

## *Original Paper*

# How Entrepreneurial Involvement Affects Entrepreneurial Quality? Mediators of Sustainable Entrepreneurial Behavior and Moderators of Entrepreneurial Positive Outcome Framework

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### ***Abstract***

*This study examines the effects of entrepreneurial involvement on entrepreneurial quality by integrating the mediating-moderating effect of sustainable entrepreneurial behavior and the entrepreneurial positive outcome. The results indicate that: (1) Entrepreneurial involvement—whether through entrepreneurial scenario involvement or entrepreneurial industry involvement—significantly influences the entrepreneurial quality and success of start-ups. (2) Further, sustainable entrepreneurial behavior serves as a bridge, mediating the relationship between entrepreneurial involvement and entrepreneurial quality. (3) Entrepreneurial positive outcome framework acts as a key moderating factor, enhancing the effect of entrepreneurial involvement and its dimensions on entrepreneurial quality. In light of the growing trend of green entrepreneurship, these findings suggest that start-ups should harness the driving force of entrepreneurial involvement, optimize the utilization of internal and external entrepreneurial resources, and implement robust incentive mechanisms for entrepreneurial teams to promote high-quality development.*

### ***Keywords***

*Entrepreneurial scenario involvement, Entrepreneurial industry involvement, Entrepreneurial quality, Sustainable entrepreneurial behavior, Entrepreneurial positive outcome framework*

## 1. Introduction

High-quality development stands as the cornerstone of China's comprehensive strategy to build a modern socialist country. To achieve this, it is imperative to establish a cohesive innovation ecosystem with strong institutional mechanisms while cultivating dynamic entrepreneurial platforms. These drivers are critical for accelerating sustainable economic and fostering long-term societal progress. In recent years, China's start-ups have strategically aligned with sustainable development principles, directing their efforts toward innovation, industrial upgrading, and enhancing new productivity. In a rapidly evolving business environment, addressing resource constraints and leveraging entrepreneurial involvement to improve the quality of start-ups—often characterized as “newborn, small, and weak”—have become crucial for ensuring sustainable development. Earlier research demonstrates that entrepreneurial involvement, as a psycho-cognitive phenomenon, plays a significant role in motivating and enhancing the entrepreneurial performance of the new generation of entrepreneurs. On the one hand, entrepreneurial involvement reflects the emotional state of entrepreneurs—a high degree of involvement results in greater energy and resource investment, reinforces subjective norms, and enhances entrepreneurial quality (Lastovicka, 1979; Cardon, 2008). On the other hand, the infectious nature of entrepreneurial involvement within the industry fosters knowledge and technology-driven teams, enhances strategic decision-making, and aids innovation-driven enterprises in mitigating internal and external technological and environmental risks (Wan et al., 2021), ultimately leading to sustained entrepreneurial growth. Therefore, in the context of globalization and rapid technological advancements, it is essential to examine the economic impact of entrepreneurial involvement on entrepreneurship quality. This exploration will contribute to the creation of an entrepreneurial environment that balances economic, social, and environmental sustainability, thereby supporting the high-quality development of start-ups through the establishment of robust innovation platforms.

Moreover, sustainable entrepreneurial behavior is a market-oriented approach that emphasizes innovation and individuality while simultaneously balancing economic, social, and environmental benefits (Aguirre, 2024). This behavior is crucial for adapting economic growth models within start-ups. As eco-civilized society continues to evolve, the traditional focus on profit maximization has increasingly shifted towards more innovative business models. These models enhance environmental responsibility and create opportunities for start-ups to explore new markets (Quinn, 1971). Elkington (1997) introduced the “triple bottom line” principle, emphasizing that entrepreneurs should uphold their economic, social, and environmental responsibilities to achieve sustainable development in today's dynamic global business environment. For instance, Jia et al. (2021) show that CEOs with diverse career experiences positively influence sustainable entrepreneurial behavior, offering empirical evidence at the individual entrepreneur level. Tao et al. (2022) further explored the mechanisms driving sustainable entrepreneurial behavior by examining platform transformation enterprises. Their findings show how entrepreneurs shift their focus to balance economic, social, and ecological factors to ensure sustainability as the external

environment changes. These findings suggest that individual factors, such as entrepreneurial involvement, are crucial in driving sustainable entrepreneurial behavior. Triadic Reciprocal Determinism highlights the dynamic interplay among individual cognition, environment, and behavior. The intensity and patterns of these interactions evolve in response to these three factors (Bandura, 1986), providing a novel perspective for studying sustainable entrepreneurial behavior. This study focuses on the entrepreneurial context and industry, examining the driving forces behind sustainable entrepreneurial practices through the lens of entrepreneurial cognition. As an individual's cognitive activity, entrepreneurial involvement reflects the pursuit of quality. This study aims to verify the mediating role of sustainable entrepreneurial behavior in the relationship between entrepreneurial involvement and entrepreneurial quality.

In addition, the entrepreneurial positive outcome framework is an effective tool for managing entrepreneurial teams. A leader's framing effect influences employees' cognition and psychology, driving motivation and engagement (Guo & Zhu, 2024). Research on positive organizational behavior suggests that workplace optimism positively impacts job performance and enhances teamwork quality. Therefore, how start-ups can leverage this framework to foster future growth, enhance innovation, and achieve meaningful development has become a key topic in academic circles. Based on the dual-driven perspective of innovation and entrepreneurship and sustainable development, this study categorizes entrepreneurial involvement into entrepreneurial scenario involvement and entrepreneurial industry involvement based on the involvement theory. It examines the moderating effect of the entrepreneurial positive outcome framework on the relationship between entrepreneurial involvement and entrepreneurial quality in start-ups, proposing a novel entrepreneurial management model with the goal of high-quality development.

In summary, how does entrepreneurial involvement enhance the quality of entrepreneurship in start-ups? What are the transmission mechanisms and their influencing factors? To address these key questions, this study examines the relationships among entrepreneurial involvement, entrepreneurial quality, sustainable entrepreneurial behavior, and entrepreneurial positive outcome framework. The goal is to provide new perspectives and practical insights into performance growth and high-quality management in start-ups within the context of sustainable development. This study provides a theoretical foundation for strategic decision-making and entrepreneurial management in a complex and dynamic environment and ultimately promotes the sustainable development of enterprises.

The rest of the paper is structured as follows. Section 2 provides the theoretical framework and hypotheses development. Section 3 shows the research methodology. Section 4 describes the empirical testing and results, and Section 5 presents a discussion. Section 6 defines the conclusion, limitations, and future research directions.

## 2. Theoretical Framework and Hypotheses Development

### 2.1 *Entrepreneurial Involvement and Entrepreneurial Quality*

Involvement refers to an individual's interest and level of commitment, reflecting their emotional state toward existence (Wan et al., 2021). Entrepreneurial involvement represents the degree of investment and emotional engagement an entrepreneur has in entrepreneurial behavior. It has a dual nature, which includes involvement in entrepreneurial scenarios and proprietary technology industry (Barrett et al., 2021; Delgado-García et al., 2012).

Unlike operators of mature firms, entrepreneurs navigate more dynamic, uncertain, and variable environments. For science and technology entrepreneurs, entrepreneurial industry involvement captures their emotional state and identification with the underlying research technology they are working on. In contrast, entrepreneurial scenario involvement reflects their emotional attachment and identification with the specific business they are pursuing. Entrepreneurial activities often originate from patented technology or unique ideas, requiring a high degree of involvement in the industry, a thorough understanding of industry development prospects, and the ability to identify key resources. This enables entrepreneurs to assess the application potential of patented technology and stay informed about industry advancements (Liao & Welsch, 2003). From the perspective of involvement theory, as entrepreneurs deepen their involvement in both the entrepreneurial industry and business, they actively process and interpret relevant information. This enhanced information-processing ability helps them to make more informed decisions (Petty & Cacioppo, 1979). Additionally, a high degree of involvement can stimulate entrepreneurs' intrinsic motivation, encouraging them to fully commit to their work, thereby enhancing job satisfaction and overall performance. This, in turn, lays a solid foundation for the sustainable improvement of entrepreneurial quality (Brown, 1996; Van Tuin et al., 2021). Based on the literature and the above arguments, the following hypotheses are proposed.

Hypothesis 1: Entrepreneurial involvement has a positive effect on entrepreneurial quality.

Hypothesis 1a: Entrepreneurial scenario involvement has a positive effect on entrepreneurial quality.

Hypothesis 1b: Entrepreneurial industry involvement has a positive effect on entrepreneurial quality.

### 2.2 *Entrepreneurial Involvement and Sustainable Entrepreneurial Behavior*

Entrepreneurial involvement plays a pivotal role in driving sustainable entrepreneurial behavior. From the perspective of entrepreneurial industry involvement, deeper involvement enables entrepreneurs to identify more opportunities for sustainable entrepreneurial behavior. Sustainable entrepreneurial behavior inherently involves a cyclical process of opportunity identification, evaluation, and exploitation to innovate products, production methods, and services continuously. This process requires sustained entrepreneurial engagement and the ability to extract valuable insights from cutting-edge information (Patzelt & Shepherd, 2011). Muñoz (2018) demonstrated that entrepreneurial knowledge—including industry cognition, natural environment awareness, and altruism—affects the identification of sustainable opportunities. Highly involved entrepreneurs are more likely to consider the social and

environmental impacts of their activities and adopt sustainable strategies (Di Vaio et al., 2022; Peng & Walid, 2022). From the perspective of entrepreneurial scenario involvement, high involvement may encourage entrepreneurs to focus on the long-term development and social responsibility of the enterprises. Kuckertz and Wagner (2010) suggested that in an entrepreneurial context, sustainable attitudes and beliefs are strongly linked to the intention of starting a new business. This implies that deeply involved entrepreneurs are more likely to prioritize long-term objectives and sustainability strategies. Their heightened commitment to environmental protection and social responsibility drives sustainable decision-making throughout the business creation process. Therefore, the level of entrepreneurs' involvement can motivate them to adopt more sustainable entrepreneurial behavior and promote the sustainable development of enterprises. Furthermore, entrepreneurs who adopt sustainable entrepreneurial behavior can enhance their enterprises' social image and reputation, attracting more resources and partners. This, in turn, reinforces their enthusiasm and commitment to entrepreneurial activities, creating a positive cycle of sustainable development. Based on the literature and the above arguments, the following hypotheses are proposed.

Hypothesis 2: Entrepreneurial involvement has a positive effect on sustainable entrepreneurial behavior.

Hypothesis 2a: Entrepreneurial scenario involvement has a positive effect on sustainable entrepreneurial behavior.

Hypothesis 2b: Entrepreneurial industry involvement has a positive effect on sustainable entrepreneurial behavior.

### *2.3 Sustainable Entrepreneurial Behavior and Entrepreneurial Quality*

Venkataraman (2004) and Ma and Todorovic (2013) argued that high-quality entrepreneurship improves societal welfare and it is a defining feature of technology-based ventures. Entrepreneurship quality is influenced by both innovation and the entrepreneurship environment. It is related to the entrepreneurial qualities, opportunities they can seize, and resources they can mobilize. From the perspective of innovation and entrepreneurship environment, traditional enterprises must urgently transform into platforms that meet the needs of multiple stakeholders while maintaining competitive advantages, thereby achieving sustainable entrepreneurship within the framework of dual-creation and sustainable development (Woodside et al., 2016). From the perspective of entrepreneurial quality, the rise of green entrepreneurship is closely tied to the entrepreneurs' ecological and environmental values. This reflects their awareness of social responsibility and commitment to sustainable development, which, in turn, enhances their social reputation (Kechun et al., 2024). In terms of opportunities and resources, start-ups face a higher failure rate than mature enterprises due to the "newborn disadvantage" of being small and resource-constrained. Their limited social recognition makes it difficult to secure resources consistently, increasing their risk of entrepreneurial failure. However, the growing demand for green consumption encourages enterprises to seek government policy support. Enterprises committed to green innovation and sustainable development benefit from various forms of government assistance, such as prioritized

land allocation, financial subsidies, and access to green production technologies. Furthermore, entrepreneurial ethics and the institutional environment are strongly interconnected, and their interaction plays a crucial role in driving the development of green entrepreneurial opportunities (Li et al., 2024; Schindehutte & Morris, 2009). Based on the literature and the above arguments, the following hypothesis is proposed.

Hypothesis 3: Sustainable entrepreneurial behavior has a positive effect on entrepreneurial quality.

#### *2.4 Mediating Role of Sustainable Entrepreneurial Behavior*

Venkataraman (2004) argued that entrepreneurship quality depends on its ability to enhance societal welfare. Sustainable entrepreneurial behavior can mediate the relationship between entrepreneurial involvement and entrepreneurial quality (Schönwälder & Weber, 2023). There is a transmission mechanism linking entrepreneurial involvement and entrepreneurial quality, in which sustainable entrepreneurial behavior may play an important role. The growth of entrepreneurial enterprises relies on continuous interaction with their surrounding environment, requiring adaptation to environmental changes. By integrating internal decision-making precision with external opportunities, entrepreneurs can engage in sustainable entrepreneurial behavior through adaptive matching and efficient resource integration, ultimately enhancing entrepreneurial quality. Following the cognition-behavior-result framework, entrepreneurs must align internal decision-making processes with external environmental changes to achieve high-quality outcomes (Gupta et al., 2023). The emergence of sustainable entrepreneurial behavior strengthens entrepreneurs' commitment to their ventures, driving significant improvements in entrepreneurial quality. Based on the literature and the above arguments, the following hypotheses are proposed.

Hypothesis 4: Sustainable entrepreneurial behavior mediates the relationship between entrepreneurial involvement and entrepreneurial quality.

Hypothesis 4a: Sustainable entrepreneurial behavior mediates the relationship between entrepreneurial scenario involvement and entrepreneurial quality.

Hypothesis 4b: Sustainable entrepreneurial behavior mediates the relationship between entrepreneurial industry involvement and entrepreneurial quality.

#### *2.5 Moderating Effects of Entrepreneurial Positive Outcome Framework*

The framing effect operates as a psychological process. Framing theory suggests that a topic can be interpreted from multiple perspectives, implying different value orientations (Chong & Druckman, 2007). According to the explanation theory, individuals with a higher level of explanation process information and make decisions from a broader, longer-term perspective, often considering other viewpoints (Dweck et al., 1995). In contrast, those with a lower level of explanation focus more narrowly on immediate concerns, relying on shorter timeframes and self-centered viewpoints. Research indicates that positive information frames correspond to higher levels of explanation, whereas negative information frames are associated with lower levels of explanation (Greenaway & Fielding, 2020; Kuvaas & Selart, 2004).

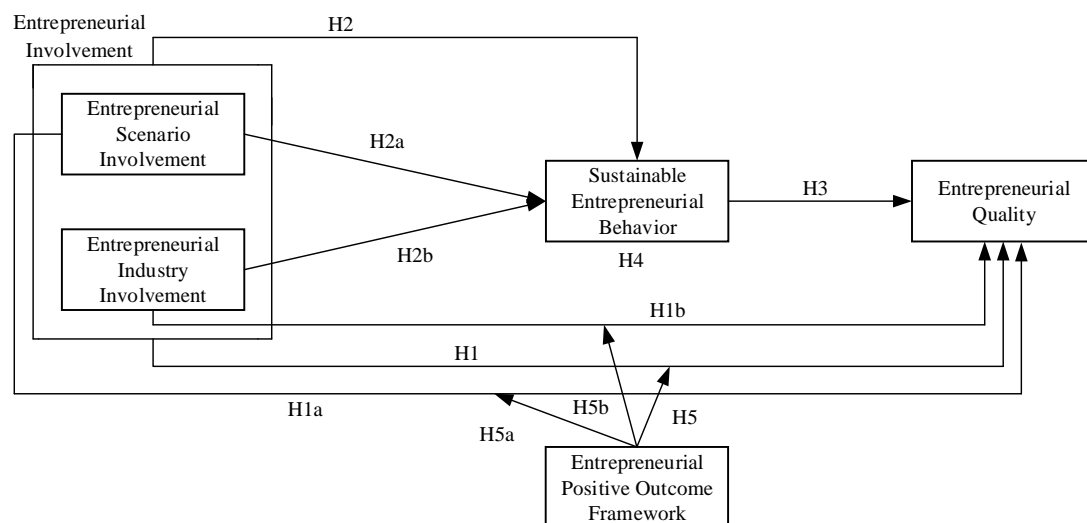
Positive frames encourage broader, longer-term perspectives, whereas negative frames promote shorter-term and egocentric perspectives. The Entrepreneurial Positive Outcome Framework emphasizes the desirability of the central goal and outcome, shaping motivation and decision-making (Guo & Zhu, 2024). This framework influences various entrepreneurship aspects, including the motivation and confidence derived from entrepreneurial involvement, the ability to recognize opportunities and innovate through participation in entrepreneurial scenarios, and the resources and opportunities provided by industry involvement (Elnadi & Gheith, 2021; Newman et al., 2019). Furthermore, entrepreneurs driven by the entrepreneurial positive outcome framework are more likely to focus on the quality and sustainability of their projects, ultimately improving competitiveness in the market (Alvarez-Risco et al., 2021). Based on the literature and the above arguments, the following hypotheses are proposed.

Hypothesis 5: Entrepreneurial positive outcome framework moderates the relationship between entrepreneurial involvement and entrepreneurial quality.

Hypothesis 5a: Entrepreneurial positive outcome framework moderates the relationship between entrepreneurial scenario involvement and entrepreneurial quality.

Hypothesis 5b: Entrepreneurial positive outcome framework moderates the relationship between entrepreneurial industry involvement and entrepreneurial quality.

Figure 1 illustrates the theoretical model and hypotheses guiding the study, which examines the impact of entrepreneurial involvement on entrepreneurial quality, with a focus on sustainable entrepreneurial behavior as a mediator and the moderating role of the entrepreneurial positive outcome framework.



**Figure 1. Theoretical Model**

### 3. Research Methodology

#### 3.1 Research Sample

Sustainable entrepreneurial behavior can manifest in both established and new enterprises, with notable differences in motivations and practices at various stages of development. Based on Zahra's (1999) definition of start-ups, this study categorized all enterprises within eight years of establishment as start-ups. The subjects of this research are the founders of these start-ups.

This study began with a pre-survey conducted from February to March 2024. The target respondents included start-ups and self-employed recent graduate entrepreneurs located in typical areas of Jiangsu Province. Data were collected through both on-site surveys and online questionnaires using Questionnaire Star. After conducting the reliability and validity analyses, the survey instrument was refined, resulting in the final version of the questionnaire.

Formal research was conducted from March to May 2024, targeting self-employed entrepreneurs who were current or recently graduated Chinese college students and a small group of entrepreneurs from local business incubators. A total of 515 questionnaires were distributed, and 439 were collected, with a recovery rate of 85.2%. After screening and sorting, 410 valid responses were retained, resulting in an effective response rate of 79.6%. Table 1 shows the sample characteristics and general profile of start-ups, making them representative and well-suited for the research theme.

**Table. 1 Sample Characteristics**

Variable	Group	Number	Variable	Group	Number
gender	Male	303	years	Above 50	24
	Female	107		Less than 1 year	163
age	25 and under	178		2-3 years	116
	26-30	85		4-6 years	49
	31-35	69		More than 6 years	82
	36 years old and above	78	scale	Large	4
education	College	84		Sub-major	5
	Bachelor's degree	228		Medium	32
	Master's degree	78		Small	100
	Doctorate	20		Sub-minor	269
number	First venture	325	type	IT/E-commerce & Hardware and software services	134



employees	Second venture	58	Machinery manufacturing	48
	Third venture	27	Pharmaceutical & Bioengineering	23
	1-5	182	Energy & Chemical	23
	6-15	137	education	51
	16-25	41	Service industry	104
	26-50	26	Others	27

*Note.* The enterprise type can be selected at the same time.

### 3.2 Measurement of Variables

In response to the research hypotheses, this study examines the variables of entrepreneurial involvement, sustainable entrepreneurial behavior, and entrepreneurial quality, which are measured using a 5-point Likert scale (1=not at all, 5=fully).

(1) Entrepreneurial Involvement: Entrepreneurial involvement can be categorized into entrepreneurial scenario involvement and entrepreneurial industry involvement. In this study, we refer to the results of Lastovicka (1979) and Ouyang et al. (2023) and measure it using three question items, which mainly include three dimensions: familiarity with the entrepreneurial industry and scenarios, importance and commitment.

(2) Sustainable Entrepreneurial Behavior: Following Miles et al., 2009 and Shepherd and Patzelt (2011), this study measures sustainable entrepreneurial behavior using a total of 4 questions, focusing on human health, employment opportunities, ethics, and the natural environment.

(3) Entrepreneurial Quality: In this study, entrepreneurial quality is assessed in terms of growth, satisfaction, and innovation. From the perspective of the growth of start-ups, drawing on Brown (1996), Wiklund and Shepherd (2011), and Zahra et al. (2002), we adopt a subjective judgment approach. Growth is primarily measured through the growth of sales and profits. Satisfaction is measured based on 'entrepreneurs' personal satisfaction with entrepreneurship, as suggested by Hitt et al. (2001). Moreover, innovativeness is measured from the perspectives of patent applications and patent conversion, which serve as the indicators of technological innovation.

(4) Entrepreneurial Positive Outcome Framework: This study adopts the scale developed by Mullins and Agnihotri (2022), which contains four items, such as "The leader paints a good picture, and entrepreneurship will have an impact on people like me" and so on.

## 4. Empirical Testing and Results

### 4.1 Reliability and Validity Tests

In this study, SPSS 26.0 was utilized to perform reliability and validity analyses. As shown in Table 2, Cronbach's  $\alpha$  coefficients for all variables exceeded 0.8, indicating a high level of scale reliability. The exploratory factor analysis results revealed that the factor loading for each indicator was greater than or close to 0.6, suggesting strong convergent validity. Additionally, the square root of the AVE for each variable was greater than the correlation coefficient between that variable and the others (Table 2 and Table 3), demonstrating good structural validity for the scale.

**Table 2. Reliability and Validity of Variables**

Variables	Factor loadings	Cronbach's $\alpha$	CR	AVE
Entrepreneurial involvement	0.688~0.832	0.948	0.9094	0.6266
Sustainable entrepreneurial behavior	0.546~0.590	0.910	0.3249	0.6579
Entrepreneurial quality	0.695~0.851	0.924	0.8869	0.6116
Entrepreneurial positive outcome framework	0.786~0.842	0.942	0.8841	0.6561

### 4.2 Correlation Analysis

The results of the correlation analysis are presented in Table 3. The analysis shows that entrepreneurial involvement ( $r=0.657$ ,  $p<0.01$ ), entrepreneurial scenario involvement ( $r=0.620$ ,  $p<0.01$ ), and entrepreneurial industry involvement ( $r=0.657$ ,  $p<0.01$ ) are significantly and positively correlated with entrepreneurial quality. Moreover, entrepreneurial involvement ( $r=0.701$ ,  $p<0.01$ ), entrepreneurial scenario involvement ( $r=0.680$ ,  $p<0.01$ ), and entrepreneurial industry involvement ( $r=0.711$ ,  $p<0.01$ ) are significantly and positively correlated with sustainable entrepreneurial behavior. Furthermore, sustainable entrepreneurial behavior ( $r=0.639$ ,  $p<0.01$ ) correlated significantly and positively with entrepreneurial quality. These findings establish a strong preliminary foundation for testing the study's hypotheses.

**Table 3. Correlation Analysis**

variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.gender	1												
2.age	0.141**	1											

3.education	-0.006	0.100*	1										
4.number	0.128**	0.249**	0.110*	1									
5.emplo	-0.046	0.208**	0.090	0.216**	1								
6.years	0.214**	0.611**	0.033	0.232**	0.342**	1							
7.scale	-0.044	-0.029	-0.008	-0.114*	0.421**	-0.111*	1						
8.invol	-0.085	-0.069	-0.073	0.025	0.076	-0.020	0.016**	1					
9.cinvol	-0.096	-0.080	-0.046	-0.009	0.083	-0.038	0.053**	0.887**	1				
10.iinvol	-0.093	-0.077	-0.061	0.009	0.082	-0.030	0.036	0.972**	0.971**	1			
11.behav	0.084**	-0.145*	-0.104	-0.061	0.015	-0.082	0.036	0.701**	0.680**	0.711**	1		
12.quality	0.016	-0.115	-0.093	0.008	0.044	-0.108*	-0.061	0.657**	0.620**	0.657**	0.639**	1	
13.frame	0.019	-0.133	-0.054	-0.007	0.022	0.086**	-0.005	0.648**	.0634**	0.660**	0.685**	0.627**	1

\*P<0.05, \*\*P<0.01, \*\*\*P<0.001

Values in parentheses are P-values.

#### 4.3 Hypothesis Testing

We test the hypotheses using a multiple linear regression analysis model. Table 4 shows that Model 1 includes only the control variables, while Models 2, 3, and 4 sequentially add the independent variables. The analysis results indicate that entrepreneurial scenario involvement ( $\beta=0.657$ ,  $p<0.001$ ), entrepreneurial industry involvement ( $\beta=0.627$ ,  $p<0.001$ ), and overall entrepreneurial involvement ( $\beta=0.662$ ,  $p<0.001$ ) have significant positive effects, thus confirming hypotheses H1, H1a, and H1b. These findings indicate that both scenario-based and industry-specific entrepreneurial involvement strengthen entrepreneurs' psychological identification with their ventures. Additionally, entrepreneurs can enhance their business performance by regulating behavior through subjective norms and team dynamics, positioning entrepreneurial involvement as an effective strategy for improving entrepreneurship quality. Furthermore, the results of Model 5 in Table 4 show that sustainable entrepreneurial behavior ( $\beta=0.640$ ,  $p<0.001$ ) has a significant positive effect on entrepreneurial quality, verifying hypothesis H3.

**Table 4. Regression Results of Direct Effects**

Variables	Entrepreneurial quality				
	Model 1	Model 2	Model 3	Model 4	Model 5
gender	-0.010 (0.850)	0.050 (0.195)	0.058 (0.144)	0.058 (0.130)	-0.054 (0.169)
age	-0.071 (0.259)	-0.012 (0.808)	-0.013 (0.788)	-0.009 (0.852)	0.018 (0.706)
education	-0.094 (0.058)	-0.043 (0.251)	-0.064 (0.102)	-0.051 (0.173)	-0.034 (0.381)
number	0.038 (0.470)	0.018 (0.651)	0.042 (0.305)	0.029 (0.451)	0.050 (0.214)
employees	0.077 (0.184)	-0.006 (0.895)	-0.026 (0.568)	-0.022 (0.618)	0.021 (0.642)
years	-0.102 (0.119)	-0.086 (0.082)	-0.074 (0.151)	-0.079 (0.112)	-0.105* (0.039)
scale	-0.039 (0.473)	-0.080 (0.052)	-0.107* (0.013)	-0.097* (0.018)	-0.083* (0.048)
Entrepreneurial scenario involvement		0.657*** (0.000)			
Entrepreneurial industry involvement			0.627*** (0.000)		
Entrepreneurial involvement sustainable				0.662*** (0.000)	0.640***
Entrepreneurial behavior					(0.000)
R <sup>2</sup>	0.017	0.494	0.477	0.514	0.415
F	2.013	50.869***	47.598***	55.156*	37.240***

In Table 5, Model 6 shows that entrepreneurial scenario involvement ( $\beta=0.705$ ,  $p<0.001$ ) has a significant positive effect on sustainable entrepreneurial behavior, supporting hypothesis H2a. Similarly, Model 7 shows that entrepreneurial industry involvement ( $\beta=0.689$ ,  $p<0.001$ ) significantly positively influences sustainable entrepreneurial behavior, confirming hypothesis H2b. Furthermore, Model 8 indicates that

overall entrepreneurial involvement ( $\beta=0.719$ ,  $p<0.001$ ) has a strong positive impact on sustainable entrepreneurial behavior, validating hypothesis H2.

In Table 5, Model 9 results indicate that sustainable entrepreneurial behavior ( $\beta=0.4028$ ,  $p<0.001$ ) has a significant positive effect on entrepreneurial quality. A comparison between Model 2 and Model 9 reveals that the effect of entrepreneurial situational involvement ( $\beta=0.4878$ ,  $p<0.001$ ) on entrepreneurial quality is weakened, suggesting that sustainable entrepreneurial behavior mediates the relationship between entrepreneurial situational involvement and entrepreneurial quality, thereby verifying hypothesis H4a.

Similarly, the results for Model 10 show that sustainable entrepreneurial behavior ( $\beta=0.4612$ ,  $p<0.001$ ) significantly influences entrepreneurial quality. A comparison between Model 3 and Model 10 shows that the effect of entrepreneurial industry involvement ( $\beta=0.4247$ ,  $p<0.001$ ) on entrepreneurial quality is also weakened, indicating that sustainable entrepreneurial behavior serves as a mediator between entrepreneurial industry involvement and entrepreneurial quality, confirming the hypothesis H4b.

Finally, the Model 11 result reveals that sustainable entrepreneurial behavior ( $\beta=0.3931$ ,  $p<0.001$ ) has a significant positive impact on entrepreneurial quality. A comparison between Model 4 and Model 11 shows that overall entrepreneurial involvement ( $\beta=0.5137$ ,  $p<0.001$ ) diminishes entrepreneurial quality. This suggests that sustainable entrepreneurial behavior plays a mediating role in the relationship between overall entrepreneurial involvement and entrepreneurial quality, thus validating hypothesis H4. These findings highlight the crucial role of sustainable entrepreneurial behavior in the entrepreneurial process, particularly for start-ups. Entrepreneurs' industry knowledge, professional expertise, team identification, and work commitment significantly impact their engagement in sustainable entrepreneurial behavior. In other words, higher entrepreneurial involvement fosters sustainable practices within new entrepreneurial teams, ultimately advancing ecological entrepreneurship goals.

**Table 5. Regression Results of Mediating Effects**

Variables	Sustainable entrepreneurial behavior			Entrepreneurial quality		
	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
gender	0.133***	0.144***	0.143***	0.0068	0.0024	0.0178
	(0.000)	(0.000)	(0.000)	(0.9186)	(0.9723)	(0.7907)
age	-0.076	-0.076	-0.072	0.0084	0.0097	0.0089
	(0.087)	(0.095)	(0.098)	(0.7459)	(0.7135)	(0.7314)
education	-0.040	-0.061	-0.048	-0.0305	-0.0410	-0.0363
	(0.258)	(0.091)	(0.167)	(0.4096)	(0.2777)	(0.3277)
number	-0.041	-0.015	-0.028	0.0438	0.0654	0.0536
	(0.268)	(0.695)	(0.436)	(0.3938)	(0.2103)	(0.2962)
employees	-0.001	-0.025	-0.020	-0.0037	-0.0110	-0.0105

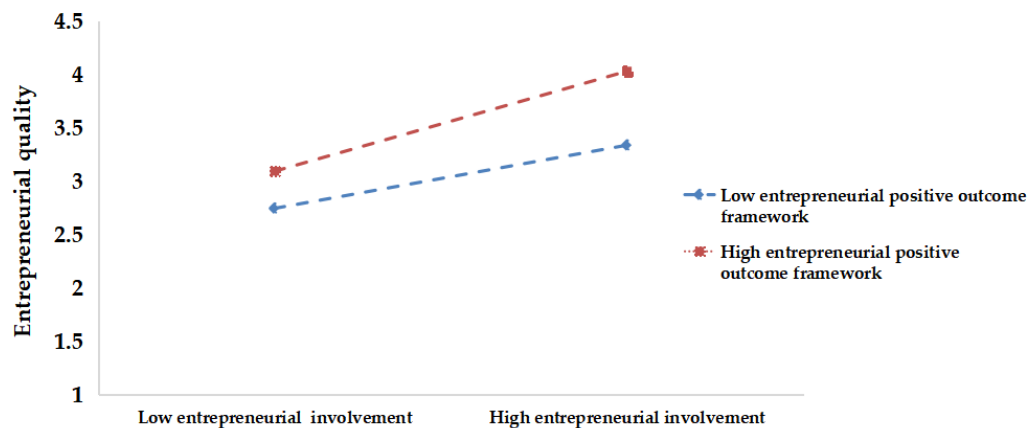
	(0.978)	(0.546)	(0.628)	(0.8970)	(0.7067)	(0.7147)
years	0.021	0.035	0.030	-0.0649*	-0.0609	-0.0615
	(0.643)	(0.457)	(0.511)	(0.0467)	(0.0670)	(0.0598)
scale	0.025	-0.005	0.006	-0.0912*	-0.1077**	-0.1019*
	(0.511)	(0.893)	(0.870)	(0.0230)	(0.0087)	(0.0113)
Entrepreneurial scenario	0.705***			0.4878***		
involvement	(0.000)			(0.000)		
Entrepreneurial industry		0.689***			0.4247***	
involvement		(0.000)			(0.000)	
Entrepreneurial			0.719***			0.5137***
involvement			(0.000)			(0.000)
Sustainable				0.4028***	0.4612***	0.3931***
entrepreneurial behavior				(0.000)	(0.000)	(0.000)
R <sup>2</sup>	0.513	0.486	0.529	0.5084	0.4896	0.5078
F	54.908***	49.265***	58.350***	45.9556***	42.6256***	45.8468***

Table 6 examines the moderating effect of the entrepreneurial positive outcome framework on the relationship between entrepreneurial involvement and quality. Model 12 indicates that the entrepreneurial positive outcome framework significantly moderates the impact of situational involvement on entrepreneurial quality ( $\beta=0.1874$ ,  $p<0.001$ ), confirming hypothesis H5. Model 13 shows a positive moderating effect of the framework on the relationship between entrepreneurial industry involvement and entrepreneurial quality ( $\beta=0.1245$ ,  $p<0.05$ ), validating hypothesis H5a. Furthermore, Model 14 shows that the framework positively moderates the effect of overall entrepreneurial involvement on entrepreneurial quality ( $\beta=0.1767$ ,  $p<0.01$ ), supporting hypothesis H5b. These findings suggest that when the entrepreneurial positive outcome framework is effectively applied within an organization, higher levels of entrepreneurial involvement led to a more positive working atmosphere. This, in turn, enables start-ups to better compete for external partnerships and opportunities. Entrepreneurial team leaders can strategically leverage this framework to enhance entrepreneurial involvement, stimulating intrinsic motivation within a team and fostering internal synergy. Ultimately, this leads to improved entrepreneurial quality and overall business performance.

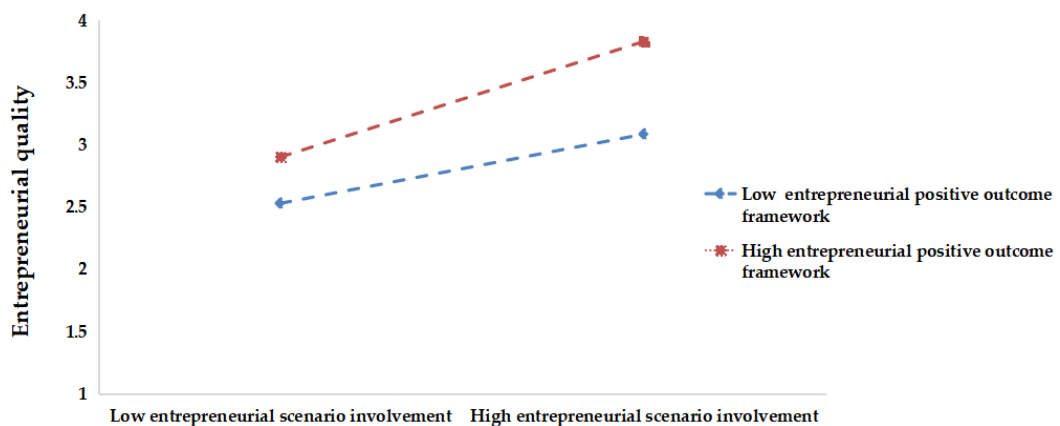
**Table 6. Regression Results of Moderating Effects**

Variables	Entrepreneurial quality		
	Model 12	Model 13	Model 14
gender	0.0426 (0.5088)	0.0521 (0.4352)	0.0555 (0.3926)
age	0.0038 (0.8810)	0.0055 (0.8326)	0.0047 (0.8522)
education	-0.0254 (0.4902)	-0.0458 (0.2263)	-0.0321 (0.3841)
number	0.0025 (0.9613)	0.0293 (0.5752)	0.0146 (0.7733)
employees	-0.0027 (0.9228)	-0.0120 (0.6819)	-0.0118 (0.6770)
years	-0.0517 (0.1066)	-0.0478 (0.1476)	-0.0487 (0.1297)
scale	-0.0703 (0.0739)	-0.0895* (0.0283)	-0.0840* (0.0339)
Entrepreneurial scenario involvement	-0.2253 (0.3204)		
Entrepreneurial industry involvement		-0.0286*** (0.9026)	
Entrepreneurial involvement			-0.1522 (0.5148)
Entrepreneurial positive outcome framework	-0.4366 (0.0731)	-0.1293 (0.6111)	-0.4073 (0.1091)
Entrepreneurial scenario involvement × Entrepreneurial positive outcome framework	0.1874*** (0.0008)		
Entrepreneurial industry involvement × Entrepreneurial positive outcome framework		0.1245* (0.0293)	
Entrepreneurial involvement × Entrepreneurial positive outcome framework			0.1767** (0.0021)
R <sup>2</sup>	0.5277	0.4973	0.5243
F	44.5758***	39.4750***	43.9826***

Figures 2, 3, and 4 illustrate the positive moderating effect of the entrepreneurial positive outcome framework on the relationship between entrepreneurial involvement and entrepreneurial quality. Specifically, entrepreneurial involvement significantly enhances entrepreneurial quality under a highly positive outcome framework. Additionally, the framework positively moderates the relationship between entrepreneurial scenario involvement and entrepreneurial quality, indicating that scenario involvement can effectively improve start-ups' entrepreneurial quality. Similarly, the framework positively moderates the relationship between entrepreneurial industry involvement and entrepreneurial quality, showing that a robust positive outcome framework amplifies the impact of industry involvement on entrepreneurial quality.

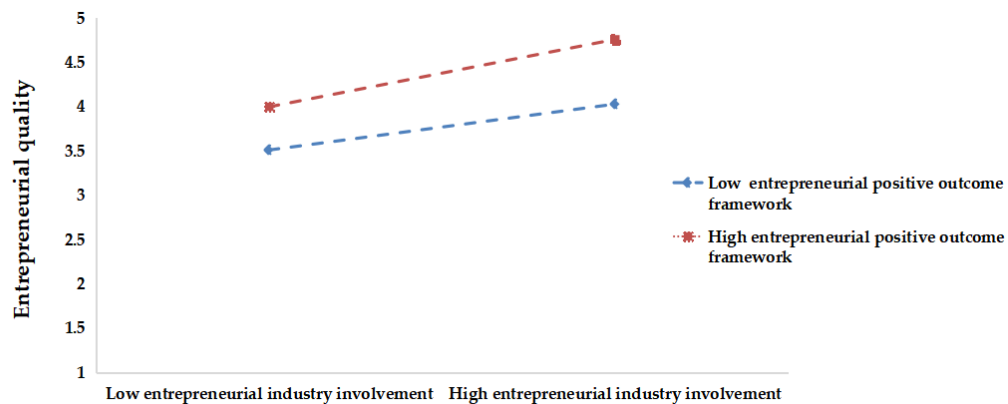


**Figure 2. The Moderating Effect of Entrepreneurial Positive Outcome Framework on Entrepreneurial Involvement and Entrepreneurial Quality**



**Figure 3. The Moderating Effect of Entrepreneurial Positive Outcome Framework on Entrepreneurial Scenario Involvement and Entrepreneurial Quality**





**Figure 4. The Moderating Effect of Entrepreneurial Positive Outcome Framework on Entrepreneurial Industry Involvement and Entrepreneurial Quality**

## 5. Discussion

This study's findings offer significant insights into the influence of entrepreneurial involvement on entrepreneurial quality and sustainable entrepreneurial behavior. These results not only validate the theoretical assumptions made in earlier research but also extend our understanding of the mediating and moderating factors involved.

First, the relationship between entrepreneurial involvement and entrepreneurial quality is assessed. The results strongly support hypotheses H1, H1a, and H1b, demonstrating that entrepreneurial scenario involvement, entrepreneurial industry involvement, and overall entrepreneurial involvement have significant positive effects on entrepreneurial quality. These findings are consistent with existing literature, which highlights the importance of entrepreneurial involvement in entrepreneurial success. Wan et al. (2021) and Barrett et al. (2021) argued that entrepreneurial involvement reflected entrepreneurs' commitment to their venture, directly influencing decision-making and business outcomes. However, our results reveal that industry-specific and scenario-specific involvement play equally important roles, unlike earlier studies that emphasized either scenario involvement (Liao & Welsch, 2003) or industry involvement (Delgado-García et al., 2012). This suggests that entrepreneurs must balance both dimensions to enhance entrepreneurial venture quality. Our findings also align with the involvement theory (Petty & Cacioppo, 1979), suggesting higher involvement leads to more active information processing and more informed decision-making.

Second, the relationship between entrepreneurial involvement and sustainable entrepreneurial behavior is confirmed through hypotheses H2, H2a, and H2b, demonstrating that entrepreneurial scenario involvement, entrepreneurial industry involvement, and overall entrepreneurial involvement positively influence sustainable entrepreneurial behavior. These results are consistent with prior findings of Di Vaio et al. (2022) and Peng and Walid (2022), who argued that entrepreneurs who are more involved in their

ventures tend to adopt sustainable practices. Additionally, Kuckertz and Wagner (2010) support these findings by suggesting that highly engaged entrepreneurs prioritize long-term objectives, such as sustainability, over short-term gains. Interestingly, our study adds nuance to these findings by showing that scenario involvement has a slightly stronger effect on sustainable behavior than industry involvement. This indicates that entrepreneurs' emotional identification with their context may be more influential in driving sustainable behavior than their technical expertise or industry knowledge. This finding contrasts with the work of Muñoz (2017), who emphasized the role of industry-specific knowledge in fostering sustainable behavior.

Third, the relationship between sustainable entrepreneurial behavior and entrepreneurial quality is confirmed through hypothesis H3, showing that sustainable entrepreneurial behavior significantly enhances entrepreneurial quality. This finding aligns with the work of Venkataraman (2004) and Ma and Todorovic (2012), who established that sustainable behavior is crucial for fostering high-quality entrepreneurship. By focusing on sustainable entrepreneurial behavior, entrepreneurs can contribute to societal welfare and enhance the long-term viability and performance of their ventures. Moreover, these results emphasize the importance of ecological entrepreneurship, as discussed by Kechun et al. (2024), highlighting how sustainable entrepreneurial behavior can improve the social standing and reputation of start-ups, making them more competitive.

Fourth, the mediating role of sustainable entrepreneurial behavior between entrepreneurial involvement and entrepreneurial quality is supported by hypotheses H4, H4a, and H4b. These results indicate that sustainable entrepreneurial behavior weakens the direct effect of both entrepreneurial scenario involvement and entrepreneurial industry involvement on entrepreneurial quality. This finding aligns with the work of Venkataraman (2004), who suggested that sustainable entrepreneurial behavior bridges the gap between entrepreneurial effort and entrepreneurial success, particularly in terms of societal and ecological impacts. The mediating effect also highlights the evolving role of entrepreneurs as not just profit-driven actors but also stewards of sustainable development (Schindehutte & Morris, 2009). This suggests that entrepreneurs who integrate sustainable behaviors into their business processes are more likely to experience higher entrepreneurial quality, as they are better positioned to secure government support, attract resources, and build stronger reputations.

Finally, the moderating role of the entrepreneurial positive outcome framework is supported through hypotheses H5, H5a, and H5b. These results show that the entrepreneurial positive outcome framework significantly moderates the relationship between entrepreneurial involvement and entrepreneurial quality. This finding aligns with the work of Li et al. (2024) and Woodside et al. (2016), who highlighted the importance of creating a supportive environment for entrepreneurs. When organizations implement this framework, entrepreneurial involvement is amplified, leading to improved overall entrepreneurial quality. The moderating role of this framework underscores that it is not enough for entrepreneurs to engage in their businesses; they must operate within environments that actively encourage and reward

entrepreneurial effort. This is particularly important for start-ups and young entrepreneurs, who often face higher risks and resource constraints.

In summary, this study provides empirical evidence that entrepreneurial involvement positively influences both sustainable entrepreneurial behavior and entrepreneurial quality. The findings also highlight the crucial mediating role of sustainable behavior and the moderating effect of supportive frameworks in enhancing entrepreneurial outcomes. These results offer practical implications for entrepreneurs, policymakers, and researchers, suggesting that fostering both deep involvement and focus on sustainability can drive higher-quality entrepreneurship. Future research could explore other mediators and moderators in this relationship and examine different entrepreneurial contexts to enhance the generalizability of these findings.

## **6. Conclusion, Limitation and Future Research**

### *6.1 Conclusions*

This study examines the impact of entrepreneurial involvement on entrepreneurial quality with the mediating role of sustainable entrepreneurial behavior and the moderating effect of the entrepreneurial positive outcome framework among startup founders in China.

First, entrepreneurial involvement—entrepreneurial scenario involvement and entrepreneurial industry involvement—can significantly affect entrepreneurial quality, with entrepreneurial scenario involvement having a larger effect compared to entrepreneurial industry involvement. Sustainable entrepreneurial behavior partially mediates the relationship between entrepreneurial involvement and entrepreneurial quality, as well as mediates the relationship between entrepreneurial scenario involvement, entrepreneurial industry involvement, and entrepreneurial quality.

Second, entrepreneurial involvement has a significant positive impact on sustainable entrepreneurial behavior, with scenario involvement showing a stronger effect. This suggests that entrepreneurs' industry expertise, professional knowledge, team identification, and commitment to their work play a crucial role in stimulating sustainable entrepreneurial behavior. By enhancing entrepreneurial involvement, sustainable behavior is fostered within startup teams, which in turn supports the achievement of goals related to ecological entrepreneurship.

Third, the entrepreneurial positive outcome framework moderates the relationship between entrepreneurial involvement and entrepreneurial quality. When the entrepreneurial positive outcome framework plays a significant role within an organization, it supports create a positive working atmosphere that enhances the level of entrepreneurial involvement. This, in turn, enables start-ups to better compete for external cooperation and opportunities.

Entrepreneurial team leaders can leverage the entrepreneurial positive outcome framework to boost entrepreneurial involvement, stimulate the intrinsic motivation of their team, foster internal entrepreneurial synergy, and ultimately enhance the quality of entrepreneurship, and overall performance.

## 6.2 Theoretical Contributions

This study's findings have significant theoretical contributions. First, based on the perspective of sustainable development, this study innovatively explores the impact of entrepreneurial involvement on entrepreneurial quality. Unlike earlier research that focused on entrepreneurial behavior from the standpoint of subjective factors or the external environment, this study breaks away from traditional paradigms by subdividing entrepreneurial involvement into two categories—entrepreneurial scenario involvement and entrepreneurial industry involvement. It compares and explores how these two forms of involvement can improve the entrepreneurial quality in start-ups. Furthermore, this study verifies the mediating role of sustainable entrepreneurial behavior and the moderating effect of the entrepreneurial positive outcome framework, refining earlier research on entrepreneurial growth and performance in start-ups.

Second, while existing research often emphasizes the influence of entrepreneurial values, ethical principles, or innovation and entrepreneurship education, particularly in science-based companies or large manufacturing firms, this study utilizes a different approach. It explores the impact of entrepreneurial psychology and behavior on entrepreneurial outcomes, focusing on start-ups. By incorporating both entrepreneurial involvement and sustainable entrepreneurial behavior into a unified research framework, this study stimulates new-generation entrepreneurs' understanding of the entrepreneurial ecosystem. It encourages them to take on social, economic, and environmental responsibilities while guiding them to enhance both entrepreneurial scenarios and industry involvement, ultimately improving the overall quality of entrepreneurship.

Third, this study deepens and extends the work of previous scholars on basic involvement and embedded theories by contextualizing them within China's national conditions and unique entrepreneurial characteristics. It further explores pathways to improve entrepreneurial quality within the context of China's modernization and development. Guided by sustainable entrepreneurship and supported by the positive outcome framework, this study constructs a dual entrepreneurial involvement impact model.

## 6.3 Practical Implications

First, the quality of entrepreneurship among start-ups can be improved by enhancing the level of entrepreneurial involvement. High levels of entrepreneurial involvement enable entrepreneurs to better identify market opportunities, design innovative products and services, and effectively navigate challenges during the entrepreneurial process. In terms of entrepreneurial scenario involvement, deepening the understanding of entrepreneurial scenarios allows entrepreneurs to assess market opportunities and potential risks more accurately, design products or services that better meet market needs, and build effective marketing strategies to attract target customer groups and establish stable relationships. In terms of entrepreneurial industry involvement, focusing on entrepreneurs' knowledge and involvement in their industries helps the entrepreneur keep track of industry development in a timely manner and make forward-looking decisions. This enables them to identify unique advantages and seek

potential investors or partners in a competitive market. Start-ups can improve their entrepreneurial involvement by actively participating in industry conferences, forums, and networking within the industry, ultimately improving the quality and increasing the likelihood of success for their ventures.

Second, strengthening the entrepreneurial positive outcome framework can significantly boost entrepreneurial quality for start-ups. When effectively implemented within an organization, this framework enhances entrepreneurial involvement and fosters a positive working atmosphere. This atmosphere not only benefits to enhances the spirit of collaboration among team members but also facilitates the firm's external search for more collaborative opportunities and resources. Specifically, leaders must take proactive measures to stimulate the enthusiasm and creativity of team members. This can include providing necessary training and development opportunities, encouraging innovative thinking, and establishing effective communication channels. As a result, team members will become more engaged in entrepreneurial activities, thus forming a strong internal entrepreneurial synergy. This synergy improves team efficiency, enhances the quality of the entrepreneurial project, and ultimately leads to better entrepreneurial outcomes.

Third, focusing on sustainable entrepreneurial behavior enhances the entrepreneurial quality of start-ups. During the entrepreneurship process, new enterprises should take proactive actions that align with economic, social, and environmental goals. These behaviors go beyond focusing on short-term economic benefits and incorporate long-term considerations such as social welfare and environmental protection. Start-ups need to develop business models that promote high-quality growth while generating positive societal impacts. This can include adopting sustainable production and consumption patterns to reduce environmental impacts and promote green, low-carbon, and sustainable development of the business.

#### *6.4 Limitations and Future Research Directions*

This study provides valuable insights into the relationship among entrepreneurial involvement, sustainable entrepreneurial behavior, and entrepreneurial quality; however, it still has some limitations. First, the study's sample consists mainly of entrepreneurs in the early stages of their ventures. Although this sample provides a unique perspective on the role of entrepreneurial involvement in shaping entrepreneurial quality, the findings may not be generalizable to more experienced entrepreneurs or entrepreneurs in other industries. Future research should expand the sample to a broader range of entrepreneurs, including those with varying levels of experience from different sectors and geographic regions, to validate the applicability of these results across diverse entrepreneurial contexts.

Second, this study employs a cross-sectional design, which limits its ability to establish causal relationships between variables. Although the regression models reveal significant associations, they do not definitively establish causality. Future research should adopt longitudinal studies to track entrepreneurial behavior and performance over time, providing deeper insights into how entrepreneurial involvement and sustainable behavior evolve and influence entrepreneurial outcomes.

Third, this study primarily examines the mediating role of sustainable entrepreneurial behavior but does not explore other potential mediators or moderators that may influence the relationship between entrepreneurial involvement and entrepreneurial quality. Future research could investigate additional mediating factors, such as entrepreneurial resilience or innovation capacity, as well as moderating variables like the institutional environment and market conditions. This would provide a more comprehensive understanding of the complex dynamics shaping entrepreneurial outcomes.

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