



A Study on the Relationship between the Leadership Characteristics of Women Entrepreneurs and Organizational Resilience——Taking the Member of Hebei Women Entrepreneurs Association as an Example.

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Abstract. Under the background of highly uncertain times, organizational resilience has become a critical factor in dealing with risk environment. The unique psychological quality and leadership behavior of women entrepreneurs in dealing with external difficulties have gradually attracted the attention of scholars. Taking the members of Hebei Women Entrepreneurs Association as the research object, the study model was built by combing the existing literature and 438 effective questionnaires to explore the relationship between the leadership characteristics of women entrepreneurs and organizational resilience. The results show that the leadership characteristics of female entrepreneurs include four aspects: perseverance, valuing employees, effective communication, as well as sensitivity. This can not only help the organization to quickly identify and adapt to environmental changes, but also unite employees to fight against the abnormal environment, which enhances the organizational resilience. Moreover, this study introduces strategic agility into the relationship model and finds that it has a partial mediating effect. The investigate not only clarified the dimensions of the leadership characteristics of women entrepreneurs in the Chinese context, but also enriched the research on the antecedent variables of organizational resilience, which brought new thinking to the composition of enterprise management teams.

Keywords: Women entrepreneurs, Leadership characteristics, Organizational resilience, Strategic agility

1 Introduction

With the frequency of uncertain events, the VUCA characteristics of market environment are gradually becoming prominent ^[1]. As an ideal organizational feature in a highly uncertain environment ^[2], organizational resilience can not only help enterprises quickly adapt to environmental changes and fully use existing resources, but also enable operations to quickly recover from the crisis, achieving adverse growth. Relevant researches show leaders are one of the key factors in building organizational resilience ^[3-4]. Traditional concepts have labelled women as "emotional" and "indecisive", while

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many active female heroes in various fields in the real world are changing this stereotype with their outstanding performance. Dong Mingzhu, chairman of Gree Electric Appliances, has transformed GREE from a small air conditioning factory with an annual output of less than 20000 units to a world-renowned Chinese manufacturing industry [5]. The value of female entrepreneurs who truly play a "half sky" role through excellent qualities such as combining hardness and softness, self-reliance, together with striving for excellence [6]. Based on the physiological perspective, scholars analyzed that female entrepreneurs have certain advantages in communicative competence, empathy ability, alertness, psychological resilience and other aspects [7]. It's a pity that the detailed dimension decomposition was not carried out. Based on the gender perspective, the relationship between leadership traits and organizational resilience is in the stage of theoretical speculation and has not been tested empirically. Taking the members of Hebei Women Entrepreneurs Association as the research object, this study explores the internal impact of women entrepreneurs' leadership characteristics and its sub dimensions on organizational resilience, and analyzes the intermediary role of strategic agility between the two, which not only deepens the understanding of female leaders in enterprises from the perspective of abnormal environments, but also promotes the improvement of organizational resilience.

2 Research hypotheses

2.1 Leadership characteristics of women entrepreneurs and Organizational Resilience

Leaders not only need to have the ability to perceive and predict crisis, but also should take action in time and unite employees to deal with the crisis [8]. Many studies believe that women have unique physiological advantages in psychological resilience, communication ability, empathy, alertness, and other aspects [9-11]. These cognitive characteristics help women entrepreneurs discover potential crisis signals. At the same time, leaders with positive emotions have a significant positive impact on organizational resilience [12]. Pan Zicheng found that women executives are better at crisis management than male leaders, valuing the opportunities for promotions [13]. As the core figure of enterprise operation, women entrepreneurs have leadership traits such as resilience, alertness, positive optimism, and good communication skills, which not only directly affect the improvement of organizational resilience, but also the biggest situational factor that affects employee emotions and team atmosphere, thereby indirectly promoting the formation of organizational resilience [14]. This paper believes that the leadership characteristics of women entrepreneurs can effectively promote the improvement of organizational resilience.

Hypothesis 1: Leadership characteristics of women entrepreneurs have a positive effect on organizational resilience.

Perseverance means that women entrepreneurs can maintain an optimistic attitude when facing crisis. The level of leader resilience directly determines the level of organizational resilience [15]. When organizations encounter crises, leaders need to have the ability to let organizations recover from adversity, successfully coping with

emergencies ^[16]. The existence of gender stereotypes, "glass ceiling" and "glass cliff" effects make women have invisible obstacles in their career development ^[17-18]. Some scholars believe female leaders show stronger anti frustration and repair abilities than male leaders ^[19-20]. The improvement of organizational resilience is inseparable from entrepreneurs with resilient leadership. In many cases, resilient leaders can significantly reduce the impact of large-scale economic crisis on small and medium-sized enterprises ^[21]. Above all, it is considered that perseverance has a positive effect on organizational resilience.

Hypothesis 1a: Perseverance has a positive effect on organizational resilience.

Valuing employees indicates that women entrepreneurs can affect employees to unite and resist crises. The disharmonious organizational relationship is bound to hinder the enterprise from going out of the dilemma ^[13]. Consequently, the initiative, unity and loyalty of employees are particularly significant. Compared with men, women entrepreneurs are more inclined to pay attention to the cultivation of employee values ^[22], and encourage employees to actively complete organizational goals ^[23], which will obtain support from subordinates ^[24]. Female leaders emphasize on employees' actual needs ^[25]. The organizational identity of employees who are well treated will be stronger, and the organizational identification will positively affect the improvement of organizational resilience ^[26]. Through the establishment of commitments between employees and other stakeholders, they effectively cultivate and enhance organizational resilience ^[27]. The paper argues that valuing employees has a positive effect on organizational resilience.

Hypothesis 1b: Valuing employees has a positive effect on organizational resilience.

Effective communication means that women entrepreneurs can help enterprises establish contact with the outside organizations and promote communication on team members. With their own characteristics, female leaders stimulate the support and understanding of followers ^[28]. Compared with men, women have more emotional thinking and human care ^[29], and are more careful in doing things ^[30]. They often show more accuracy and meticulousness in giving commands ^[31]. With their strong communication skills ^[32], they can not only effectively transfer information, improving the supervision of enterprises ^[33], but also more easily reach cooperation with external organizations, obtaining the support of external resources ^[34]. Therefore, women leaders can create a fine and open communication atmosphere, ensuring the sustainable development of enterprises ^[35]. The leaders' communication ability will help organizations cope with various unexpected challenges ^[36]. Simultaneously, strengthening communication with the outside organizations is the key parts of improving organizational resilience ^[37]. It is considered that effective communication can promote the improvement of organizational resilience.

Hypothesis 1c: Effective communication has a positive effect on organizational resilience.

Sensitivity mean that women entrepreneurs can assist enterprises to use more complementary methods to predict and interpret the complex external environment. Women's delicate personality characteristics and innate "sixth sense" give them the characteristic advantage of keen insight ^[35,38]. They can not only predict the complex

environment by controlling details ^[39], grasping key problems hidden in the intricacy environment ^[23], but also make more decisive and correct decisions in case of emergency ^[40]. Relying on virtues of their vigilance and risk appetite, they are easy to overcome organizational inertia ^[41]. Women entrepreneurs can find opportunities and threats as early as possible by focusing on environmental changes and catching business related phenomena ^[42]. To improve organizational resilience, it is necessary for leaders to recognize environmental changes and make early warning of crisis events. The organization's active preparation can strengthen the evaluation of potential damages ^[43], administering to identify unknown risks, which will lay a foundation for change under the crises ^[44]. The paper argues that sensitivity have a positive effect on organizational resilience.

Hypothesis 1d: Sensitivity have a positive effect on organizational resilience.

2.2 Leadership characteristics of women entrepreneurs and strategic agility

Only when an enterprise has strategic agility, can it maintain "the same frequency" with the external environment ^[45]. To achieve strategic agility, managers need to remain sensitive capturing opportunities and making decisive decisions ^[46]. The direction and speed of thinking integration in the top management team affect the interpretation of strategic information, influencing the strategic updating ^[47]. Thereby, the improvement of strategic agility is impacted by leadership traits such as sensitivity to external environmental changes and the speed of effective information dissemination. The leadership characteristics of entrepreneurs have a positive effect on the improvement of strategic agility ^[48]. Women entrepreneurs use different mechanisms to search information and adjust strategic directions, which give them advantages over competitors ^[49]. Zhang Lili assumes that almost all successful women entrepreneurs can keep an optimistic attitude when facing threats ^[50]. Their perseverant characteristics can make decisive and correct strategic decisions. Secondly, the effective communication of strategic direction for changes affects strategies, goals, and decision-making configurations in enterprises ^[51]. Taking advantage of their communications, women entrepreneurs can quickly support the decisions of various functional departments. When opportunities arise, women entrepreneurs can guide organizations to update existing organizational practices in time to maintain consistency of the organization and market environment ^[51]. Afterwards, they reconstruct and allocate internal and external resources ^[52]. These practices will help to achieve strategic objectives for enterprises.

Hypothesis 2: Leadership characteristics of women entrepreneurs have a positive effect on strategic agility.

Hypothesis 2a: Perseverance has a positive effect on strategic agility.

Hypothesis 2b: Valuing employees has a positive effect on strategic agility.

Hypothesis 2c: Effective communication has a positive effect on strategic agility.

Hypothesis 2d: Sensitivity have a positive effect on strategic agility.

2.3 Strategic agility and Organizational Resilience

The more agile an enterprise is, the more it can monitor changes in the market and various behaviors of competitors, perceiving opportunities and threats provided by the market environment ^[52]. Some scholars found that strategic agility is the most significant driving factor to enhance organizational resilience ^[53-54]. Strategic agility helps organizations to read early signals, but also enables them to rapidly adjust their strategic directions and reconfigure resources, creating prerequisites for improving organizational resilience ^[55]. Strategic agility is able to combine resources and capabilities of companies with dynamic opportunities, guide the company out of its current predicament, and ensure long-term survival through business models renewal, which will enable the organization to recover from adversity to an undamaged state or to be further optimized ^[55]. However, strategic agility is more than just the ability to react quickly. It also plays a significant role in resolving the paradox between prior plans and unexpected events or situations ^[56]. Coordinating the paradox between planning and adaptation that exists in organizational resilience, it plays an important role in promoting the level of organizational resilience in start-ups ^[57]. This paper argues that strategic agility has a positive impact on organizational resilience.

Hypothesis 3: Strategic agility has a positive impact on organizational resilience.

2.4 The intermediary role of strategic agility

One of the necessary factors for the success of women entrepreneurs is their ability to recover quickly from failures, learning from them and responding positively to crises ^[58]. Their optimism can not only ease the tension in the organization, but also make employees believe in the decisions made by the managers and help the organization to recover from the shocks and achieve growth. Meanwhile, for women entrepreneurs, it is a natural choice to make full use of their communication skills in order to convey the information about changes in strategic direction in the shortest time, which can enable the organisation to take rapid response measures ^[59]. Simultaneously, constructive relationships between leaders and employees are critical to organizational resilience ^[60]. Female leadership traits positively contribute to the formation of a favorable group atmosphere ^[61-62]. They create a sense of belonging among the "insiders" and make them more willing to actively contribute to the organizational success ^[63]. Only when leaders and employees coexist harmoniously can the communication and implementation process of strategic direction change be smoother, and organizational resilience be further developed. Eventually, with their sensitive and prudent leadership characteristics, women entrepreneurs can detect and capture information related to business operations in a timely manner, so as to make strategic forward-looking judgments ^[64].

Hypothesis 4: Strategic agility mediates the relationship between leadership characteristics of women entrepreneurs and organizational resilience.

Hypothesis 4a: Strategic agility mediates the relationship between perseverance and organizational resilience.

Hypothesis 4b: Strategic agility mediates the relationship between valuing employees and organizational resilience.

Hypothesis 4c: Strategic agility mediates the relationship between effective communication and organizational resilience.

Hypothesis 4d: Strategic agility mediates the relationship between sensitivity and organizational resilience.

The research model in this paper is specifically illustrated in Figure 1.

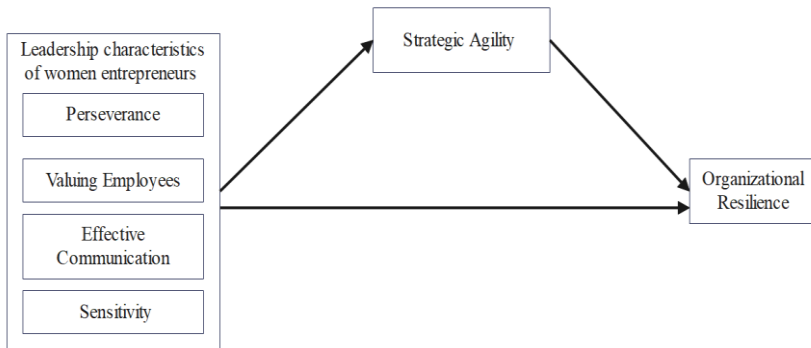


Fig. 1. Conceptual model.

3 Method

3.1 Variable measurements

3.1.1 Leadership characteristics of women entrepreneurs.

The measurement of "perseverance" mainly referred to the mental resilience scale developed by Manzano-García [65]. "Valuing Employees" drawn heavily on the scale constructed by Rhoades [66] and Isthofaina [67]. "Effective Communication" is based on a scale developed by Guo Yi [68]. "Sensitivity" mainly referred to the scales developed by Tang [69] and Miao Qing [70]. The KMO value of the leadership characteristics scale for women entrepreneurs was 0.927, and the Cronbach's alpha was 0.925.

3.1.2 Organizational Resilience.

We classify organizational resilience into three dimensions: planning capacity, adaptive capacity and situational awareness. Measurement items of planning capacity mainly consulted the scale developed by Lee [71], Wang Yong [12]. Measurement items of adaptive capacity mainly involved the scales developed by Zhang Xiue [72]. Measurement entries for situational awareness refer to the scale developed by Kantur [73]. The questionnaire found to have good reliability and validity by measuring organizational resilience KMO of 0.922 and Cronbach's Alpha of 0.936.

3.1.3 Strategic Agility.

Strategic agility draws on scales developed by Muhammad K. Hamdan [64] and Thomas Clauss [74]. The strategic agility scale was examined and found to have excellent reliability with a KMO of 0.833 and Cronbach 's Alpha of 0.892.

In addition, basic information such as respondents' age, education, and years of experience in the field were used as control variables.

3.2 Participants

The research population includes the member of Hebei Women Entrepreneurs Association. 438 valid questionnaires were returned (response rate 87.78%). Characteristics of the sample are shown in Table 1.

Table 1. Sample composition

Sample information	Categories	Quantities	Percentages (%)
Age	20-30	86	19.6
	31-40	194	44.3
	41-50	115	26.3
	51+	43	9.8
Educational level	Secondary education	40	9.1
	Bachelor's degree	213	48.6
	Master's degree and Doctoral degree	185	42.2
Work experience	<1 year	10	2.3
	1-3 years	32	7.3
	4-6 years	81	18.5
	7-10 years	107	24.4
	>10 years	208	47.5

4 Results

4.1 COMMON-METHOD BIAS

To test the common-method bias, this study added F1 as a latent variable to the model on the basis of the original trait factor to establish a two-factor model, as shown in Figure 2. The results are shown in Table 2, No significant increase in CFI, CMIN/DF. TCI remained unchanged, RMR decreased by 0.001. RMSEA has instead increased. So, the sample data didn't have a significant common-method bias.

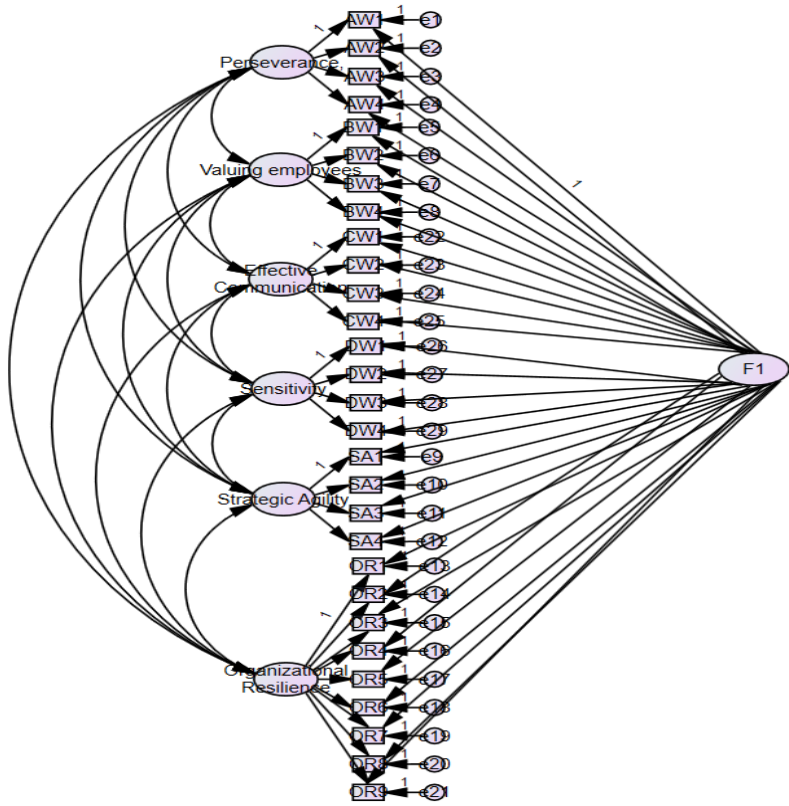


Fig. 2. Common-method bias model

Table 2. Common-method bias test for variables

Model	CMIN	CMIN/DF	CFI	TCI	RMSEA	RMR
Common-method bias latent variables not included	584.225	1.614	0.975	0.972	0.037	0.023
Includes common-method bias latent variables(F1)	542.000	1.628	0.977	0.972	0.038	0.022
Difference	42.225	-0.014	-0.002	0	-0.001	0.001

4.2 Correlation analysis

The results presented in Table 3 indicate that organizational resilience is positively correlated with the leadership characteristics of women entrepreneurs, perseverance, valuing employees, effective communication, and sensitivity. H1, H1a, H1b, H1c, and H1d are initially established; Strategic agility is positively associated with the leadership characteristics of women entrepreneurs, perseverance, valuing employees, effective communication, and sensitivity, which is hypothesized as H2, H2a, H2b, H2c, and H2d were preliminarily tested; Strategic agility is positively related to organizational resilience, so H3 is initially tested.

Table 3. Relevant analysis results

	1	2	3	4	5	6	7
1. The leadership characteristics of women entrepreneurs	1						
2. Perseverance	0.796**	1					
3. Valuing employees	0.792**	0.511**	1				
4. Effective communication	0.764**	0.458**	0.480**	1			
5. Sensitivity	0.764**	0.475**	0.471**	0.461**	1		
6. Strategic agility	0.474**	0.368**	0.376**	0.359**	0.373**	1	
7. Organizational resilience	0.579**	0.454**	0.459**	0.448**	0.444**	0.540**	1

Notes:*** indicates $P < 0.001$, ** indicates $P < 0.01$, * indicates $P < 0.05$

4.3 Hypothesis-testing

4.3.1 Tests for main effects and mediating effects of research variables.

The hypotheses proposed in the previous section regarding the research variables were tested by constructing structural equations, as shown in Figure 3. Specifically speaking, CMIN/ DF was 1.583, less than 2; They, including GFI, AGFI, NNFI (TCI), CFI, IFI, were greater than 0.9; RMSEA was 0.037, RMR was 0.023, which fulfilled the judgment standards of less than 0.08.

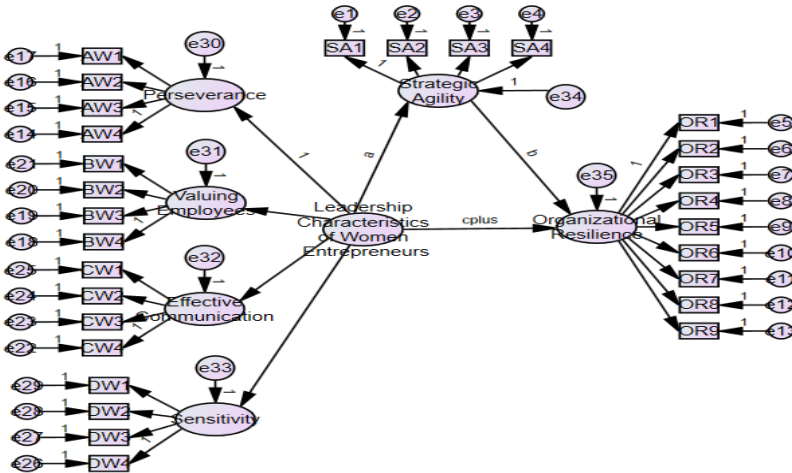


Fig. 3. Path diagram of structural equation modelling of research variables

The results of the direct effect hypothesis test are illustrated in Table 4. The path coefficient from leadership characteristics of women entrepreneurs to organizational resilience is 0.623 and $P < 0.001$; The path coefficient from leadership characteristics of women entrepreneurs to strategic agility is 0.842 and $P < 0.001$; Assuming that the path coefficient from strategic agility to organizational resilience is 0.241 and $P < 0.001$. Therefore, hypotheses H1, H2, and H3 held true.

Table 4. Results of hypothesis testing for structural equation modeling of research variables

Hypothesis	Pathway	Estimate	S.E.	C.R.	P	——
H1	Organizational resilience <--- Leadership characteristics of women entrepreneurs	0.623	0.080	7.800	***	True
H2	Strategic agility <--- Leadership characteristics of women entrepreneurs	0.842	0.094	8.998	***	True
H3	Organizational resilience <--- Strategic agility	0.241	0.044	5.530	***	True

Notes:*** indicates P<0.001,** indicates P<0.01,* indicates P<0.05

The results of Bootstrap are shown in Table 5. The 95% confidence intervals for the total, indirect, and direct effects did not contain 0, and Z was greater than 1.96, so strategic agility partially mediated the relationship between leadership characteristics of women entrepreneurs and organizational resilience, verifying that hypothesis H4 was valid.

Table 5. Mediation effect test for strategic agility (leadership characteristics of women entrepreneurs)

Effects	Relationships	Point Estimate	Products of Coefficients		Bootstrapping			
			SE	Z	Bias-Corrected		Percentile	
					Lower	Upper	Lower	Upper
Total effects	Leadership characteristics of women entrepreneurs → Organizational resilience	0.826	0.075	11.013	0.687	0.984	0.688	0.988
Indirect effects	Leadership characteristics of women entrepreneurs → Strategic agility → Organizational resilience	0.203	0.045	4.511	0.123	0.300	0.121	0.298
Direct effects	Leadership characteristics of women entrepreneurs → Organizational resilience	0.623	0.085	7.329	0.469	0.801	0.470	0.802

4.3.2 Tests for main effects and mediating effects of latent variables.

The latent variable mediation model is shown in Figure 4. Specifically, the CMIN/DF is 1.614, the GFI, AGFI, NNFI (TCI), CFI, and IFI are all greater than 0.9, and the values of RMSEA and RMR are less than 0.08, resulting in a better model fit.

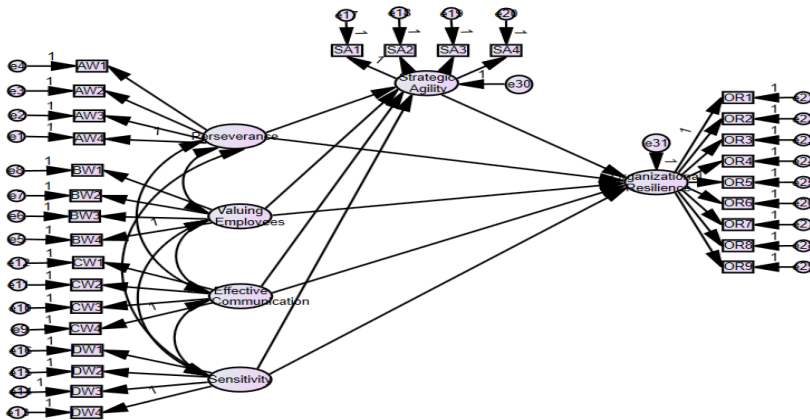


Fig. 4. Path diagram of structural equation modeling of latent variables

The results of the direct effect hypothesis test are indicated in Table 6. The four leadership traits all positively affect organizational resilience. Therefore, hypotheses H1a, H1b, H1c, and H1d are true; All four leadership traits positively influence strategic agility with standardized path coefficients of 0.159, 0.174, 0.180, and 0.210. Hypotheses H2a, H2b, H2c, and H2d are established; Strategic agility positively contributes to organizational resilience, verifying hypothesis H3 holds firm.

Table 6. Table of path coefficients of latent variable structural equation models

Hypotheses	Pathways	Estimate	S.E.	C.R.	P	——
H1a	Organizational resilience <--- Perseverance	0.119	0.048	2.463	0.014*	True
H1b	Organizational resilience <--- Valuing employees	0.114	0.049	2.342	0.019*	True
H1c	Organizational resilience <--- Effective communication	0.147	0.055	2.704	0.007**	True
H1d	Organizational resilience <--- Sensitivity	0.116	0.051	2.283	0.022*	True
H2a	Strategic agility <--- Perseverance	0.159	0.070	2.274	0.023*	True
H2b	Strategic agility <--- Valuing employees	0.174	0.071	2.462	0.014*	True
H2c	Strategic agility <--- Effective communication	0.180	0.079	2.278	0.023*	True
H2d	Strategic agility <--- Sensitivity	0.210	0.073	2.866	0.004**	True
H3	Organizational resilience <--- Strategic agility	0.299	0.040	7.435	***	True

Notes:*** indicates P<0.001,** indicates P<0.01,* indicates P<0.05

The latent variable mediation effect test is shown in Table 7. The confidence intervals for the total, indirect, and direct effects of four leadership traits don't contain 0, and the z-values were all greater than 1.96, so strategic agility partially mediated between the latent variables and organizational resilience, which validated that hypotheses H4a, H4b, H4c, and H4d hold true.

Table 7. Table of latent variable mediation effect tests

Effects	Relationships	Point Estimate	Products of Coefficients		Bootstrapping			
					Bias-Corrected		Percentile	
					SE	Z	Lower	Upper
Total effects	Perseverance→ Organizational resilience	0.166	0.056	2.964	0.054	0.274	0.058	0.278
Indirect effects	Perseverance→ Strategic agility→ Organizational resilience	0.048	0.022	2.182	0.007	0.096	0.007	0.095
Direct effects	Perseverance→ Organizational resilience	0.119	0.050	2.380	0.018	0.219	0.018	0.219
Total effects	Valuing employees→ Organizational resilience	0.166	0.051	3.255	0.068	0.266	0.068	0.266
Indirect effects	Valuing employees→ Strategic agility→ Organizational resilience	0.052	0.022	2.364	0.012	0.101	0.011	0.098
Direct effects	Valuing employees→ Organizational resilience	0.114	0.049	2.327	0.020	0.213	0.020	0.213
Total effects	Effective communication→ Organizational resilience	0.201	0.058	3.466	0.082	0.310	0.084	0.313
Indirect effects	Effective communication→ Strategic agility→ Organizational resilience	0.054	0.024	2.250	0.009	0.104	0.009	0.103
Direct effects	Effective communication→ Organizational resilience	0.147	0.057	2.579	0.031	0.258	0.031	0.257
Total effects	Sensitivity→ Organizational resilience	0.178	0.058	3.069	0.070	0.300	0.066	0.294
Indirect effects	Sensitivity→ strategic agility→ Organizational resilience	0.063	0.025	2.520	0.021	0.119	0.018	0.115
Direct effects	Sensitivity→ Organizational resilience	0.116	0.056	2.071	0.012	0.234	0.009	0.232

5 Conclusions and Implications

5.1 Conclusions

Firstly, women entrepreneurs' leadership traits of perseverance, valuing employees, effective communication, and sensitivity contribute to organizational resilience and help turn companies around. Secondly, women entrepreneurs' leadership characteristics can not only directly and positively influence the enhancement of organizational resilience, but also indirectly enhance organizational resilience through the transmission mechanism of strategic agility. This paper not only confirms that women entrepreneurs have strong psychological-resilience, valuing employees, effective communication, sensitivity and other traits, and that they have both "the beauty of rigidity" and "the charm of softness", which is more in line with the crisis situation, but also confirms the correlation between the leadership characteristics of women entrepreneurs and organizational resilience by constructing structural equation models, deepening the cognition of the impact of gender diversity on organization resilience.

5.2 Management Revelations

Women entrepreneurs should not be underestimated in enterprises and are an indispensable part of the entrepreneurial team. Therefore, women entrepreneurs should focus on self-cultivation, improve their leadership level and leadership art, giving full play to their strengths to lead their organizations through crises and difficulties. At the same time, from the perspective of corporate governance, the value and role of women entrepreneurs should be correctly recognized, creating more opportunities and conditions for women's careers. Secondly, women entrepreneurs should maintain their four leadership traits of perseverance, valuing employees, effective communication, and sensitivity. as well as being calm in the face of crises and responding positively to them. With these leadership traits, they contribute to organizational resilience by constantly updating their operational models, following the trends of the times, and taking advantage of the opportunities.

5.3 Limitations and Future Directions

The sample data may have subjective bias. In the future, the objective judgment of employees on women entrepreneurs can be added to ensure that the statistics are more accurate and objective. Meanwhile, in the mediating effect analysis, the study only introduced the mediating variable of strategic agility, but there may be other mediating or moderating variables in the mechanism of the impact of women entrepreneurs' leadership characteristics on organizational resilience, which can be further expanded subsequently.

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