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THE RELATIONSHIPS BETWEEN ENTREPRENEURIAL COGNITION AND ENTREPRENEURIAL INTENTION: COGNITION OF ARTIFICIAL INTELLIGENCE AS A MEDIATOR

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Abstract

This study explores the relationship between AI technology and the entrepreneurial intentions and cognition of college student entrepreneurs, revealing the impact of AI on the formation of entrepreneurial intentions and discussing how to motivate entrepreneurs toward business success. This not only reflects the key role of AI in the current business environment but also emphasizes the importance of continuous learning and adaptation to new challenges for entrepreneurs. It provides valuable insights for college students and young entrepreneurs interested in leveraging AI for business ventures.

Keywords: Entrepreneurial Cognition, Entrepreneurial Intention, Cognition of Artificial
Intelligence

Introduction

The progress of society stems from revolutionary advancements in supply, which transform production methods and reshape social structures and economic systems. The fourth industrial revolution, beginning at the start of the 21st century and continuing to the present, is characterized by the integration and breakthroughs of technologies such as artificial intelligence, the Internet of Things, big data analysis, quantum computing, and biotechnology (Philbeck & Davis, 2018). AI technology has made significant advancements in smart manufacturing, financial services, medical diagnosis, and other fields. The application scope of the Internet of Things extends from smart homes to industrial automation and urban management. The large-scale growth of data and enhanced analysis capabilities have enabled enterprises and governments to extract deep insights from massive datasets to guide decision-making and innovation (Majumdar et al., 2018). The technological developments of this period have not only brought profound economic, social, and cultural impacts but also highlighted the importance of interdisciplinary integration. Furthermore, they have raised new ethical, legal, and policy challenges, especially regarding the ethics of artificial intelligence (Leslie, 2019), data privacy, and cybersecurity.

This study aims to understand the relationship between college students' understanding of entrepreneurship (entrepreneurial cognition) and their desire to start a business (entrepreneurial intention). Specifically, it explores whether a deeper knowledge of entrepreneurship correlates with a higher likelihood of starting a business. Additionally, the study examines whether college students' understanding (entrepreneurial cognition) is related to their awareness and interest in artificial intelligence (AI). It investigates if a deeper understanding of entrepreneurship also results in a higher awareness and interest in AI technology, and how this awareness of AI correlates with their entrepreneurial intention Through these research objectives, the study seeks to elucidate the interrelationship between entrepreneurial cognition, AI awareness, and entrepreneurial intention. This understanding is particularly valuable for guiding college students and young entrepreneurs.

Literature Review

Entrepreneurial Cognition

Entrepreneurial cognition is a defined concept that refers to the knowledge structures used in the entrepreneurial process, encompassing opportunity evaluation, idea generation, and business growth strategies (Mitchell et al., 2007). This includes how entrepreneurs utilize mental models to integrate information, identify and create new products or services, and acquire necessary resources. Emphasizing the importance of entrepreneurial cognitive research, it combines cognitive psychology with entrepreneurial understanding (Mitchell et al., 2002).

Intuition is considered the core of entrepreneurial cognition, with many entrepreneurs attributing their decisions and success to intuitive insights. The understanding of intuition in entrepreneurial cognition involves exploring its nature, role, and cultivation methods (Baldacchino, 2019). Opportunity, as a core concept in international entrepreneurship, involves analyzing the structure of opportunities (Oyson & Whittaker, 2015). Studies on entrepreneurial success factors have found that successful entrepreneurs differ in psychological and social aspects, such as less counterfactual thinking, high self-confidence, and strong social skills (Baron, 2000).

Entrepreneurial cognition as a research field focuses on how entrepreneurs perceive, process, and apply information to make decisions. The core lies in the process by which entrepreneurs identify business opportunities, akin to pattern recognition, involving the collection and analysis of information, as well as the use of past experience and intuition to discover new markets or innovation opportunities. This process underscores the importance of the entrepreneur's information processing abilities and experience (Baron, 2006). Additionally, bounded rationality theory reveals the limitations in entrepreneurs' decision-making processes, such as constraints on information, time, and cognitive abilities, which affect their decisions in the face of risks and uncertainties (Simon, 1955).

The framework of entrepreneurial cognitive theory focuses on entrepreneurs' thinking and cognitive styles, particularly the specific thinking patterns and cognitive characteristics exhibited during opportunity identification, risk evaluation, decision-making, and learning from failures. These include innovativeness, risk acceptance, flexibility, and learning ability (Mitchell et al., 2002). Research on cognitive resilience emphasizes entrepreneurs' metacognitive abilities and responses to feedback in adapting to

changing environments and overcoming challenges (Haynie et al., 2012).

Entrepreneurial Intention

The formation of entrepreneurial intention is an interactive process involving personal psychology, social culture, and educational factors. An individual's attitude toward entrepreneurship and self-efficacy significantly impact their intentions, with these psychological factors being profoundly influenced by past experiences and achievement motivation. Socio-cultural support and entrepreneurship education can substantially enhance entrepreneurial intentions by providing knowledge, skills, and stimulating entrepreneurial spirit. Therefore, entrepreneurial intention results from the interaction between an individual's internal motivation and the external environment.

In exploring entrepreneurial imagery, academic works by various scholars have provided profound insights and theoretical foundations. These studies not only enrich our understanding of the entrepreneurial process but also offer important guidance for entrepreneurial education and practice. Among them, the "effectuation" theory challenges traditional entrepreneurial thinking, emphasizing the importance of

entrepreneurs using existing resources and opportunities to create new business models (Sarasvathy, 2009). Additionally, (Timmons and Tan, 2004) provide an in-depth analysis of various aspects of the entrepreneurial process, including entrepreneurial characteristics, opportunity recognition, resource acquisition, and business establishment, highlighting the importance of entrepreneurship and risk-taking. (Drucker and Maciariello, 2014) illustrate that innovation, essential to economic and social progress, is not only the product of technological advancements but also results from management and organizational changes.

The Effect of A on C

H1: The entrepreneurial intention will be influenced by the entrepreneurial cognition.

This hypothesis delves into how an individual's perception of entrepreneurial-related knowledge, skills, risks, and opportunities affects their entrepreneurial intentions. This includes understanding market needs, identifying business opportunities, assessing risks and potential rewards, and how cognition influences resource allocation and decision-making in the entrepreneurial process.

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Cognition of Artificial Intelligence

Artificial intelligence (AI) integrates computer science, logic, and other disciplines, achieving advancements in fields such as speech recognition and intelligent robotics, as noted by (Zhang and Lu, 2021). AI profoundly impacts modern society by enhancing labor efficiency, creating new job opportunities, and contributing to a more equitable and healthy society. The history of AI dates back to the 19th century and emerged as an independent field in the 1950s with the logical language of Boolean algebra and the theoretical foundations laid by Turing. Since then, AI has evolved significantly, from basic algorithms to deep learning, as analyzed by (Delipetrev et al., 2020). During the COVID-19 pandemic, AI demonstrated its potential in drug identification and medical diagnosis (Bullock et al., 2020). In the future, AI's role in fields such as nursing is expected to increase (Strong, 2016). In education, AI tutoring systems can enhance learning outcomes, but diverse teaching strategies must be considered (Zhang & Aslan, 2021). Meanwhile, unsupervised learning has advanced in computer networks but still faces challenges (Usama et al., 2019). In the medical field, AI technology has excelled in responding to virus outbreaks

(Vaishya et al., 2020). As AI rapidly develops, it is essential to focus on education and training opportunities to ensure the technology's healthy and sustainable progress.

AI is a technology with immense potential, crucial for improving production efficiency, creating job opportunities, and promoting social progress. Its application in medical and educational fields demonstrates its capability to enhance human life. However, the rapid development of AI also presents challenges, including the need for professional talent training, data privacy protection, and decision-making transparency. Addressing the ethics and transparency of AI and strengthening relevant skills training within the education system are vital for ensuring the technology's healthy and sustainable development.

The Effect of A on B

H2: The cognition of Artificial Intelligence will be influenced by entrepreneurial cognition.

This hypothesis focuses on exploring the relationship between entrepreneurial cognition and the understanding of artificial intelligence (AI). It examines whether

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individuals with a deep understanding of the entrepreneurial process are more likely to comprehend and utilize AI technologies, and how this cognition affects their learning and use of AI. This includes grasping the basic knowledge of AI technologies, identifying the potential applications of AI in specific industries, and evaluating how AI can enhance business efficiency and innovation.

The Effect of B on C

H3: The entrepreneurial intention will be influenced by the cognition of Artificial Intelligence.

The hypothesis focuses on exploring the relationship between the level of cognition about AI and entrepreneurial intentions. In today's digitalized and technology-driven economy, understanding AI technology is considered extremely important for modern entrepreneurs. This includes individuals' understanding of the basic principles, application scenarios, and innovation potential of AI, and how these factors influence their entrepreneurial intentions

Research Methodology

The subjects of this study primarily include students from the first year of university up to and including postgraduate levels. To effectively conduct sample selection, we will use online surveys for distribution, allowing us to quickly and broadly cover students of all grades and educational levels, ensuring that the sample is representative and encompasses various academic stages. This approach helps in obtaining a diverse group of respondents, making the research results more universally applicable. Through survey analysis, the goal is to collect 250 valid questionnaires from current university and postgraduate students.

This study's questionnaire is divided into two main parts: The first part includes personal variables such as gender, current grade level, major, work experience, interest in entrepreneurship, participation in entrepreneurship-related courses during university, exposure to artificial intelligence (AI) technology, perceived advantages of AI technology in the entrepreneurial process, potential challenges of AI in entrepreneurship, and consideration of using AI technology if planning to start a business. The second part focuses on entrepreneurial cognition (the first factor dimension includes understanding the process of creating a new company (EC1), knowing the practical

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details required to start a company (EC2), knowing how to develop an entrepreneurial plan (EC3), and being able to commercialize new ideas (EC4)). Entrepreneurial intention (I am prepared to become an entrepreneur (EI1), my career goal is to be an entrepreneur (EI2), I will strive to start and manage my own company (EI3), I am determined to establish a company in the future (EI4)).

Empirical Analysis and Results

Table 4-1 Exploratory Factor Analysis

	1	2	3
EC1	0.925		
EC2	0.890		
EC3	0.877		
EC4	0.858		
EI1		0.927	
EI2		0.871	
EI3		0.859	
EI4		0.844	
AI1			0.961
AI2			0.901
AI3			0.900
AI4			0.892
AI5			0.891

Source: Summarized by this study

This study found the lowest value to be (EI4) 0.844 and the highest value to be (AI1) 0.961. All are in compliance with the KMO rating.

Table 4-2 Cronbach's Alpha (α) values:

|	(EC)	(EI)	(AI)
α	0.933	0.923	0.950
Number	4	4	5

Source: Summarized by this study

The alpha coefficient (0.933) for(EC) signifies that the questionnaire effectively captures cognition's influence on entrepreneurial fundamentals, process comprehension, and entrepreneurial preparedness, aiding venture capitalists in evaluating potential entrepreneurs' knowledge levels. The alpha coefficient (0.923) for (EI) demonstrates the measurement tool's high consistency in assessing individuals' entrepreneurial motivations and career aspirations, facilitating understanding and support for those interested in entrepreneurship. The alpha coefficient (0.950) for (AI) cognition, underscores the tool's precision in assessing participants' opinions, expectations, and concerns regarding AI technology.

The structural equation model is used to explore the interactions and effects among different variables. Regression weights are key indicators within this model, used to assess the strength and direction of predictive relationships between variables, with Standard Error (S.E.)

and p-values used for evaluation. A smaller standard error indicates a higher precision of the estimate, while a p-value less than 0.05 indicates that the predictive relationship has reached statistical significance."

Table 4-3 structural equation modeling
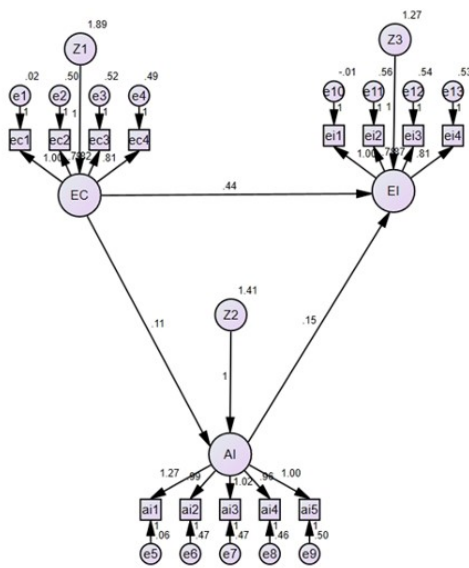
This study employs structural equation modeling (SEM) to scrutinize the nexus among entrepreneurial cognition (EC), artificial intelligence cognition (AI), and entrepreneurial intention (EI). Firstly, it investigates the influence of entrepreneurial cognition on artificial intelligence cognition. The model outcomes reveal a significant positive effect of entrepreneurial cognition on artificial intelligence cognition, with a path coefficient of 0.11,

a standard error of 0.055, a critical ratio (C.R.) of 2.002, and a P value of 0.045, denoting statistical significance. This implies that for every unit increase in entrepreneurial cognition, artificial intelligence cognition escalates by 0.11 units. Subsequently, the impact of artificial intelligence cognition on entrepreneurial intention is examined. The findings indicate a notable positive impact, with a path coefficient of 0.15, a standard error of 0.061, a critical ratio of 2.508, and a P value of 0.012, signifying statistical significance. This suggests that a one-unit rise in artificial intelligence cognition corresponds to a 0.15-unit increase in entrepreneurial intention. Lastly, the direct influence of entrepreneurial cognition on entrepreneurial intention is scrutinized. The data underscores an exceedingly significant impact of entrepreneurial cognition on entrepreneurial intention, with a path coefficient of 0.44, a standard error of 0.053, a critical ratio of 8.431, and a P value of less than 0.001 (marked as ***), underscoring the pivotal role of entrepreneurial cognition in fortifying entrepreneurial intention. Overall fit results ($\chi2/df = 1.339$), (GFI = 0.967), (AGFI = 0.951), (RMR = 0.042), (RMSEA = 0.049) ,(CFI = 1.000),(NFI = 982),(IFI =1.001),showed that the model suited the data well

In summary, the findings of this study underscore the significant positive influence of entrepreneurial cognition on both artificial intelligence cognition and entrepreneurial intention. Additionally, artificial intelligence cognition exerts a noteworthy impact on entrepreneurial intention. These outcomes corroborate the hypothesis posited in this study and underscore the pivotal role of entrepreneurial cognition in enhancing entrepreneurial intention. These results furnish an empirical foundation for future endeavors in entrepreneurship education and policy formulation, accentuating the necessity of augmenting both entrepreneurial cognition and artificial intelligence cognition to bolster entrepreneurial intention. This underscores the imperative of fostering entrepreneurial aspirations.

Conclusion and Recommendation

The study reveals that entrepreneurial cognition significantly boosts artificial intelligence (AI) cognition and entrepreneurial intentions. It highlights that enhancing entrepreneurial cognition not only develops AI-related knowledge but also strengthens entrepreneurial drive. This effect underscores the critical role of entrepreneurial education in fostering both AI cognition and entrepreneurial intentions. Findings advocate for embedding technical expertise and entrepreneurial thinking within educational systems to enhance entrepreneurial actions effectively. These results support the need for educational policies aimed at nurturing these competencies, suggesting that such efforts can lead to a more innovative, competitive, and sustainable entrepreneurial environment, promoting broader economic and social growth.

The government should develop policies to enhance entrepreneurship education at universities, ensuring these institutions have the necessary resources for quality education. Integrating AI and technical training in partnership with tech firms is vital to prepare entrepreneurs for technological shifts. Establishing a comprehensive entrepreneurial ecosystem is crucial, providing services from startup capital to market intelligence. Additionally, creating innovation and entrepreneurship hubs will offer centralized support, fostering a dynamic entrepreneurial community. This approach will help equip entrepreneurs with the skills and resources needed to succeed in an evolving market environment.

Educational institutions should prioritize the cultivation of entrepreneurial

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cognition by introducing specialized entrepreneurship courses, imparting fundamental entrepreneurial knowledge and skills, nurturing entrepreneurial mindset and capabilities among students. Inviting accomplished entrepreneurs and industry experts to deliver lectures and share their experiences at schools will inspire stu-

dents' entrepreneurial enthusiasm. Within entrepreneurship curricula, schools should integrate artificial intelligence education, incorporating artificial intelligence-related knowledge and skills to empower students with proficiency in this frontier technology and enhance their entrepreneurial competitiveness.

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