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The Influence Mechanism of Environmental Attention on Opportunity Beliefs in Yunnan Province, China: "One Belt One Road" Perspective

กลไกอิทธิพลของความสนใจด้านสิ่งแวดล้อมต่อความเชื่อเรื่องโอกาสในมณฑลยูนนาน ประเทศจีน: มุมมอง "หนึ่งแถบหนึ่งเส้นทาง"

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ABSTRACT

Implementing the "One Belt, One Road" strategy has brought unprecedented business opportunities to China's Yunnan Province, which has triggered a boom in entrepreneurship. In the process of first-time entrepreneurship, entrepreneurs' personalized understanding and judgment of entrepreneurial opportunities determine the success or failure of entrepreneurship,

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and environmental attention is closely related to opportunity beliefs. Therefore, this study investigated the relationship between environmental attention and opportunity beliefs, the mediating role of ambidextrous learning, and the moderating effect of AI literacy among first-time entrepreneurs in Yunnan Province, China, based on the opportunity construction and opportunity discovery theories. In this study, data were collected from first-time entrepreneurs in eight entrepreneurial parks in Yunnan Province, China, between August and October 2024, using a purposive sampling method and a dummy questionnaire. A total of 536 valid responses were received, yielding a validity rate of 82.46%.

This study employed quantitative research to test the hypotheses. The results showed that environmental attention among first-time entrepreneurs was positively correlated with opportunity beliefs. Ambidextrous learning (exploratory and exploitative learning) had a mediating effect, while AI literacy moderated the direct effect of environmental attention on ambidextrous learning (exploratory and exploitative learning) and the indirect effect on opportunity beliefs through ambidextrous learning (exploratory and exploitative learning) in Yunnan Province, China.

Keywords: "One Belt, One Road", environmental attention, opportunity beliefs, ambidextrous learning, AI literacy

บทคัดย่อ

การนำกลยุทธ์ "หนึ่งแถบ หนึ่งเส้นทาง" มาใช้ ได้นำมาซึ่งโอกาสทางธุรกิจที่ไม่เคยมีมาก่อนในมณฑลยูนนาน ประเทศจีน ซึ่งได้จุดประกายการเติบโตอย่างรวดเร็วของผู้ประกอบการ ในกระบวนการของการเป็นผู้ประกอบการครั้งแรก ความเข้าใจและการตัดสินใจเกี่ยวกับโอกาสของผู้ประกอบการเป็นรายบุคคลเป็นตัวกำหนดความสำเร็จหรือความล้มเหลวของการเป็นผู้ประกอบการ และความใส่ใจต่อสิ่งแวดล้อมมีความสัมพันธ์อย่างใกล้ชิดกับความเชื่อเรื่องโอกาส ดังนั้น การศึกษานี้จึงศึกษาความสัมพันธ์ระหว่างความใส่ใจต่อสิ่งแวดล้อมและความเชื่อเรื่องโอกาส บทบาทการไกล่เกลี่ยของการเรียนรู้แบบสองมือ และผลกระทบที่ลดลงของความรู้ด้านปัญญาประดิษฐ์ (AI) ในหมู่ผู้ประกอบการครั้งแรกในมณฑลยูนนาน ประเทศจีน โดยอ้างอิงจากทฤษฎีการสร้างโอกาสและการค้นพบโอกาส ในการศึกษานี้ ได้มีการรวบรวมข้อมูลจากผู้ประกอบการครั้งแรกในอุทยานผู้ประกอบการแปดแห่งในมณฑลยูนนาน ประเทศจีน ระหว่างเดือนสิงหาคมถึงตุลาคม พ.ศ. 2567 โดยใช้วิธีการสุ่มตัวอย่างแบบเจาะจงและแบบสอบถามจำลอง มีผู้ตอบแบบสอบถามที่ถูกต้องทั้งหมด 536 คน คิดเป็นอัตราความถูกต้อง 82.46%

การศึกษานี้ใช้การวิจัยเชิงปริมาณเพื่อทดสอบสมมติฐาน ผลการศึกษาแสดงให้เห็นว่าความสนใจด้านสิ่งแวดล้อมในหมู่ผู้ประกอบการมือใหม่มีความสัมพันธ์เชิงบวกกับความเชื่อเรื่องโอกาส การเรียนรู้แบบใช้มือทั้งสองข้าง (การเรียนรู้แบบสำรวจและแบบแสวงหาประโยชน์) มีผลในการไกล่เกลี่ย ขณะที่ความรู้ด้านปัญญาประดิษฐ์ (AI) ช่วยลดผลกระทบโดยตรงของความสนใจด้านสิ่งแวดล้อมที่มีต่อการเรียนรู้แบบใช้มือทั้งสองข้าง (การเรียนรู้แบบสำรวจและแบบแสวงหาประโยชน์) และผลกระทบทางอ้อมต่อความเชื่อเรื่องโอกาสผ่านการเรียนรู้แบบใช้มือทั้งสองข้าง (การเรียนรู้แบบสำรวจและแบบแสวงหาประโยชน์) ในมณฑลยูนนาน ประเทศจีน

คำสำคัญ: “หนึ่งแถบหนึ่งเส้นทาง” ความใส่ใจต่อสิ่งแวดล้อม ความเชื่อเกี่ยวกับโอกาส การเรียนรู้แบบถนัดทั้งสองข้าง ความรู้ด้าน AI

Introduction

China's “one belt one road” initiative aims to promote the economic integration of the Eurasian and African regions and to build a new growth strategy for the world economy that will energize the global economy (Mau and Seuren, 2023). In the area of regional cooperation in China, it seeks to construct a regional cooperation system that deeply integrates East and West and outside China by setting heterogeneous regional development objectives, narrowing the development gap between East and West in China, and enhancing the internationalization of the regions along the “one belt one road” (Liu and Kong, 2023). Based on the above regional development goals, China has proposed new positioning for the development of provinces along the “one belt one road”, for example, China's Yunnan Province, as the center city of Southeast Asia along the “one belt one road”, shoulders the role of connecting economic, trade, and cultural hubs outside of China, and the performance of its role as a hub is crucial to the overall development of the region, as well as along the “one belt one road”, its role as a hub is crucial to the overall development of the region and along the “one belt one road” (He, 2024). According to a statistical analysis by the People's Government of Yunnan Provincial (2023), from January to September 2023, the import and export value of Yunnan Province's import and export value to the countries along the “one belt one road” will amount to RMB 145.15 billion, accounting for 75.9% of the province's foreign trade. As Zhao *et al.* (2022a) suggest the development of China's Yunnan Province and its economic radiation and linkage to other surrounding regions is representative of the reality of the development regions along the “one belt one road”. However, few studies in the literature incorporate first-time entrepreneurship based on the “one belt one road” perspective (Quer and Andreu, 2023).

In addition, Clark and Pidduck (2024) emphasize that entrepreneurship is a highly uncertain journey and it is difficult for new businesses to get it "right" from the start (Buccieri *et al.*, 2023). In particular, blind adherence to certain opportunities will lead to the misallocation of limited resources and will fail (Debrulle *et al.*, 2023). Therefore, new ventures should promptly pull out of bad opportunities and move to new, more promising opportunities to survive and grow (Su *et al.*, 2024). Therefore, this study explores the main factors and process mechanisms affecting first-time entrepreneurs' opportunity beliefs in Yunnan Province, China, from the perspective of the "one belt one road" initiative to provide theoretical and practical bases for the establishment of new firms, the promotion of local economic development in the future, and the enhancement of common prosperity along the "one belt one road" initiative. This will provide a practical basis for the establishment of new enterprises, the promotion of future local economic development, and the enhancement of common prosperity along the "one belt one road".

Opportunity beliefs have been an emerging topic in the recent entrepreneurship field (Lu and Tao, 2023), and have been described as individual beliefs that entrepreneurs develop after overcoming ignorance of information about opportunities in their environment (Gregoire *et al.*, 2010). In response to the question of "why some entrepreneurs can form opportunity beliefs while others cannot", research has begun to explore the cognitive structure of entrepreneurs, particularly entrepreneurs' environmental attention (Li and Lin, 2024). Environmental attention has also been described as the extent to which entrepreneurs allocate their attention to the entrepreneurial environment, which is well able to cope with the high level of uncertainty in the external environment, thus assisting in the formation of entrepreneurs' opportunity beliefs (Zhang and Zhao, 2020); research has also confirmed that environmental attention is positively related to beliefs about opportunities (Zhang and Zhao, 2020). As Zhang *et al.* (2023) suggest, environmental attention enables entrepreneurs to understand the changing trends of the external environment, accurately grasp the potential opportunities in the environment, and also enhances the innovativeness in recognizing the opportunities, and when the entrepreneurs will form a high evaluation of the opportunity in their mind, it will promote the creation of opportunity beliefs. Meanwhile, Ni and Wei (2023) also emphasized that opportunity beliefs are not only related to the success or failure of a start-up but also throughout the entire process of entrepreneurship, determining the subsequent entrepreneurial behavior of the firm. However, the extent to which entrepreneurs allocate their attention to the entrepreneurial environment contributes to the formation of a personalized understanding and judgment of entrepreneurial opportunities. However, the relationship between environmental attention and

opportunity beliefs of first-time entrepreneurs, under the One belt one road perspective is unclear in Yunnan Province, China.

In addition, ambidextrous learning may be an important factor in improving opportunity beliefs as they are formed. It has been described as a process that can take into account the interaction between learning itself and the external environment, can help entrepreneurs break down previous behavioral patterns while building new ones, and also builds up an individual's courage to face failures head-on and explore and solve problems at their root causes (Zhao *et al.*, 2022b). Research has found a strong relationship between environmental attention and entrepreneurial learning (Zhu *et al.*, 2016). As stated by Li *et al.* (2019), entrepreneurial learning can not only help firms better adapt to the diversity and complexity of the environment, maintain the match between the firm and the environment, and satisfy the needs of customers, but also promote the dissemination and accumulation of resources within the firm and the acquisition of resources for transformation from outside the firm, thus forming unique capabilities and competitive advantages. Meanwhile, Yao *et al.* (2022) emphasize that the most important task for first-time entrepreneurs is to continuously innovate and learn, and to develop new products or services through continuous trial and error to develop their unique competitive advantage and secure their survival. In addition, Zhang and Huang's (2020) study found that ambidextrous learning mediates the relationship between innovation network structure and disruptive innovation. As stated by Wasim *et al.* (2024), innovation is a necessary condition for firms to be invincible, and learning is the eternal driving force of innovation, and only by continuously accepting external knowledge can we catch up with the world's development and change (Liu *et al.*, 2023). Therefore, exploratory and exploitive learning, are both enhancements to one's knowledge base and necessary for new ventures to become invincible (Li and Lin, 2024; Yu *et al.*, 2023). However, the extent to which ambidextrous learning and attention are allocated to the entrepreneurial environment may further enhance the formation of personalized understandings and judgments of entrepreneurial opportunities. However, it is not clear what the mediating effect of duality learning is between environmental attention and opportunity beliefs among first-time entrepreneurs under the one belt one road perspective in Yunnan Province, China.

On the other hand, AI literacy may be an important factor in facilitating first-time entrepreneurs to take into account the interaction between learning itself and the external environment in the formation of ambidextrous learning. It has been described as the ability of AI in terms of technical understanding, critical evaluation, and practical application (Laupichler *et al.*, 2023). Research has found that environmental attention correlates with individual abilities (Li *et al.*, 2024). As stated by Qian *et al.* (2023), environmental attention may motivate

the application of AI technology, and individuals with high levels of ecological attention may have a greater preference for AI technology in entrepreneurship and drive more environmentally friendly technological decisions and innovations (Kumar, 2023). Furthermore, Zhou *et al.* (2024) hypothesized that AI literacy may be able to modulate the relationship between environmental attention and ambidextrous learning. Meanwhile, Zhang *et al.* (2022) emphasize that AI literacy can improve individuals' environmental attention, make them more sensitive to environmental changes, and enhance their AI skills as they can see the effects of AI technologies in practical applications and ultimately apply them to the exploration of entrepreneurial opportunities. Although AI literacy may be an important moderator of binary learning in the development of new ventures in Yunnan Province, China, it is not clear how the AI literacy of first-time entrepreneurs moderates the relationship between environmental attention and binary learning under the "one belt one road" perspective.

In summary, the purpose of this study is to investigate first-time entrepreneurs' perceptions of environmental attention and opportunity beliefs, as well as the mediating and facilitating effects of ambidextrous learning and AI literacy in Yunnan Province, China, under the "one belt one road" perspective. Clarifying these relationships will identify the antecedents and facilitating mechanisms of first-time entrepreneurs' opportunity beliefs in Yunnan Province, China, under the "one belt one road" perspective, which will be valuable and helpful in promoting their future entrepreneurial practices in the "one belt one road" region.

Research Questions

In entrepreneurship research in China, opportunity beliefs is the least emphasized, which starkly contrasts advanced countries. In contrast, Western nations have extensively explored opportunity beliefs in recent years, reflecting both theoretical and practical trends in entrepreneurship research. This also largely reflects the level of entrepreneurship research, though differences stemming from environmental and knowledge backgrounds exist, the trend towards opportunity beliefs is evident. Unfortunately, research on the antecedents and promotional mechanisms influencing opportunity beliefs in China remains highly unclear. Given this, the following research questions are proposed:

(1) Does the environmental attention related to opportunity beliefs in Yunnan Province, China?

(2) Does ambidextrous learning mediating between environmental attention and opportunity beliefs in Yunnan Province, China?

(3) Does AI literacy moderating between environmental attention and opportunity beliefs in Yunnan Province, China?

(4) Does AI literacy moderates the indirect effect of environmental attention on opportunity beliefs in Yunnan Province, China? i.e., the higher the level of AI literacy, the lower the indirect effect of environmental attention on opportunity beliefs through ambidextrous learning.

Research Objectives

(1) To exploring the relationship between environmental attention and opportunity beliefs in Yunnan Province, China.

(2) To analyze the mediating effect of ambidextrous learning between environmental attention and opportunity beliefs in Yunnan Province, China.

(3) To analyze the moderating effect of AI literacy between environmental attention and ambidextrous learning in Yunnan Province, China.

(4) To analyze the moderating effect of AI literacy moderates the indirect effect of environmental attention on opportunity beliefs, i.e., the higher the level of AI literacy, the lower the indirect effect of environmental attention on opportunity beliefs through ambidextrous learning.

Literature Review and Hypothesis

Opportunity Construction Theory

Opportunity construction theory believes that entrepreneurial opportunities are subjectively constructed by entrepreneurs, and the basis of such construction comes from entrepreneurs' knowledge structure and subjective imagination (Suddaby *et al.*, 2015). Unlike the opportunity construction theory, the opportunity discovery theory advocates the discovery of entrepreneurial opportunities from the external environment, which will effectively avoid the negative impact of misinterpretation of environmental information due to the constraints formed by the entrepreneur's original knowledge structure (Shepherd and Patzelt, 2018). In highly uncertain entrepreneurial environments, entrepreneurs need to allocate their attention to the external environment to observe the changing trends of the external environment and tap into new environmental changes to facilitate the judgment and understanding of the identified opportunities (Shepherd *et al.*, 2017). However, if an entrepreneur possesses a high level of AI

literacy, he or she is bound to utilize the information in the external environment to analyze, integrate, and reorganize his or her knowledge (Zhong *et al.*, 2024). In this process, the entrepreneur's original knowledge structure will be broken and changed, and new information acquired through environmental attention (Shepherd and Patzelt, 2018), which will strengthen the direct and indirect effects of ecological attention on ambidextrous learning (Cai *et al.*, 2022). This also reflects that entrepreneurial opportunities are not just discovered, but constructed in the interaction between entrepreneurs and entrepreneurial contexts (Cai *et al.*, 2022). In addition, according to the opportunity discovery theory, the high level of uncertainty in the environment causes entrepreneurs to devote their attention to observing the external environment, and this allocation of attention enables entrepreneurs to understand the external environment instead of just passively adapting to the environment, which will contribute to the generation of beliefs about opportunities (Shepherd and Patzelt, 2018). However, at the same time, if first-time entrepreneurs have a high level of AI literacy, they will tend to integrate and optimize the information in the external environment with their knowledge, a process that will alter the new information acquired through environmental attention, thus weakening the probability that entrepreneurs will directly form opportunity beliefs through environmental attention (Zhang and Zhao, 2020). Conversely, when entrepreneurs do not possess strong enough AI literacy, then only they will pay more attention to the original information acquired through ambient attention and will be less likely to be negatively affected by the entrepreneurs' inherent knowledge structure (Shepherd and Patzelt, 2018).

Environmental Attention and Opportunity Beliefs

Opportunity beliefs have been described as individual beliefs that entrepreneurs develop after overcoming ignorance of opportunity information in the environment (Gregoire *et al.*, 2010). Research has shown that environmental attention is positively related to opportunity beliefs (Zhang and Zhao, 2020). Environmental attention has also been defined as the extent to which entrepreneurs allocate their attention to the entrepreneurial environment (Zhang and Zhao, 2020). According to the attention-based View, when entrepreneurs continue to pay attention to the external environment, it will help to improve the quality of individual environmental attention, which in turn will help them to complete the meaning construction and decision-making activities on specific topics (Zhu *et al.*, 2016). On the other hand, with the improvement of environmental attention, entrepreneurs can accurately grasp the trend of the external environment and perceive whether there is a deficiency between the existing technology and the target market through environmental stimuli, and then clarify the fit

between the two to form an objective evaluation of the external environment (Gregoire *et al.*, 2010). On the other hand, entrepreneurs can also accurately grasp the information of existing entrepreneurial policies, culture, and organizational environments, to form an assessment of the feasibility of the opportunity itself, reduce the impact of environmental uncertainty on the psychology of entrepreneurs, and eliminate their doubts about the feasibility and desirability of the opportunity (Zhu *et al.*, 2016). As Zhang and Zhao (2020) suggest, after entrepreneurs overcome their ignorance of the environment and the feasibility of the opportunity, they assign a certain meaning to the opportunity in their minds, which leads to the creation of opportunity beliefs. Hence the hypothesis:

H1: Environmental attention and opportunity beliefs of first-time entrepreneurs are positively correlated.

The Mediator Role Played by Ambidextrous Learning

Ambidextrous learning has been described as entrepreneurs balancing the interaction between learning itself and the external environment (Zhao *et al.*, 2022b). Ambidextrous learning has been found to mediate the relationship between innovation network structure and disruptive innovation (Zhang and Huang, 2020). As Zhu *et al.* (2016) stated, learning activities can effectively promote potential entrepreneurs' perception of the meaning and value of entrepreneurial activities, strengthen their entrepreneurial motivation, and reinforce their decision-making and judgment abilities in the future entrepreneurial process. Therefore, if potential entrepreneurs' attention to the entrepreneurial environment is more stable, they will construct meaning based on entrepreneurial activities and behaviors for entrepreneurial policies, culture, and environment, and further acquire better knowledge and skills through exploratory and exploitive learning, which can further enhance their decision-making and judgment (Li and Lin, 2024), and ultimately enhance the formation of opportunity beliefs. Hence the hypothesis:

H2ab: Exploratory and exploitative learning has a mediator effect between environmental attention and opportunity beliefs.

The Moderator Role Played by AI literacy

In addition, AI literacy may be able to moderate the relationship between environmental attention and ambidextrous learning (Zhou *et al.*, 2024). This is because in highly uncertain entrepreneurial environments, entrepreneurs need to allocate their attention to the external environment to observe the changing trends of the external environment and tap into new

environmental changes to facilitate the likelihood of identified opportunities (Shepherd *et al.*, 2017). Meanwhile, Chen's (2024) study also found that entrepreneurial learning is a dynamic process involving entrepreneurs' identification of entrepreneurial opportunities, integration of resources, and innovation of business models; AI literacy enhances entrepreneurs' ability to scan the environment and increase their sensitivity to market dynamics, thus facilitating bi-dimensional learning. In addition, if entrepreneurs possess a high level of AI literacy, they will be accustomed to analyzing, integrating, and utilizing information from the external environment with their knowledge (Kumar, 2023; Zhang *et al.*, 2022). As Zhang and Zhao (2020) said, in this process, the old knowledge structure of entrepreneurs will be improved and deepened, and they can further acquire more new information resources through environmental attention, and further analyze, refine, integrate, and utilize diversified information resources through AI technology, which will relatively strengthen the direct influence of ecological attention on ambidextrous learning. The influence of environmental attention on exploratory and exploitive learning is also relatively strengthened. Hence the hypothesis:

H3ab: AI literacy has a positive moderating effect between environmental attention and exploratory and exploitative learning.

On further analysis, AI literacy moderated the relationship between environmental attention and ambidextrous learning, as well as the relationship between environmental attention and opportunity beliefs, and the present study hypothesized that the mediating role of ambidextrous learning between environmental attention and opportunity beliefs was also moderated by AI literacy. Hence the hypothesis:

H4ab: AI literacy moderates the indirect effect of environmental attention on opportunity beliefs, i.e., the higher the level of AI literacy, the lower the indirect effect of environmental attention on opportunity beliefs through exploratory and exploitative learning.

Research Framework

The research framework was constructed according to the research objectives and hypotheses (Figure 1).

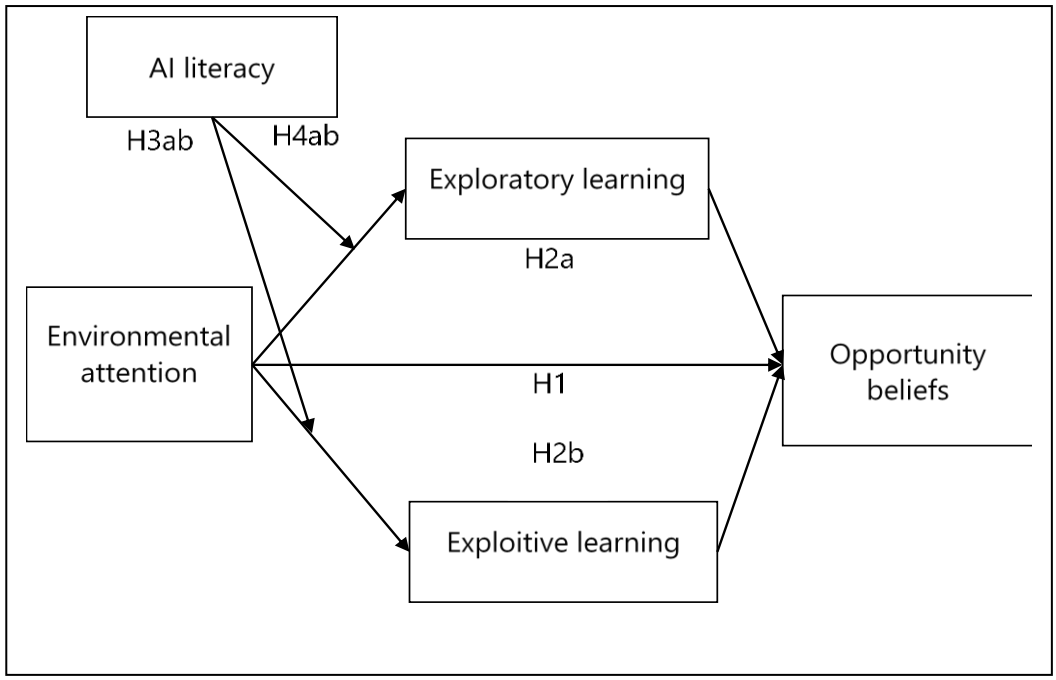


Figure 1: Research Conceptual Framework

Source: Author (2025)

Methodology

Sample and Data Collection Procedure

This study comprises a total of 49 items, requiring tenfold the number of items to meet the sample size requirement (Videla *et al.*, 2021). With 536 valid questionnaires collected, the study thus satisfies the stipulated number of measurement items. Furthermore, before sample collection, all respondents were confirmed to have entrepreneurial experience within the scope of the “one belt one road”.

The survey was conducted in August-October 2024, using a purposive sampling method, and electronic questionnaires were distributed through the managers of nine business parks related to the “one belt one road” in Yunnan Province, China, to investigate the first-time entrepreneurs' perceptions of environmental attention, ambidextrous learning, AI literacy, and opportunity beliefs, and finally obtained a sample of 536 (82.461% validity rate).

Measures

Environmental attention scale: Drawing on Zhu *et al.*'s (2016) tool, with the addition of China's "one belt one road" context, the scale is divided into 3 factors, namely, policies on entrepreneurship (The α of the scale =0.94), culture (α=0.96), and organizational attention (α=0.96), with a total of 9 items.

AI literacy scale: Drawing on Zhou *et al.*'s (2024) tool, with the addition of China's "one belt one road" context, divided into 4 factors: AI knowledge (The α of the scale=0.775), skills (α=0.911), attitudes and values (α=0.850), and ethics (α=0.865), with 25 items.

Ambidextrous learning scale: Drawing on Li *et al.*'s (2019) tool, with the addition of China's "one belt one road" context, the scale is divided into exploratory (The α of the scale = 0. 847) and exploitive learning (α = 0. 904), with 2 factors and a total of 10 items.

Opportunity beliefs scale: Drawing on Zhang and Zhao's (2020) tool, with the addition of China's "one belt one road" context, divided into perceptions of the fit between supply mode and target market, and perceptions of the feasibility of the opportunity, 2 factors, 5 items (The α of the scale =0.897).

Gender, education, age, and number of employees were used as demographic variables, and the other variables were measured on a 5-point scale in a self-report format.

The overall model had an SRMR = 0.05, a good match.

Results

Distribution of Population Characteristics

As shown in Table 1, the sample is predominantly female (58.77%), and the largest group has a specialized degree (85.63%), the highest percentage of entrepreneurship is in the age group of 31-35 years old (52.43%), and the highest percentage of 4-6 employees (44.59%).

Within the context of the Belt and Road Initiative, the sample highlights female as a primary force among entrepreneurs; moreover, individuals with specialized qualifications form the core cohort of entrepreneurs. On the other hand, the 31-35 age group was identified as the predominant demographic among entrepreneurs. Finally, micro and small enterprises employing between 4-6 staff were confirmed to constitute the largest proportion.

Table 1: Distribution of population characteristics

Background variables	Category	N	%
Gender	Male	221	41.23
	Female	315	58.77
	Total	536	100
Education	High school and below	17	3.17
	Specialized	459	85.63
	Undergraduate	58	10.82
	Graduate student	2	0.37
	Total	536	100
Age	24-30	158	29.48
	31-35	281	52.43
	36-40	35	6.53
	41-45	46	8.58
	46 and above	16	2.99
	Total	536	100
Number of employees	3 or less	162	30.22
	4-6	239	44.59
	6-10	110	20.52
	11-20	12	2.24
	21 and above	13	2.43
	Total	536	100

Note: n=536

Correlation Analysis

The correlation matrix shows that environmental attention of first-time entrepreneurs was significantly correlated with opportunity beliefs (r=-0.152***, p<0.001), and H1 hold. Moreover, the relationship between the Environmental attention, Exploratory and Exploitive learning, and AI literacy is entirely significant (r=0.508***, 0.243***, 0.237***, p<0.001), indicating that all variables are interrelated.

Table 2: Correlation analysis

Variable	M	SD	1	2	3	4	5
1. Environmental attention	3.712	0.923	**0.760**				
2. Exploratory learning	3.643	0.965	0.508**	**0.810**			
3. Exploitive learning	3.760	1.032	0.243**	0.231**	**0.782**		
4. AI literacy	3.763	0.953	0.237**	0.172**	0.257**	**0.789**	

5. Opportunity beliefs	3.728	0.856	-0.152**	0.163**	0.173**	0.186**	**0.775**
α			0.912	0.901	0.835	0.907	0.929
CR			0.735	0.796	0.838	0.891	0.823
AVE			0.578	0.657	0.624	0.561	0.601

Note: ***p < 0.001; the value in the diagonal is the AVE open root value.

Mediating and Moderating Effect Analysis

As shown in Table 3, exploratory and exploitive learning had a mediating effect (-4.786***, -3.347***, p<0.001) on the path of environmental attention to opportunity beliefs, and H2ab holds (environmental attention⟶exploratory and exploitive learning ⟶opportunity beliefs). Therefore, exploratory and exploitative learning effectively mediate the relationship between environmental attention and opportunity beliefs. AI literacy has a significant positive moderating effect in the pathway environmental attention to the exploratory and exploitative learning (β=0.152***, 0.149***, p<0.001), and H3ab holds (environmental attention × AI literacy ⟶ exploratory and exploitative learning). Therefore, exploratory and exploitative learning effectively moderate the relationship between environmental attention and opportunity beliefs.

Table 3: Mediating and moderating effect analysis

Effect	Path	Coefficients
Mediating	Environmental attention⟶exploratory learning ⟶opportunity beliefs	-4.786*** (Sobel Z)
	Environmental attention ⟶exploitive learning ⟶opportunity beliefs	-3.347*** (Sobel Z)
Moderating	Environmental attention × AI literacy ⟶exploratory learning	0.152***
	Environmental attention × AI literacy ⟶exploitative learning	0.149***

Note: ***p < 0.001

Moderated Mediation Effect

As shown in Table 4, the indirect effect of AI literacy through exploratory and exploratory learning was significant at different levels of AI literacy (-0.1242***, -0.1546***, -0.1692***; -0.1293***, -0.1593***, -0.1985***, p<0.001), and H4ab holds. Therefore, the indirect effects of AI literacy on opportunity beliefs through ambidextrous learning (exploratory and exploitive learning).

Table 4: Test results of moderated mediation effect

Effect	Sobel test		95 IC
	Indirect effect	SE	
AI literacy(low)	-0.1242	0.0437	0.1378, 0.3062
AI literacy(medium)	-0.1546	0.0491	0.1745, 0.3589
AI literacy(high)	-0.1692	0.0634	0.1904, 0.4345
AI literacy(low)	-0.1293	0.0413	0.0918, 0.2017
AI literacy(medium)	-0.1593	0.0372	0.0951, 0.2393
AI literacy(high)	-0.1985	0.0523	0.1130, 0.3120

Note: ***$p < 0.001$

Discussion

First, the analysis confirms that the environmental attention of first-time entrepreneurs in Yunnan Province is positively correlated with opportunity beliefs in the context of China's "one belt one road". Therefore, the extent to which first-time entrepreneurs in Yunnan Province, China, allocate their attention to the entrepreneurial environment is the main factor affecting their personalized understanding and judgment of entrepreneurial opportunities. Therefore, first-time entrepreneurs in Yunnan Province, China, must proactively enhance their environmental awareness. Centring on the "one belt one road", they should focus on innovation and differentiation strategies to foster a growth mindset, thereby effectively advancing the future development of new enterprises.

Second, the study confirms for the first time that ambidextrous learning has a mediating effect between environmental attention and opportunity beliefs among first-time entrepreneurs in Yunnan Province under the perspective of China's "one belt one road". Therefore, first-time entrepreneurs consider that the interaction between learning itself and the external environment is an important mediator that affects the relationship between their attention to the environment and beliefs about opportunities in Yunnan Province, China. Therefore, first-time entrepreneurs in Yunnan Province, China, should proactively and consistently engage in diverse learning activities to enhance their skills and knowledge. Centring their efforts on the "one belt one road", they should heighten their awareness of external environments and improve their personalized understanding and judgement of entrepreneurial opportunities.

Third, the study confirms for the first time that the AI literacy of first-time entrepreneurs in Yunnan Province moderates the mediating effects of environmental attention and opportunity beliefs, and ambidextrous learning (exploratory and exploitive learning) in the

context of China's "one belt one road". Therefore, AI literacy of first-time entrepreneurs is an important moderating mechanism between environmental attention and opportunity beliefs, and ambidextrous learning bridge relationships in Yunnan Province, China. Therefore, first-time entrepreneurs in Yunnan Province, China, should proactively enhance their artificial intelligence capabilities in technical comprehension, critical evaluation, and practical application. Furthermore, they should heighten their awareness of external environments in alignment with the "one belt one road", thereby transforming and updating their personalized understanding and assessment of entrepreneurial opportunities.

Implications

The empirical findings of this study contribute to the policy formulation, mechanism design, and measures of entrepreneurship management of the government in Yunnan Province, China, and the creation of a supportive atmosphere for first-time entrepreneurial practices in the society, and at the same time, it has an important theoretical basis and decision-making reference for first-time entrepreneurs' entrepreneurial practices, especially in the entrepreneurial practices under the perspective of the "one belt one road". Management practice has important management insights:

1) First, first-time entrepreneurs should recognize the key position of China's Yunnan Province in the "one belt one road", and also increase the extent to which they allocate their attention to the entrepreneurial environment, focusing on innovation and differentiation strategies to ensure the existence of the new business and its high-quality growth in the future. In addition, it is important to be flexible and adaptive, while avoiding over-flexibility that could lead to a loss of strategic focus.

2) Second, entrepreneurs in China's Yunnan Province should also recognize the extent to which entrepreneurs allocate their attention to the entrepreneurial environment personalized understanding and judgment of entrepreneurial opportunities are critical to the survival and growth of new ventures, and beliefs about opportunities play an important role in this regard First-time entrepreneurs should rationally look at their initial opportunity beliefs, and actively engage in diversified learning as well as identifying, analyzing, judging, and deciding on new opportunities. They should also take the initiative in identifying, analyzing, judging, and making decisions about new opportunities, to ensure the survival and development of their new businesses.

3) Third, first-time entrepreneurs should recognize the important role of utilizing intelligent tools for the development of new ventures, and AI literacy can not only provide

comprehensive analysis and integration of the operations and tactics of new ventures but also provide a basis for decision-making for first-time entrepreneurs in China's Yunnan Province. Therefore, first-time entrepreneurs should strengthen the learning and simulation practice of AI literacy to utilize the powerful role of intelligent tools.

4) On the other hand, first, it is also suggested that entrepreneurial organizations can build both physical and online entrepreneurial platforms based on the background of the one belt one road, and provide financial support for the establishment of new businesses, to guarantee the entrepreneurial practice activities of first-time entrepreneurs in Yunnan Province, China (Mau and Seuren, 2023).

Second, entrepreneurial organizations also need to provide first-time entrepreneurs with entrepreneurial training, space, and other supportive policies to ensure the generation of new businesses in Yunnan Province, China (Cai *et al.*, 2024).

Third, entrepreneurial organizations to develop entrepreneurial programs in key industrial sectors around the “one belt one road” strategy, focus on the foreign economy, promote the development of new ventures, and incorporate ambidextrous learning to promote local crude first-time entrepreneurship to ensure the incubation of new ventures in Yunnan Province, China (Clark and Pidduck, 2024).

Fourth, relevant entrepreneurial institutions also need to provide first-time entrepreneurs with multiple resources such as policy support and integrated platform construction to stimulate first-time entrepreneurs' long-term learning enthusiasm, provide them with knowledge and skills in AI, stimulate their entrepreneurial vitality, and build up their level of attention to the environment as well as the ability to extrapolate on opportunities, thereby promoting the high-quality development of the regional economy in Yunnan Province, China and play a greater role in the one belt one road strategy.

Limitations and Future Research Directions

This study also has some limitations.

1) First, this study explores the process mechanism of first-time entrepreneurs' environmental attention on opportunity beliefs without distinguishing the dimensions of ecological attention, so future research can explore the effects of different dimensions of environmental attention on opportunity beliefs in a more detailed way.

2) Second, due to the limitation of the conditions, the collection of data from respondents through questionnaires will be affected by the subjective cognitive bias of the

respondents, future research suggests the use of panel data from multi-stage surveys or the measurement of the variables from the dual perspectives of the first-time entrepreneurs as well as from the perspective of others.

3) Third, this study is an empirical analysis, which reflects limited relationships between variables. In the future, we can use the qualitative method of in-depth interviews with individuals and teams to explore the antecedents affecting opportunity beliefs, as well as the pathways, and to further elaborate on the key roles played by ambidextrous learning and AI literacy in the process mechanism.

4) Fourth, in exploring the boundary conditions of environmental attention, only ambidextrous learning and AI literacy are chosen, and future research can also propose other variables based on other theories, such as virtual internationalization, digital resilience, and data leadership. In addition, it can be explored with Chinese local theories, such as juexing, virtue cognition, water Personality, etc., which may gain unexpected benefits.

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