

Article

How Sustainability Orientation Drives Pro-Environmental Behavior in Entrepreneurial Firms: The Roles of Social Support and Sustainable Entrepreneurship

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Abstract

This study examines how sustainability orientation shapes sustainability behavior among entrepreneurial small and medium-sized enterprises (SMEs) in Turkey. Grounded in self-determination theory (SDT) and the theory of planned behavior (TPB), this study develops and empirically tests a conditional process model in which perceived social support functions as a mediating mechanism and sustainable entrepreneurship operates as a boundary condition. Data were collected from 519 senior managers of ISO 14001-certified SMEs using a two-wave survey design to mitigate common method variance (CMV). Using Hayes' PROCESS macro, the results indicate that sustainability orientation is positively associated with sustainability behavior and that perceived social support partially mediates this relationship by facilitating the translation of sustainability values into action. Furthermore, sustainable entrepreneurship strengthens both the direct association between sustainability orientation and sustainability behavior and the indirect pathway operating through perceived social support. SMEs with higher sustainable entrepreneurship capabilities are better positioned to leverage internal values and external social reinforcement to enact proactive sustainability practices. Overall, the findings highlight the joint role of motivational orientations, social reinforcement, and entrepreneurial capability in shaping sustainability outcomes. The study contributes to sustainability and entrepreneurship research by clarifying how value-based orientations are converted into sustainable behavior and offers practical implications for policymakers and SME leaders seeking to accelerate sustainability transitions in emerging economies.

Keywords: sustainability orientation; sustainability behavior; sustainable entrepreneurship; perceived social support; SMEs; environmental management; emerging economies

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1. Introduction

In an era where environmental degradation, social inequity, and climate volatility dominate the global agenda, the sustainability orientation of small and medium-sized enterprises (SMEs) is no longer secondary; it has emerged as a strategic value orientation shaping how entrepreneurial firms perceive and respond to sustainability challenges [1,2]. Entrepreneurial firms that cultivate a genuine sustainability orientation—defined as a value-based predisposition reflecting commitment to environmental stewardship, social

responsibility, and long-term societal value—are uniquely positioned to contribute to sustainable development [3]. Yet, despite growing scholarly attention, there remains a limited understanding of how such value orientations are translated into consistent and observable sustainability behavior within SMEs, particularly in emerging economies [4,5]. This research addresses that critical gap by examining entrepreneurial SMEs in Turkey and asking: how does sustainability orientation translate into sustainability behavior, and through which social and capability-based mechanisms does this translation occur?

Empirical evidence suggests a persistent orientation–behavior gap among SMEs. While many firms articulate sustainability commitments through formal statements, certifications, or ESG disclosures, their day-to-day operational behaviors often fail to fully reflect these stated intentions [6]. This disconnect undermines organizational legitimacy and weakens stakeholder trust, limiting the broader societal impact of sustainability initiatives. For SMEs, this challenge is further exacerbated by resource constraints, institutional pressures, and dependence on external stakeholders, all of which complicate the internalization and enactment of sustainability values [7]. Accordingly, identifying the psychological and organizational mechanisms that enable sustainability-oriented values to be converted into concrete behavior remains a pressing theoretical and practical concern.

Although prior research has examined entrepreneurial orientation and its variants in relation to firm performance, far fewer studies have explicitly connected sustainability orientation to sustainability behavior in SMEs. Meta-analytic evidence on green entrepreneurial orientation and green market orientation confirms their positive association with sustainability performance [8]; however, such studies often aggregate across industries and institutional contexts, thereby obscuring the internal processes through which sustainability values are enacted in entrepreneurial firms, particularly in non-Western settings [9]. Moreover, the mechanisms that mediate and condition this translation from orientation to behavior remain insufficiently theorized. In particular, the role of perceived social support—defined as the extent to which firms perceive encouragement, legitimacy, and resource-related backing from stakeholders—has been largely overlooked as a pathway through which sustainability orientation is transformed into action.

In addition, although sustainable entrepreneurship is widely recognized as a firm-level capability that shapes innovation and performance outcomes, its function as a boundary condition in the sustainability orientation–behavior relationship remains underdeveloped [10–12]. Specifically, prior research has not sufficiently examined whether sustainable entrepreneurship amplifies the extent to which sustainability-oriented values are converted into behavior, nor whether it strengthens the effectiveness of social support in enabling such behavioral enactment within SMEs [13]. This omission is notable, as sustainable entrepreneurship reflects the firm’s capability to operationalize sustainability values through entrepreneurial processes, rather than merely endorsing them rhetorically.

To address these gaps, this study draws on two complementary theoretical lenses. First, self-determination theory (SDT) explains how internalized values (sustainability orientation) interact with external motivational contexts (perceived social support) to foster sustained behavioral engagement [14]. Second, according to the Theory of Planned Behavior (TPB), individuals’ intentions to act are jointly influenced by their evaluative beliefs, perceived social expectations, and the extent to which they feel capable of performing the behavior, providing a structured account of how social support and entrepreneurial capability influence sustainability behavior [15]. Integrating SDT and TPB allows us to conceptualize sustainability behavior in SMEs as the outcome of both value internalization and supportive social–organizational conditions.

Crucially, this study explicitly differentiates sustainability orientation from sustainable entrepreneurship. While sustainability orientation reflects a firm’s value-based

commitment to sustainability principles, sustainable entrepreneurship represents a capability-based mechanism through which these values are strategically enacted and scaled through entrepreneurial activities [16,17]. By distinguishing values from capabilities, the proposed framework clarifies their distinct yet complementary roles in shaping sustainability behavior.

This research advances the literature in multiple important ways. First, it advances SME sustainability theory by positioning perceived social support as a core mediating mechanism that enhances existing orientation-based models of sustainability behavior. Second, it introduces sustainable entrepreneurship by operating as a contextual factor that shapes the strength of the direct and indirect effects of sustainability orientation, thereby addressing calls for more nuanced capability-based explanations of sustainability enactment in entrepreneurial firms. Third, by focusing on ISO 14001–certified SMEs in Turkey [18–20], this study extends sustainability research into an underexplored emerging-economy context, offering insights relevant to policymakers and SME leaders seeking to promote meaningful sustainability practices. Accordingly, the present research seeks to answer the following questions:

RQ1: Does sustainability orientation positively relate to sustainability behavior in SMEs?

RQ2: Does perceived social support serve as an explanatory mediating mechanism linking sustainability orientation with sustainability behavior?

RQ3: Does sustainable entrepreneurship moderate the relationships between (a) sustainability orientation and sustainability behavior, and (b) perceived social support and sustainability behavior?

2. Conceptual Background and Hypotheses Formulation

2.1. Underpinning Theories

SDT posits that motivation exists along a continuum from extrinsic to intrinsic regulation and that values are more likely to be internalized when social environments support the fundamental human needs related to self-determination, effectiveness, and social connection [21]. Applied to sustainability-oriented SMEs, SDT suggests that sustainability orientation reflects a value-based, internalized motivation rather than mere compliance with external pressures [22]. When firms perceive social support in the form of legitimacy, encouragement, or access to resources from stakeholders, such support fulfills relatedness and competence needs, reinforcing the internalization of sustainability values and sustaining behavioral engagement over time [23,24]. From this perspective, perceived social support acts as a motivational mechanism that facilitates the conversion of sustainability orientation into consistent sustainability behavior.

The TPB explains behavior as a function of intentions to act, which emerge from evaluative judgments, normative pressures, and perceptions of control [25]. Within SMEs, these elements correspond to how decision-makers evaluate sustainability practices, perceive normative expectations from key stakeholders, and assess their capacity to implement sustainable actions [26]. Empirical evidence indicates that TPB constructs are strong predictors of sustainability-related intentions and behaviors, particularly when decision-makers perceive both normative support and sufficient control over resources and capabilities [27].

Integrating SDT and TPB provides a parsimonious yet powerful framework for explaining sustainability behavior in entrepreneurial SMEs. While SDT explains why sustainability-oriented values become internalized and sustained through supportive social environments, TPB clarifies how these internalized values are converted into behavioral intentions and enacted through perceived norms and control mechanisms [28]. Perceived social support occupies a pivotal position in this integration by simultaneously reinforcing

motivational internalization (SDT) and strengthening perceived behavioral control and subjective norms (TPB). Furthermore, sustainable entrepreneurship—conceptualized as a firm-level capability to operationalize sustainability through entrepreneurial processes—conditions the effectiveness of both orientation and support in shaping actual behavior [29]. This integrated framework allows us to conceptualize sustainability behavior not as a direct outcome of orientation alone, but as a contingent process driven by motivational reinforcement, social validation, and entrepreneurial capability.

2.2. Sustainability Orientation and Sustainable Behavior

Sustainability orientation (SO) captures the extent to which firms embed environmental and social priorities into their strategic values and decision-making processes [30]. Rather than viewing sustainability as a constraint, sustainability-oriented SMEs perceive it as complementary to economic performance and innovation [9]. In entrepreneurial firms, particularly SMEs, SO is strongly shaped by founders' and top managers' personal values due to their central role in strategic choices and resource allocation. From a motivational perspective, SO represents an internalized value orientation that predisposes firms toward voluntary and sustained engagement in sustainability behavior, rather than mere regulatory compliance or symbolic adoption [31,32].

Drawing on SDT, firms with a strong sustainability orientation tend to display intrinsically driven motivation to pursue environmentally and socially responsible actions when sustainability values are internally endorsed rather than externally imposed [21]. Similarly, the TPB suggests that favorable attitudes toward sustainability strengthen behavioral intentions, which in turn increase the likelihood of actual behavioral enactment [25]. Taken together, these perspectives indicate that sustainability orientation functions as a core cognitive–motivational driver that facilitates the translation of sustainability values into consistent and observable sustainability behavior. Empirical studies consistently show that firms with strong sustainability orientation demonstrate higher levels of green innovation, environmental management, and sustained sustainability practices, including in emerging-market contexts where institutional support may be uneven [33]. Accordingly, firms with a stronger sustainability orientation are more likely to systematically implement sustainability behavior in their day-to-day operations.

H1. *Sustainability orientation positively influences sustainability behavior.*

2.3. Sustainability Orientation and Perceived Social Support

Perceived social support (PSS) refers to entrepreneurs' perceptions that key stakeholders—such as customers, employees, suppliers, communities, and public institutions—endorse, legitimize, and facilitate sustainability-oriented initiatives [34]. In SMEs, where financial and organizational resources are frequently limited, perceived social support represents a salient intangible resource that influences firms' motivation and capacity to engage in sustainability-oriented behavior, particularly by enhancing legitimacy, confidence, and access to stakeholder-based encouragement [35]. Importantly, PSS captures subjective interpretations of stakeholder attitudes rather than objective support alone, emphasizing how entrepreneurs cognitively appraise their social environment.

From the perspective of SDT, perceived social support satisfies entrepreneurs' needs for relatedness and competence, thereby reinforcing motivation and commitment to sustainability-oriented action [36]. When entrepreneurs feel encouraged and validated by stakeholders, sustainability-oriented decisions become more meaningful and easier to enact. Similarly, the TPB positions social approval and facilitation as central components of subjective norms and perceived behavioral control, both of which strengthen behavioral intentions [25]. Firms with a strong sustainability orientation are more likely to signal

value congruence, credibility, and long-term commitment through transparent communication and responsible practices, which enhances relational legitimacy and elicits positive stakeholder endorsement [37,38]. As a result, sustainability orientation functions as an antecedent that activates perceived social support by shaping how stakeholders respond to, and entrepreneurs interpret, sustainability-oriented actions. Therefore, sustainability orientation is expected to strengthen perceived social support.

H2. *Sustainability orientation positively influences perceived social support.*

2.4. *Perceived Social Support in Shaping Sustainability Behavior*

Perceptions of social support are central to shaping how sustainability-oriented values are translated into concrete sustainability behavior, serving as a key behavioral mechanism rather than a mere contextual condition [39]. By reducing uncertainty, facilitating access to knowledge and resources, and reinforcing social expectations, PSS increases the perceived feasibility and desirability of sustainability actions [7]. SMEs that perceive stronger stakeholder endorsement are more inclined to sustain environmentally and socially responsible behaviors over time.

Within the TPB, this effect operates through enhanced perceived behavioral control and subjective norms, which are among the strongest predictors of behavioral enactment [25,40]. From a SDT perspective, perceived social support reinforces the internalization of sustainability values, transforming motivation into sustained action. Accordingly, PSS functions not only as a direct driver of sustainability behavior but also as a mediating pathway through which sustainability orientation is converted into observable and sustained sustainability practices [41,42]. Firms with a stronger sustainability orientation are therefore more likely to perceive higher levels of social support, which subsequently motivates and enables the consistent implementation of sustainability behavior.

H3. *Perceived social support positively influences sustainability behavior.*

H4. *Perceived social support plays a mediating mechanism linking sustainability orientation with sustainability behavior.*

2.5. *Sustainable Entrepreneurship as a Moderator*

Sustainable entrepreneurship (SE) reflects a firm's capability to identify, develop, and exploit entrepreneurial opportunities that simultaneously generate economic, environmental, and social value [35]. Unlike sustainability orientation, which captures values and strategic intent, SE represents an action-oriented entrepreneurial capability that enables firms to operationalize sustainability within innovation and business development processes [43]. This distinction clarifies that while sustainability orientation reflects "what firms value," sustainable entrepreneurship determines "what firms are able to do" with those values.

From a theoretical standpoint, SE operates as a contextual factor that shapes the strength of the sustainability orientation–behavior relationship. SDT highlights competence as a prerequisite for transforming internalized motivation into effective action, while the TPB emphasizes perceived behavioral control as a determinant of whether intentions translate into behavior [28]. Firms with high SE capability possess the skills, knowledge, and adaptive capacity required to convert sustainability-oriented values into implementable practices. Empirical evidence shows that such firms are more effective in developing green innovations, aligning sustainability goals with operational activities, and responding proactively to stakeholder expectations [33]. Accordingly, SE is expected to strengthen the direct association between sustainability orientation and sustainability behavior, as

well as the conditional influence of sustainable entrepreneurship on the indirect mechanism through perceived social support, which is developed separately in the following section.

H5. *Sustainable entrepreneurship moderates the effect of sustainability orientation on sustainability behavior, strengthening this relationship at higher levels of sustainable entrepreneurship.*

2.6. Moderation of the Indirect Effect Through Perceived Social Support

Sustainability behavior (SB) represents the observable enactment of environmentally and socially responsible practices, including resource efficiency, pollution prevention, employee well-being, ethical conduct, and community engagement [44]. In the proposed framework, SB emerges from the interaction of internal motivation, social reinforcement, and entrepreneurial capability. Sustainability orientation provides the motivational foundation, perceived social support reinforces normative and relational legitimacy, and sustainable entrepreneurship enhances the firm's capacity to act [45].

Beyond its direct moderating role, sustainable entrepreneurship is expected to shape the indirect mechanism through which sustainability orientation translates into sustainability behavior via perceived social support. Firms with stronger sustainable entrepreneurship capabilities are more capable of converting stakeholder validation into concrete strategic actions, coordinating internal and external resources, and sustaining commitment to environmental and social initiatives [35,46,47]. Consequently, the mediated relationship between sustainability orientation and sustainability behavior intensifies through perceived social support when sustainable entrepreneurship is high, reflecting a conditional indirect effect (moderated mediation).

H6. *Sustainable entrepreneurship moderates the indirect effect of sustainability orientation on sustainability behavior via perceived social support, strengthening this relationship at higher levels of sustainable entrepreneurship.*

2.7. Control Variables

To account for potential heterogeneity among SMEs, firm age and firm size are incorporated as control variables in the analysis. Firm age captures accumulated experience, routines, and institutional knowledge that may shape how SMEs interpret and adopt sustainability practices. While older firms may benefit from greater stability and legitimacy, younger firms often exhibit higher flexibility and responsiveness to emerging sustainability demands [48]. Firm size reflects differences in resources, managerial capacity, and operational complexity. Larger SMEs typically possess greater slack resources to support sustainability initiatives, whereas smaller firms may face constraints but benefit from agility and faster decision-making processes [49,50]. By controlling for firm age and firm size, this study isolates the effects of sustainability orientation, perceived social support, and sustainable entrepreneurship on sustainability behavior, thereby reducing alternative explanations and strengthening the internal validity of the proposed model [51–53].

2.8. Conceptual Framework

Figure 1 presents the proposed conceptual model, which is theoretically anchored in SDT and TPB, explaining how sustainability orientation influences sustainability behavior in SMEs through motivational, cognitive, and social mechanisms. Sustainability orientation represents a firm's value-based strategic commitment to environmental, social, and economic priorities, providing the motivational foundation for sustainability-related decision-making.

Perceived social support mediates this relationship by capturing entrepreneurs' beliefs that key stakeholders endorse, legitimize, and facilitate sustainability initiatives. Consistent with SDT and TPB, perceived social support enhances the internalization of sustainability values, strengthens normative expectations, and increases perceived behavioral control, thereby enabling the enactment of sustainability behavior. Sustainable entrepreneurship moderates the direct effect of sustainability orientation on sustainability behavior and conditions the indirect effect operating through perceived social support, strengthening these relationships when firms possess higher entrepreneurial capability to operationalize sustainability initiatives.

Firm age and firm size are included as control variables to account for structural differences across SMEs. Overall, the framework depicts a conditional process fully anchored in SDT and TPB, in which sustainability behavior emerges from the interaction of value-based orientation, social reinforcement, and entrepreneurial capability, positioning SME sustainability engagement as a function of motivational, relational, and strategic mechanisms rather than isolated organizational attributes.

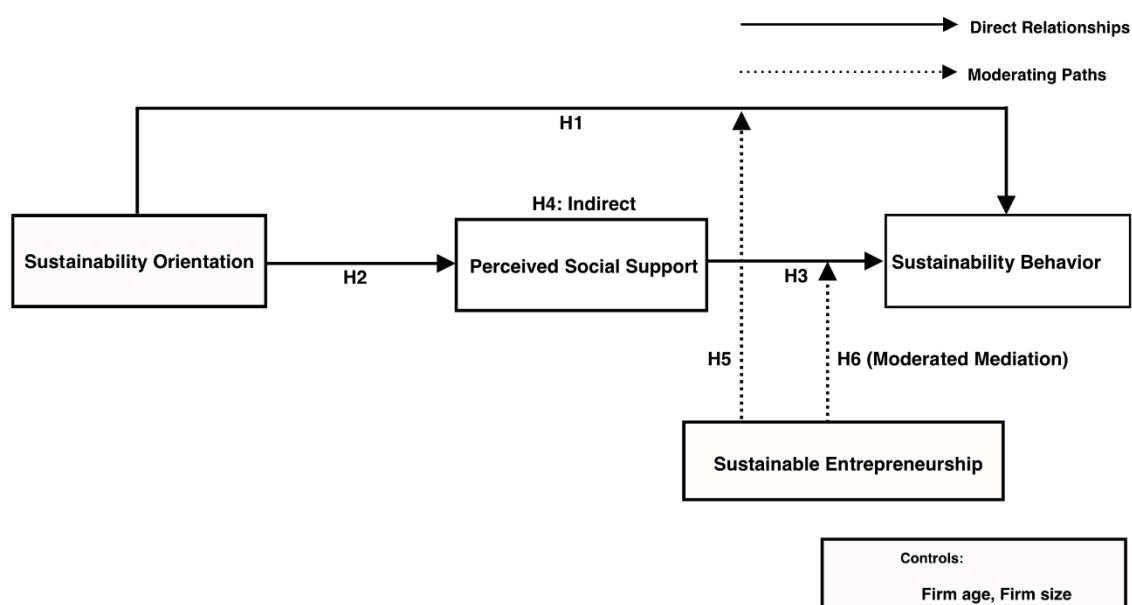


Figure 1. Conceptual research model. Note: Sustainable entrepreneurship moderates both the direct relationship between sustainability orientation and sustainability behavior (H5) and the indirect relationship through perceived social support, representing a moderated mediation (H6).

3. Methods

3.1. Data Collection and Sampling

This study employed a cross-sectional survey design with temporally separated data collection to examine the proposed relationships among sustainability orientation, perceived social support, sustainable entrepreneurship, and sustainability behavior in Turkish SMEs. Data collection was conducted across two temporally separated phases in order to mitigate potential common method variance (CMV), consistent with recommended procedural controls in survey research [54].

The study targeted SMEs registered with the Small and Medium Enterprises Development Organization (SMEDO) in Turkey, defined as firms employing up to 250 employees [55]. A purposive sampling strategy was adopted to ensure that participating firms met two predefined criteria: (1) ISO 14001 certification and (2) official registration with SMEDO. This approach was selected to align the sample with the study's focus on sustainability-oriented SMEs and to ensure respondents possessed relevant organizational

experience. However, consistent with the nature of purposive sampling, this strategy may limit the generalizability of the findings beyond ISO 14001–certified SMEs and similar institutional contexts.

The survey instrument was initially designed in English based on validated scales from existing studies and subsequently translated into Turkish through a rigorous back-translation process to ensure semantic equivalence [56]. The translated instrument was pre-tested with four academic experts and four industry practitioners to ensure clarity, contextual relevance, and content validity. Before distributing the questionnaire, participating firms were informed about the study’s purpose, and respondents were guaranteed anonymity and confidentiality to promote honest and unbiased responses.

At Time 1 (T1), data were collected on sustainability orientation and perceived social support. At Time 2 (T2), conducted two weeks later, data were collected on sustainable entrepreneurship and sustainability behavior. Of the 850 questionnaires distributed electronically and in paper form, 531 responses were received in the first wave. Following the second data-collection phase and the elimination of incomplete or unmatched surveys, a final sample of 519 valid paired responses was obtained, yielding a usable response rate of 61.06%.

Descriptive characteristics of the participating firms are summarized in Table 1. The SMEs surveyed across various industries were IT services account 14 (2.70%), food and beverages 103 (19.85%), electronics and electricals 57 (10.98%), textile and apparel 46 (8.86%), medical and pharmaceutical 19 (3.66%), building materials 99 (19.08%), construction 25 (4.82%), plastic and rubber 56 (10.79%), services 49 (9.44%) and others 51 (9.82%).

Table 1. Characteristics of survey participants.

Sample Attributes (519)	Frequency	Proportion (%)
Gender		
Male	317	61.08
Female	202	38.92
Experience		
Less than 2 years	19	3.66
2–5 years	102	19.65
5–10 years	155	29.87
Above 10 years	243	46.82
Firm age		
Less than 5 years	74	14.26
5–10 years	249	47.98
Above 10 years	196	37.76
Firm size		
Fewer than 50 employees	81	15.61
50–99 employees	314	60.50
100–149 employees	68	13.10
150 and less than 250 employees	56	10.79
Industries		
IT services	14	2.70
Food and beverages	103	19.85
Electronics/electricals	57	10.98
Textile and apparel	46	8.86
Medical and pharmaceutical	19	3.66
Building materials	99	19.08
Wood and furniture	25	4.82
Plastic and rubber	56	10.79

Service	49	9.44
Others	51	9.82

3.2. Measures

Each construct was operationalized using multi-item scales measured on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). To ensure transparency and replicability, the full wording of all measurement items, including adapted items, is reported in Appendix A (Table A1).

Sustainability orientation was measured using six items adapted from Kuckertz and Wagner [30]. One original item—“German firms should take an internationally leading role in the field of environmental protection”—was contextually adapted to the Turkish SME setting. This adaptation was necessary because the original wording reflects a macro-national ambition, whereas the present study examines firm-level strategic orientations (“Our firm should take a leading role in environmental protection within its industry”). Accordingly, the item was rephrased to capture SMEs’ proactive commitment to environmental leadership within their competitive and institutional context, rather than at a national level. Importantly, this adaptation preserved the conceptual core of the original item—proactive environmental responsibility—while aligning the level of analysis with the firm-level focus of the study. The adapted wording is explicitly reported in Appendix A (Table A1), ensuring consistency between the measurement description and the reported items.

Perceived social support was measured using three items adapted from Muñoz and Dimov [34], capturing community-level normative and cultural support for sustainability-oriented entrepreneurial behavior. Although the original scale includes four items, one item was excluded to maintain conceptual alignment with SME-level sustainability initiatives. The retained items capture stakeholder encouragement, normative expectations, and cultural support, and their full wording is reported in Appendix A (Table A1).

Sustainable entrepreneurship was measured using eight items adapted from Kimuli et al. [57], operationalizing the construct as a firm-level capability encompassing environmental management practices, operational planning, employee engagement, and financial sustainability. This operationalization aligns with the study’s conceptualization of sustainable entrepreneurship as an enabling capability rather than an outcome, and all items are reported verbatim in Appendix A (Table A1).

Sustainability behavior was measured using eight items adapted from Satar et al. [58]. Although the original scale was developed at the individual entrepreneurial level, all items were carefully reworded to reflect observable firm-level sustainability practices, including environmental initiatives, green product development, and certification efforts. The adapted wording is fully disclosed in Appendix A (Table A1), allowing readers to assess the appropriateness of the level-of-analysis shift.

3.3. Data Analysis Approach

SPSS version twenty-five and AMOS version 26 were used for data analysis. The analysis commenced with an evaluation of the psychometric properties of the measurement instruments, including assessments of reliability and construct validity through confirmatory factor analysis (CFA) [59]. CFA was conducted prior to hypothesis testing to ensure the adequacy of the measurement model, thereby separating measurement validation from structural hypothesis evaluation [60].

Hypothesis testing was conducted using Hayes’ PROCESS macro implemented in SPSS [61]. Specifically, PROCESS Model 4 was applied to assess the mediation effect of perceived social support, whereas Model 15 was utilized to examine the conditional indirect effects involving sustainable entrepreneurship. The PROCESS model numbers refer

exclusively to Hayes' predefined analytical templates and are conceptually distinct from the regression model labels reported in the result tables.

The use of the PROCESS macro was deliberately chosen over structural equation modeling (SEM) for hypothesis testing for several methodological reasons. First, PROCESS is specifically designed to estimate conditional indirect effects using bias-corrected bootstrapping, which is considered the most robust approach for testing mediation and moderated mediation effects [62]. Second, PROCESS provides direct estimation and probing of interaction effects, thereby avoiding the complex product-indicator specifications and identification challenges commonly associated with SEM-based moderation analysis [63].

While structural equation modeling enables concurrent estimation of measurement and structural relationships, it is less efficient and less transparent for testing conditional process models involving higher-order interactions. In the present study, SEM was appropriately used for measurement validation, whereas PROCESS was employed for hypothesis-driven analysis focusing on mediation and moderated mediation relationships. This analytical separation enhances estimation clarity and interpretability, particularly in applied SME research contexts where policy-relevant interpretation of conditional effects is essential.

3.4. Common Method Variance

To assess the potential impact of CMV, multiple complementary statistical procedures were employed, and the results are summarized in Table 2 for clarity and transparency. Specifically, Multiple diagnostic techniques were employed to assess common method bias, including Harman's single-factor test, a one-factor CFA, and the common latent factor (CLF) approach.

Results from Harman's single-factor analysis showed that the first unrotated factor accounted for 44.61% of the total variance, remaining below the 50% threshold and indicating that common method bias is unlikely to significantly affect the findings [54].

To further validate this finding, a one-factor CFA model was estimated, in which all items were constrained to load on a single latent construct. As reported in Table 2, the one-factor model exhibited poor fit indices (e.g., high RMSEA and low incremental fit indices), indicating that the data do not support a single-factor structure.

Finally, the CLF technique was employed by introducing a latent factor capturing CMV into the measurement model. The differences in standardized factor loadings between the models with and without the CLF were consistently below 0.20, which is within acceptable limits and indicates that CMV does not substantially bias the estimated relationships. Taken together, the convergent evidence from these analyses confirms that CMV is not a major concern in the present study.

Table 2. Summary of Common Method Variance Tests.

Test	Procedure	Key Results	Threshold/Interpretation	Conclusion
Harman's Single-Factor Test	Unrotated exploratory factor analysis with all items loading on one factor	First factor explained 44.61% of total variance	<50% indicates CMV is unlikely	CMV not a concern
One-Factor CFA Model	All items constrained to load on a single latent factor	CMIN/df = 6.992; RMSEA = 0.201; TLI = 0.602; IFI = 0.606; NFI = 0.595; CFI = 0.606	Poor model fit indicates absence of single-factor bias	CMV not a concern
Common Latent Factor (CLF)	Comparison of standardized loadings with and without CLF	Differences in loadings < 0.20	$\Delta < 0.20$ indicates negligible CMV	CMV not a concern

4. Results

4.1. Estimation of the Measurement Model

Internal consistency was evaluated using Cronbach's alpha, with coefficients ranging from 0.893 to 0.909, demonstrating high reliability across all constructs. Convergent validity was further supported by composite reliability and AVE values exceeding recommended benchmarks (see Table 3). Specifically, the CR and Cronbach's alpha values for all constructs exceeded the recommended threshold of 0.70, while AVE values ranged from 0.551 to 0.626, confirming that each construct explains more than 0.50 of the variance in its indicators [64,65].

Sustainability orientation was initially measured using six items; however, one item (SO4) was removed during the measurement model assessment due to low factor loadings. Consequently, the construct was retained with five indicators, as reflected in Table 3. Collectively, the reliability and convergent validity results demonstrate that the measurement model is robust and suitable for hypothesis testing.

Discriminant validity was confirmed using the Fornell–Larcker criterion, as the square root of each construct's AVE exceeded its correlations with other variables, as reported in Table 4 [66]. Although the correlation between sustainable entrepreneurship and sustainability behavior is relatively high ($r = 0.748$), it remains below the corresponding square roots of AVE for both constructs, providing empirical support for their discriminant validity.

Importantly, the high correlation reflects theoretical relatedness rather than conceptual redundancy. From a measurement perspective, sustainable entrepreneurship is operationalized as a firm-level capability encompassing managerial planning, environmental management practices, employee engagement, and financial control [29,35], whereas sustainability behavior captures the actual enactment of environmental and social practices and outcomes [44,57]. Thus, sustainable entrepreneurship represents a capacity or enabling mechanism, while sustainability behavior reflects realized actions and performance. This conceptual distinction is reinforced by the use of separate measurement scales, distinct item content, and the absence of multicollinearity concerns.

Model fit indices for the measurement model are presented in Table 5. The results indicate an excellent model fit ($\text{CMIN}/\text{df} = 1.396$, $\text{RMSEA} = 0.025$, $\text{TLI} = 0.986$, $\text{IFI} = 0.988$, $\text{NFI} = 0.958$, $\text{CFI} = 0.988$), indicating an excellent fit between the research model and the data collected [67,68].

Finally, Potential multicollinearity issues were examined through variance inflation factors (VIFs), all of which fell well below conservative cutoff values of 2.5, indicating no collinearity concerns [50].

Table 3. Reliability and convergent validity results.

Variables	Item Codes	SFL	SMC	α	AVE	CR
Sustainability orientation				0.893	0.626	0.893
	SO1	0.765	0.585			
	SO2	0.811	0.657			
	SO3	0.780	0.609			
	SO4 *	-	-			
	SO5	0.798	0.636			
	SO6	0.801	0.642			
Perceived social support				0.805	0.584	0.808
	PSS1	0.735	0.540			
	PSS2	0.748	0.560			
	PSS3	0.807	0.651			

Sustainable entrepreneurship		0.909	0.555	0.909
SE1	0.754	0.578		
SE2	0.773	0.598		
SE3	0.731	0.534		
SE4	0.737	0.543		
SE5	0.760	0.578		
SE6	0.740	0.548		
SE7	0.726	0.526		
SE8	0.735	0.533		
Sustainable behavior		0.907	0.551	0.908
SB1	0.758	0.575		
SB2	0.744	0.554		
SB3	0.690	0.501		
SB4	0.740	0.547		
SB5	0.707	0.500		
SB6	0.739	0.546		
SB7	0.785	0.617		
SB8	0.771	0.595		

Note: SO = sustainability orientation; PSS = perceived social support, SE = sustainable entrepreneurship; SB = sustainable behavior; α = Cronbach's alpha, CR = composite reliability; extracted; SMC = squared multiple correlation; AVE = average variance; * = items deleted due to low factor loading.

Table 4. Correlations and discriminant validity.

Construct	M	SD	SO	PSS	SE	SB	Firm Age	Firm Size
SO	4.001	0.615	(0.791)					
PSS	3.991	0.722	0.563 **	(0.764)				
SE	3.290	0.865	0.497 **	0.729 **	(0.745)			
SB	3.952	0.701	0.520 **	0.670 **	0.748 **	(0.742)		
Firm age	-	-	-0.092	0.045	-0.018	-0.020	-	
Firm size	-	-	-0.030	0.016	0.036	0.046	0.064	-

Note: SD = standard deviation; ** = correlation is significant at 0.01 level; M = mean.

Table 5. Model fit results.

Model Fit Measures	Cut-Off	Results	Remark
CMIN/df	<3	1.396 ($p < 0.001$)	Fit
RMSEA	<0.8	0.025	Fit
TLI	>0.9	0.986	Fit
IFI	>0.9	0.988	Fit
NFI	>0.9	0.958	Fit
CFI	>0.9	0.988	Fit

4.2. Hypothesis Testing: Direct and Mediation

Direct and mediation hypotheses were evaluated using PROCESS Model 4. For clarity, the PROCESS model number refers to the analytical template used for mediation analysis, whereas the labels “Model 1” and “Model 2” in Table 6 denote the sequential regression equations estimated within this framework.

As shown in Table 6, sustainability orientation exhibits a significant positive association with perceived social support ($\beta = 0.463$, $p < 0.001$) and sustainability behavior ($\beta = 0.351$, $p < 0.001$), while perceived social support is also positively linked to sustainability behavior ($\beta = 0.191$, $p < 0.001$), supporting H1–H3.

Indirect effects were assessed using bias-corrected bootstrapping with 5000 resamples, a method recognized for its robustness in mediation testing [69]. As reported in Table 6, sustainability orientation exerted a statistically significant overall effect on sustainable behavior ($\beta = 0.439$, $t = 15.208$, $p < 0.001$). When perceived social support was incorporated into the model as a mediating mechanism, the indirect pathway remained significant ($\beta = 0.088$, 95% CI [0.054, 0.125]), indicating that approximately 20.05% of the total effect operates through this mediating process. This pattern indicates partial mediation, thereby supporting H4.

Table 6. Direct and mediating effects.

Independent Construct	Response Construct	Estimates (β)	Std. Error	t-Values	p-Values	95% CI	
						Lower	Upper
Model 1							
	Intercept	1.874	0.132	14.162	***	[1.614, 2.134]	
SO	PSS	0.463	0.038	12.094	***	[0.387, 0.534]	
R ² = 0.190							
Model 2							
	Intercept	1.619	0.111	14.562	***	[1.401, 1.837]	
SO	SB	0.351	0.031	11.293	***	[0.290, 0.412]	
PSS	SB	0.191	0.029	6.516	***	[0.133, 0.248]	
R ² = 0.317							
The indirect impact of SO on SB via PSS							
SO → PSS → SB		0.088	0.018			[0.054, 0.125]	

Note: SO = Sustainability orientation, PSS = Perceived social support, SB = Sustainable behavior, CI = confidence interval, *** $p < 0.001$.

4.3. Testing Hypothesis: Moderation Effects

The moderation hypotheses were tested using Hayes' PROCESS macro (Model 15). For clarity, the PROCESS model number refers to the analytical template used to estimate moderation and conditional indirect effects, whereas the labels "Model 1" and "Model 2" in Table 7 denote the regression equations estimated within this framework. To minimize multicollinearity, all predictor variables were mean-centered prior to analysis, and firm age and size were included as control variables.

As shown in Table 7, sustainability orientation demonstrates a significant positive association with sustainability behavior ($\beta = 0.265$, $t = 8.556$, $p < 0.001$). This effect varies depending on the level of sustainable entrepreneurship, as evidenced by the significant interaction between sustainability orientation and sustainable entrepreneurship (SO $\times$ SE: $\beta = 0.132$, $t = 4.955$, $p < 0.001$). To aid interpretation of this interaction, simple slope analyses were performed at one standard deviation above and below the mean value of sustainable entrepreneurship. Figure 2 illustrates this interaction, showing that the association between sustainability orientation and sustainability behavior is stronger for firms with high sustainable entrepreneurship ($\beta = 0.404$, $t = 10.235$, $p < 0.001$) than for firms with low sustainable entrepreneurship ($\beta = 0.123$, $t = 2.743$, $p < 0.01$). These findings provide support for H5.

Similarly, Table 7 shows that perceived social support is positively related to sustainability behavior ($\beta = 0.146$, $t = 5.192$, $p < 0.001$), and this association is moderated by sustainable entrepreneurship (PSS $\times$ SE: $\beta = 0.073$, $t = 2.868$, $p < 0.001$). The simple slope analysis indicates that the relationship between perceived social support and sustainability behavior is significant at high levels of sustainable entrepreneurship ($\beta = 0.222$, $t = 5.613$, $p < 0.001$), but non-significant at low levels ($\beta = 0.066$, $t = 1.699$, $p > 0.05$). Figure 3 depicts

this interaction pattern. Together, these results indicate that sustainable entrepreneurship conditions the strength of both relationships, supporting H6.

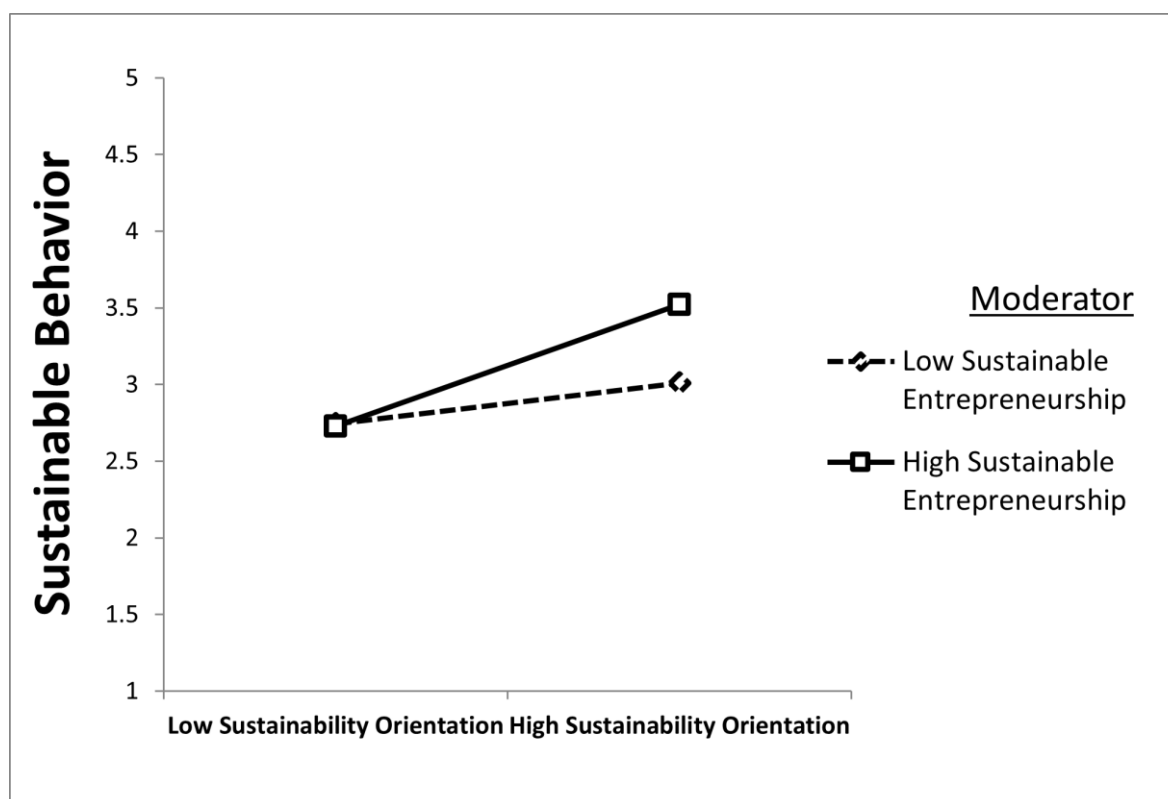


Figure 2. Sustainability orientation-sustainable behavior relationship: Sustainable entrepreneurship as moderator.

Table 7. Moderating effects.

Relationship	β (Estimate)	S.E.	t-Values	p-Values	95% CI	
					Lower	Upper
Model 1: Perceived Social Support (PSS)						
Intercept	0.000	0.031	0.000	ns	−0.061	0.061
SO	0.463	0.038	12.094	**	0.388	0.538
Firm age	0.079	0.063	1.251	ns	−0.045	0.202
Firm size	0.009	0.018	0.485	ns	−0.026	0.043
R ² = 0.193 ***						
Model 2: Sustainability Behavior (SB)						
Intercept	3.496	0.22	157.061	***	3.453	3.541
SO	0.265	0.031	8.556	***	0.204	0.350
PSS	0.146	0.028	5.192	***	0.091	0.202
SE	0.122	0.024	5.135	***	0.080	0.184
SO × SE	0.132	0.027	4.955	***	0.075	0.168
PSS × SE	0.073	0.025	2.868	**	0.023	0.123
Firm age	0.028	0.043	0.651	ns	−0.057	0.113
Firm size	0.008	0.012	0.062	ns	−0.023	0.025
R ² = 0.642 ***						
The conditional direct effect of SO on SB at different levels of SE						
−1SD (Low)	0.123	0.045	2.743	**	0.035	0.211
+1SD (High)	0.404	0.039	10.235	***	0.327	0.482
The conditional direct effect of PSS on SB at different levels of SE						

-1SD (Low)	0.066	0.039	1.699	ns	-0.010	0.142
+1SD (High)	0.222	0.040	5.613	***	0.144	0.299
Index Of Moderation Mediation						
	0.034	0.014	-	-	0.007	0.065

Note: SO = Sustainability orientation, PSS = Perceived social support, SB = Sustainable behavior, SE = Sustainable entrepreneurship, CI = confidence interval, ns = non-significant; ** $p < 0.01$; *** $p < 0.001$.

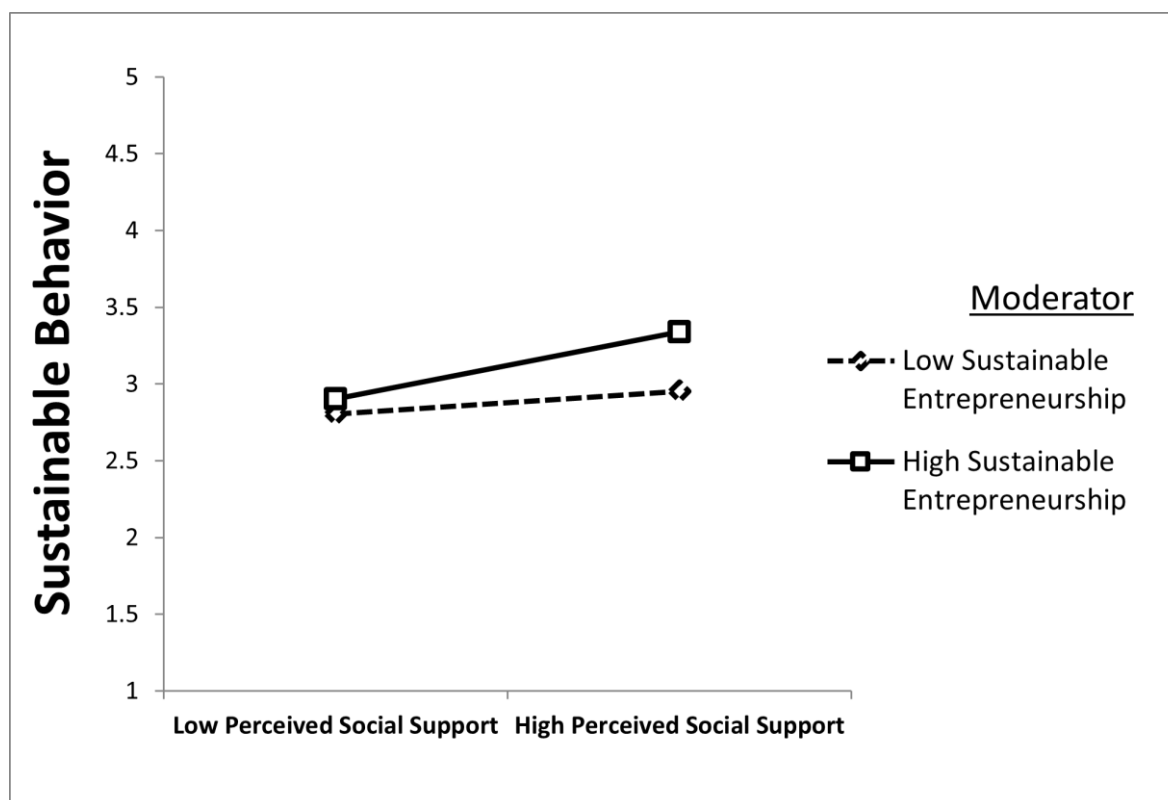


Figure 3. Perceived social support-sustainable behavior relationship: Sustainable entrepreneurship as moderator.

5. Discussion and Implications

5.1. Discussion of Key Findings

Overall, the results offer strong empirical support for a positive linkage between sustainability orientation and sustainability behavior among SMEs. These findings highlight the critical role of deeply embedded environmental and social values in guiding how entrepreneurial firms operationalize sustainability in daily activities [9,30]. Rather than implying a causal effect, the results indicate that firms with stronger sustainability orientation are more likely to engage in sustainability-related behaviors. This pattern is consistent with SDT, which suggests that behaviors grounded in autonomous and internalized motivation tend to be more stable and value-consistent over time [21,70]. From a TPB perspective, sustainability orientation appears to strengthen favorable attitudes and perceived behavioral control, thereby facilitating the translation of sustainability intentions into practice [25,71]. Within emerging economy settings, including Turkey, where institutional and resource constraints are pronounced, this association highlights the role of sustainability orientation as a cognitive and strategic anchor rather than a symbolic posture [4,72].

Beyond the direct association, this study clarifies the mechanism through which sustainability orientation is linked to sustainability behavior, with perceived social support

emerging as a partial explanatory mechanism accounting for a meaningful portion of the observed effect, approximately 20% of the total effect, suggesting that stakeholder endorsement, legitimacy, and encouragement constitute a meaningful but not exhaustive pathway. Firms with strong sustainability orientation appear to cultivate trust and relational legitimacy with stakeholders, which in turn reinforces sustainability-related engagement [37,38]. Consistent with SDT, such social support satisfies needs for relatedness and competence, enhancing motivation, while TPB suggests that it strengthens perceived behavioral control and subjective norms [25,36,40]. Importantly, the partial nature of the mediation implies that a substantial proportion of the sustainability orientation–behavior relationship operates through additional, unobserved mechanisms.

The remaining unexplained portion of the effect (approximately 80%) likely reflects other organizational and managerial processes not explicitly modeled in this study. Potential explanatory mechanisms include organizational culture supportive of sustainability, leadership commitment, managerial skills related to implementation, learning routines, and firm-specific capabilities for integrating sustainability into operations. Prior research suggests that sustainability-oriented cultures, responsible leadership, and structured sustainability routines can independently drive sustainability behavior in SMEs, particularly in contexts characterized by institutional uncertainty [7,33,41,73]. By acknowledging these alternative pathways, the findings reinforce the view that sustainability behavior is a multidimensional outcome shaped by a constellation of strategic, cultural, and capability-based factors rather than a single mediating mechanism.

The moderation results further refine the interpretation by identifying sustainable entrepreneurship as a boundary condition that strengthens the observed relationships. Firms with higher sustainable entrepreneurial capability exhibit stronger associations between sustainability orientation and sustainability behavior, as well as between perceived social support and sustainability behavior. This pattern should be interpreted as an amplifying effect rather than a deterministic one, indicating that entrepreneurial capabilities enhance firms' ability to act on sustainability values and stakeholder support. From an SDT perspective, sustainable entrepreneurship enhances perceived competence, while TPB highlights its role in strengthening perceived behavioral control [28]. Recent studies similarly emphasize that entrepreneurial capabilities related to innovation, opportunity recognition, and resource orchestration intensify sustainability outcomes in SMEs [35,43]. Taken together, the findings suggest that sustainability behavior emerges from the interaction of values, social reinforcement, and entrepreneurial capability, with effect sizes indicating meaningful but bounded influences rather than universal or automatic outcomes.

5.2. Theoretical Implications

This research contributes theoretically by advancing understanding of how motivational, social, and entrepreneurial mechanisms jointly influence sustainability-related behavior in SMEs. First, the findings advance understanding of sustainability orientation as a core strategic and psychological capability that shapes sustainability behavior, strengthening prior assumptions that internalized environmental and social values are central drivers of action in entrepreneurial contexts [9,30]. By empirically demonstrating that SO directly predicts sustainability behavior, the study reinforces the argument that sustainability engagement is not merely a response to institutional pressure but emerges from deeply rooted motivations and cognitive orientations within entrepreneurial firms. This contributes to the broader sustainability entrepreneurship literature, which has called for more nuanced theorizing on how value-based orientations translate into behavior, particularly in SMEs operating under resource and institutional constraints [4,72].

Second, by integrating SDT and the TPB, the study provides a theoretically grounded explanation of how and why sustainability-oriented firms convert their values into

sustainable behavior. The mediation results illuminate perceived social support as a key psychological and social mechanism that fulfills SDT's needs for relatedness and competence [21] and shapes TPB's perceived behavioral control and subjective norms [25]. This responds to recent calls for theory-driven models that unpack the psychological processes underlying sustainability decisions in entrepreneurial settings [36,40]. By demonstrating that social reinforcement is essential in enabling firms to transform internalized sustainability motivation into action, the study enriches theoretical discourse by clarifying that sustainability orientation alone is insufficient—relational and normative support from stakeholders is equally critical.

Third, the study makes a significant contribution by establishing sustainable entrepreneurship as a boundary condition that amplifies both direct and indirect pathways leading to sustainability behavior. While SE has been conceptualized as a capability that integrates economic, environmental, and social goals [35,74,75], empirical evidence on its moderating role has been limited. This study demonstrates that SE strengthens the influence of sustainability orientation and social support on sustainability behavior, thereby positioning SE as a dynamic capability that enhances perceived behavioral control [28] and entrepreneurial competence in sustainability contexts. By showing that the effect of sustainability orientation is significantly stronger in firms with higher SE capability, the study extends theoretical frameworks linking entrepreneurial capabilities, opportunity recognition, and sustainability performance [33]. This contributes to emerging theorization suggesting that sustainability in SMEs arises from the interplay of internal motivation, relational legitimacy, and entrepreneurial competence.

Finally, this study makes a contextual theoretical contribution by examining sustainability processes within Turkish entrepreneurial SMEs, a setting that remains underrepresented in sustainability and entrepreneurship research. By situating the empirical model in an emerging-market context, the study extends SDT and TPB beyond Western institutional environments, demonstrating their applicability in regions where institutional support for sustainability may be uneven [7]. This contextual extension is valuable for the sustainability and entrepreneurship themes, as it highlights how innovation and sustainability dynamics unfold in SMEs embedded in rapidly evolving but institutionally constrained ecosystems. Together, these theoretical implications offer a more integrated and context-sensitive understanding of how sustainability orientation interacts with psychological, social, and entrepreneurial mechanisms to shape sustainability behavior in entrepreneurial firms.

5.3. Practical Implications

From a practical standpoint, the findings generate valuable insights for entrepreneurs, SME managers, policymakers, and ecosystem stakeholders seeking to promote sustainable business practices. First, the pronounced effect of sustainability orientation emphasizes the importance of fostering sustainability-driven values and strategic mindsets among entrepreneurial decision-makers. SME leaders should invest in internal training, leadership development, and value-driven strategic planning that embeds sustainability into the firm's identity and long-term decision-making. Because sustainability orientation acts as a motivational compass grounded in internalized values [21,30], fostering such orientations can help firms maintain sustainability engagement even when financial, market, or regulatory pressures fluctuate. Entrepreneurial support agencies, incubators, and SME development centers can play a strategic role by integrating sustainability values into mentoring programs and entrepreneurial education.

Second, the mediating influence of perceived social support suggests that sustainability transformations within SMEs are embedded in broader social and relational contexts rather than occurring independently. Entrepreneurs rely heavily on encouragement,

legitimacy, and resources from stakeholders—including customers, employees, suppliers, local communities, and public institutions—to translate sustainability intentions into concrete practices. This suggests that policymakers and ecosystem actors should strengthen multi-stakeholder collaboration platforms, create sustainability-oriented business networks, and offer incentives that enhance SMEs' perceptions of social and institutional support. For SMEs themselves, establishing better communication channels with customers, demonstrating transparency in sustainability activities, and strengthening community engagement can enhance perceived social support and reduce uncertainty around sustainability investments [7,37]. Such relational and normative reinforcement is particularly crucial in emerging markets, where institutional guidance may be inconsistent and resource constraints more pronounced.

Third, the moderating role of sustainable entrepreneurship indicates that entrepreneurial capabilities—such as opportunity recognition, innovation, and resource recombination—significantly strengthen the pathway from sustainability orientation to sustainability behavior. This offers practical direction for capacity-building programs: SMEs should develop entrepreneurial skills that help them transform sustainability values and stakeholder encouragement into innovative products, services, and processes. Entrepreneurial training programs, accelerators, and chambers of commerce can provide specialized modules on sustainable innovation, circular business models, and sustainability-oriented opportunity recognition [33,35]. Likewise, firms with limited sustainable entrepreneurship capabilities may require targeted support to build confidence and competence in implementing sustainability initiatives, reflecting TPB's emphasis on perceived behavioral control [25]. This suggests that interventions aimed at enhancing entrepreneurial competence will have compounding benefits—strengthening both direct and indirect sustainability pathways.

Finally, the study offers context-specific implications for emerging-market policy systems, particularly within Turkey. Given the resource and institutional constraints commonly faced by SMEs, targeted government policies—such as tax incentives for sustainable innovation, streamlined access to green financing, and recognition programs for sustainability-oriented SMEs—can enhance both perceived social support and sustainable entrepreneurial capability. Policymakers should also strengthen the regulatory environment surrounding environmental standards and provide guidance that reduces uncertainty for firms adopting sustainability practices. By recognizing that sustainability in SMEs arises from the interplay of internalized values, social reinforcement, and entrepreneurial capability, ecosystem actors can design more holistic and effective interventions. Collectively, these insights support the importance of advancing innovation and sustainability in SMEs by offering actionable pathways that help entrepreneurial firms turn sustainability aspirations into measurable and meaningful behavioral outcomes.

5.4. Limitations

Although this study offers valuable insights into how sustainability orientation shapes the sustainability behavior of entrepreneurial SMEs, several limitations should be acknowledged. First, the cross-sectional research design limits causal inference and does not capture how the examined relationships may evolve over time. Second, the empirical focus on Turkish SMEs—particularly those operating under ISO 14001 certification—enhances contextual relevance but restricts the transferability of the findings to non-certified firms, other sectors, or different institutional environments. Third, despite the significant roles of perceived social support and sustainable entrepreneurship, a substantial portion of the direct effect of sustainability orientation on sustainability behavior remains unexplained, indicating that additional organizational or psychological mechanisms may be at

play. Finally, reliance on self-reported data may introduce common method bias, even though procedural and statistical remedies were applied.

5.5. Future Research Directions

Building on these limitations, several promising avenues for future research emerge. Longitudinal studies are encouraged to examine how the mediating role of perceived social support and the moderating influence of sustainable entrepreneurship change as firms mature in their sustainability journey or institutionalize sustainability practices. Comparative studies across certified and non-certified SMEs, as well as across emerging and developed economies, would help assess the generalizability of the proposed model under different regulatory and cultural conditions. Future research could also integrate additional mediating mechanisms—such as sustainability-oriented organizational culture, leadership capabilities, managerial cognition, or dynamic learning routines—to capture more fully the process through which sustainability orientation translates into sustained behavioral outcomes. Moreover, the use of multi-source data, objective sustainability indicators, or longitudinal performance measures would further strengthen robustness and inference.

6. Conclusions

This study advances our understanding of sustainability-driven behavior in entrepreneurial SMEs by developing and empirically testing a conditional process model that integrates sustainability orientation, perceived social support, and sustainable entrepreneurship. Drawing on SDT and the TPB, the findings demonstrate that sustainability orientation serves as a foundational motivational resource that shapes firms' sustainability behavior both directly and indirectly through social reinforcement mechanisms. By identifying perceived social support as a partial mediator and sustainable entrepreneurship as a key boundary condition, the study moves beyond value-based explanations and highlights how motivational, relational, and capability-based mechanisms interact to translate sustainability commitments into observable organizational behavior. These insights contribute to the sustainability and entrepreneurship literature by clarifying why sustainability orientation alone is insufficient unless supported by stakeholder legitimacy and entrepreneurial capacity.

From a practical perspective, the study underscores that SMEs seeking to strengthen sustainability behavior should not only cultivate sustainability-oriented values but also actively build supportive stakeholder relationships and invest in entrepreneurial capabilities that enable implementation. Policymakers and support agencies can enhance SME sustainability outcomes by fostering community-level social support systems and providing training and incentives that strengthen sustainable entrepreneurship capabilities. Overall, this research offers a coherent and integrative framework that explains how sustainability orientation is transformed into action within entrepreneurial firms, providing a robust foundation for future research on sustainability transitions in SMEs across diverse institutional contexts.

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Conflicts of Interest: The authors report no conflicts of interest.

Appendix A

Table A1. Measurement Items.

Construct	Code	Item	Source
Sustainability Orientation (SO)	SO1	Our firm should take a leading role in environmental protection within its industry.	Kuckertz & Wagner [30]
	SO2	The environmental performance of a company will in future be considered more and more by financial institutions.	
	SO3	I think that environmental problems are one of the biggest challenges for our society.	
	SO4	I think that entrepreneurs and companies need to take on a larger social responsibility. <i>(Deleted during analysis due to low loadings)</i>	
	SO5	Sustainability is an important criterion for my personal decision-making.	
	SO6	The firm believes sustainable business practices can lead to competitive advantages.	
Perceived Social Support (PSS)	PSS1	The social norms and culture of your community encourage sustainable behaviors.	Muñoz & Dimov [34]
	PSS2	The social norms and culture of your community emphasize the responsibility that the firm has in contributing to address community issues.	
	PSS3	The social norms and culture of your community encourage young people to be independent and start their own businesses.	
Sustainable Entrepreneurship (SE)	SE1	Review and update plans to reduce and to recycle wastes.	Kimuli et al. [57]
	SE2	Develop a management plan to support the production of quality products/services.	
	SE3	Routinely undertake sample analysis to improve the quality of products/services.	
	SE4	Write environmental and sustainability policy.	
	SE5	Give credit to someone who goes out of their way to improve the performance of our business.	
	SE6	Give constructive feedback to employees about their performance.	
	SE7	Monitor the profitability of the products/services.	
	SE8	Have a cash flow forecast for both this year and next year.	
Sustainability Behavior (SB)	SB1	I feel energized by engaging in tasks that have the potential to benefit others.	Satar et al. [58]
	SB2	I am driven to initiate business activities that can positively impact others.	
	SB3	I prefer tasks that enable me to create a positive impact on others.	
	SB4	I perform my best when working on tasks that contribute to the well-being of others.	

SB5	It is important for me to have opportunities to use my abilities for the benefit of others.
SB6	I am actively involved in developing a green business plan.
SB7	I have initiated the development of green products or services or taken steps to improve the environmental impact of my existing products.
SB8	I have sought to obtain green business certification.

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