financing. These findings support Human Capital Theory, which views financial knowledge and competencies as valuable capabilities that enhance managerial decision-making and business performance.

This study extends previous research by positioning financial literacy within a multidimensional framework of sustainable entrepreneurial success, encompassing not only financial performance but also business sustainability, innovation, market expansion, personal achievement, and social impact. Theoretically, it reinforces Human Capital Theory by demonstrating the importance of financial competencies in explaining broader entrepreneurial outcomes. Practically, entrepreneurship development programs should strengthen financial planning, bookkeeping, budgeting, cash-flow management, and financial risk assessment to improve entrepreneurs' capacity to maintain business continuity and achieve long-term success.

The Effect of Entrepreneurial Mindset on Sustainable Entrepreneurial Success

The findings demonstrate that entrepreneurial mindset positively contributes to sustainable entrepreneurial success, indicating that entrepreneurs with opportunity-oriented thinking, proactive behavior, continuous learning, and adaptability are better equipped to recognize business opportunities and respond to changing market conditions. This finding is consistent with (Juniardi et al., 2023), who demonstrated that entrepreneurial mindset contributes to SME performance through entrepreneurial behavior. Similarly, (S. Chen et al., 2024) found that entrepreneurial mindset plays an important role in translating entrepreneurs' prior experiences into improved new venture performance. These findings support the entrepreneurial cognition perspective, which emphasizes that cognitive orientations influence how entrepreneurs interpret opportunities, process information, and formulate strategic decisions (Daspit et al., 2021).

This study extends previous research by examining entrepreneurial mindset beyond early-stage venture performance and business development, positioning it within a multidimensional framework of sustainable entrepreneurial success among established Generation Z entrepreneurs. Theoretically, it reinforces entrepreneurial cognition as an important foundation for explaining how opportunity-oriented thinking and adaptive decision-making contribute to sustained business outcomes. Practically, entrepreneurship

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education and mentoring programs should encourage opportunity recognition, strategic thinking, proactive decision-making, and continuous learning to strengthen entrepreneurs' capacity for long-term business development.

The Moderating Role of Emotional Control in the Relationship Between Entrepreneurial Self-Efficacy and Sustainable Entrepreneurial Success

The findings demonstrate that emotional control strengthens the positive relationship between entrepreneurial self-efficacy and sustainable entrepreneurial success, suggesting that entrepreneurs' confidence in their capabilities becomes more effective when accompanied by the ability to regulate emotional responses under pressure. This interpretation is supported by recent empirical and conceptual evidence highlighting that emotional regulation acts as a vital psychological buffer, preventing cognitive overload and enabling founders to translate self-efficacy into resilient, long-term strategic actions under severe strain (Banerjee & Pathak, 2026; Iqbal et al., 2026) Similarly, (Schmodde & Wehner, 2024) emphasized the importance of emotion regulation in managing challenging entrepreneurial experiences. Integrating Social Cognitive Theory and Self-Regulation Theory, emotional control can be understood as a complementary capability that helps entrepreneurs translate their confidence into persistent and constructive business actions (Stajkovic & Luthans, 2003; Gielnik et al., 2020) .

This study extends previous research by identifying emotional control as a complementary psychological mechanism that strengthens the contribution of entrepreneurial self-efficacy to multidimensional sustainable entrepreneurial success. Theoretically, it integrates Social Cognitive Theory and Self-Regulation Theory by explaining how entrepreneurial confidence and emotional regulation jointly contribute to sustained business outcomes. Practically, entrepreneurship development programs should integrate emotional regulation, stress management, and reflective decision-making into experiential learning and mentoring activities to help entrepreneurs maintain confidence and make effective decisions under challenging business conditions.

The Moderating Role of Emotional Control in the Relationship Between Entrepreneurial Mindset and Sustainable Entrepreneurial Success

Contrary to the proposed hypothesis, the findings indicate that emotional control does not significantly moderate the relationship between entrepreneurial mindset and sustainable entrepreneurial success. This suggests that the contribution of entrepreneurial mindset to business success does not necessarily become stronger through additional emotional regulation. One possible explanation is that entrepreneurial mindset primarily operates through opportunity recognition, proactive thinking, and strategic adaptability, whereas emotional control focuses on managing emotional responses under pressure. (Schmodde & Wehner, 2024) explain that emotion regulation, emotional intelligence, and emotion-focused coping represent distinct mechanisms in entrepreneurial contexts, while (Cock et al., 2020) demonstrate that the relationship between emotion regulation and venture survival depends on venture performance conditions. These perspectives suggest that cognitive and emotional capabilities may contribute to entrepreneurial outcomes through different mechanisms.

This study extends previous research by demonstrating that the moderating contribution of emotional control may depend on the specific entrepreneurial capability being examined. Theoretically, it provides a more differentiated understanding of Self-Regulation Theory by

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distinguishing the role of emotional regulation in strengthening entrepreneurial confidence from its interaction with entrepreneurial cognition. Practically, entrepreneurship development programs should cultivate entrepreneurial mindset and emotional control as complementary but distinct competencies, emphasizing opportunity recognition, strategic thinking, and emotional management without assuming that strengthening one automatically amplifies the contribution of the other.

The Moderating Role of Market Turbulence in the Relationship Between Creativity and Sustainable Entrepreneurial Success

The findings demonstrate that market turbulence strengthens the positive contribution of creativity to sustainable entrepreneurial success, suggesting that creative capabilities become more valuable when entrepreneurs face rapidly changing customer preferences, market demands, and competitive conditions. This finding is consistent with (Dayan et al., 2023; Osei et al., 2025; Cobbinah et al., 2025), who demonstrated that market and technological turbulence strengthen the indirect relationship between organizational creativity and firm performance through organizational resilience. Similarly, (Karami et al., 2025) highlighted the role of entrepreneurial alertness in translating creativity into innovation and entrepreneurial outcomes. From the perspective of Contingency Theory, the effectiveness of entrepreneurial capabilities depends on external environmental conditions (Mahmud et al., 2021), while the Dynamic Capabilities Perspective explains how creativity helps entrepreneurs identify opportunities and adapt their business responses to environmental changes (David J. Teece, 2025).

This study extends previous research by demonstrating that market turbulence acts as a contextual condition that increases the strategic value of creativity in achieving multidimensional sustainable entrepreneurial success. Theoretically, it integrates Contingency Theory and the Dynamic Capabilities Perspective by explaining how external market conditions shape the contribution of internal entrepreneurial capabilities to sustainable business outcomes. Practically, entrepreneurs should combine creative problem-solving and continuous innovation with systematic market monitoring, customer feedback, and flexible business strategies to maintain competitiveness and long-term business sustainability.

The Moderating Role of Market Turbulence in the Relationship Between Resource Marshaling and Sustainable Entrepreneurial Success

The findings demonstrate that market turbulence strengthens the positive contribution of resource marshaling to sustainable entrepreneurial success, suggesting that entrepreneurs' ability to identify, combine, and redeploy available resources becomes increasingly valuable when market conditions change unpredictably. This interpretation is supported by (Adegbile et al., 2024), who demonstrated the importance of resource mobilization approaches for venture performance under resource constraints, and (Battisti et al., 2026), who highlighted how entrepreneurial resource mobilization determines the effectiveness of sustainability and innovation orientations in small ventures. From the integration of Resource Orchestration Theory and Contingency Theory, the strategic value of resource marshaling depends partly on entrepreneurs' ability to adjust resource configurations in response to changing environmental demands (Sirmon et al., 2011; Mahmud et al., 2021; Song & Xiang, 2023).

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This study extends previous research by demonstrating that market turbulence increases the strategic value of resource marshaling in achieving multidimensional sustainable entrepreneurial success. Theoretically, it integrates Resource Orchestration Theory and Contingency Theory by highlighting how external market conditions strengthen the contribution of internal resource management capabilities to sustainable entrepreneurial outcomes. Practically, entrepreneurs should maintain flexible resource allocation, strengthen business networks, monitor market developments, and regularly reassess resource utilization to respond effectively to changing customer demands and competitive pressures.

IMPLICATIONS

Theoretical implications. This study offers implications for understanding sustainable entrepreneurial success among Generation Z entrepreneurs. Theoretically, it extends entrepreneurship research by integrating six determinants—entrepreneurial self-efficacy, creativity, resource marshaling, teamwork, financial literacy, and entrepreneurial mindset—within a multidimensional success framework encompassing financial performance, business sustainability, innovation, market expansion, personal achievement, and social impact. The findings reinforce Social Cognitive Theory, the Resource-Based View, Human Capital Theory, and Resource Orchestration Theory by showing how psychological, financial, and resource-management capabilities contribute to business outcomes. The moderation results connect self-regulation and contingency perspectives: emotional control strengthens the contribution of self-efficacy but does not significantly moderate entrepreneurial mindset, whereas market turbulence strengthens the contributions of creativity and resource marshaling. This indicates that contextual conditions do not affect entrepreneurial capabilities uniformly.

Practical implications. Entrepreneurship programs should integrate development with business-management skills. Training should prioritize teamwork, financial literacy, entrepreneurial confidence, creative problem-solving, opportunity recognition, and resource mobilization. Mentoring and experiential learning can help entrepreneurs apply these capabilities to business challenges. Programs should also develop emotional regulation and stress management to support decision-making under pressure. In turbulent markets, entrepreneurs should monitor customer preferences, experiment with offerings, strengthen networks, and reallocate resources flexibly. These actions can support business continuity, competitiveness, and sustainable entrepreneurial success.

CONCLUSION

This study aimed to examine the determinants of sustainable entrepreneurial success by investigating the contributions of entrepreneurial characteristics and skills, as well as the moderating roles of emotional control and market turbulence among Generation Z entrepreneurs in Riau Province, Indonesia. The findings confirm that sustainable entrepreneurial success is shaped by a combination of individual psychological capabilities, practical entrepreneurial competencies, and contextual conditions. Overall, the research objectives were achieved, with nine of the ten proposed hypotheses supported by the empirical results.

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The findings establish that entrepreneurial self-efficacy, creativity, resource marshaling, teamwork, financial literacy, and entrepreneurial mindset have positive and significant relationships with sustainable entrepreneurial success. Among these determinants, teamwork demonstrates the strongest contribution, highlighting the importance of collaboration, knowledge sharing, and the integration of complementary competencies in sustaining business development. Entrepreneurial self-efficacy and financial literacy also emerge as important contributors, indicating that psychological confidence and financial management capabilities are essential for maintaining business continuity. Meanwhile, creativity, resource marshaling, and entrepreneurial mindset support entrepreneurs in identifying opportunities, adapting business strategies, and utilizing available resources effectively. Collectively, these findings demonstrate that sustainable entrepreneurial success requires an integrated combination of psychological, cognitive, financial, and collaborative capabilities rather than reliance on individual competencies alone.

Regarding the moderating relationships, emotional control positively strengthens the relationship between entrepreneurial self-efficacy and sustainable entrepreneurial success. However, its moderating effect on the relationship between entrepreneurial mindset and sustainable entrepreneurial success is not statistically significant. This distinction suggests that emotional regulation may complement entrepreneurs' confidence in their abilities without necessarily amplifying the contribution of their cognitive orientation. In contrast, market turbulence positively moderates both the creativity–sustainable entrepreneurial success relationship and the resource marshaling–sustainable entrepreneurial success relationship. These findings indicate that changing market conditions increase the strategic importance of creativity and resource mobilization in maintaining business competitiveness and sustainability.

Theoretically, this study contributes to entrepreneurship literature by integrating Social Cognitive Theory, the Resource-Based View, Human Capital Theory, Resource Orchestration Theory, Self-Regulation Theory, and Contingency Theory within a multidimensional framework of sustainable entrepreneurial success. The findings provide a broader understanding of how individual capabilities interact with internal psychological and external environmental conditions to shape entrepreneurial outcomes. In particular, the different moderating effects of emotional control and market turbulence demonstrate that entrepreneurial capabilities do not operate uniformly across different contextual conditions.

In conclusion, sustainable entrepreneurial success among Generation Z entrepreneurs requires more than the ability to establish and operate a business. It depends on developing complementary individual and collective competencies while maintaining the capacity to respond to emotional pressures and changing market environments. Entrepreneurship development initiatives should therefore prioritize teamwork, financial literacy, entrepreneurial confidence, creativity, adaptive resource management, and strategic thinking. By integrating these capabilities into entrepreneurship education, mentoring, and business development programs, entrepreneurs can strengthen their capacity to maintain business continuity, competitiveness, and sustainable success over time.

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