



# The effect of Artificial Intelligence Empowerment in Entrepreneurship on Agility

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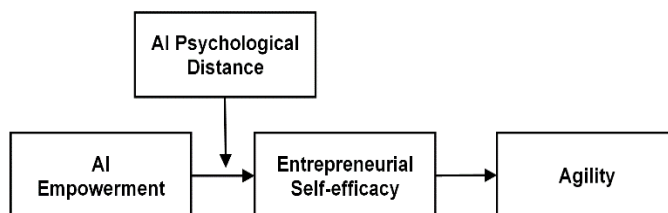
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**Abstract.** AI technologies have profoundly changed entrepreneurial activities, but previous studies focused on its instrumental role, ignoring its impact on emotion and cognition. This paper supplements the research in this field, finding that AI Empowerment in entrepreneurship positively affects Agility, Entrepreneurial Self-efficacy plays a mediating role in this process, and AI Psychological Distance positively moderates the influence of AI Empowerment on Entrepreneurial Self-efficacy.

**Keywords:** AI Empowerment, Self-efficacy, Agility, Psychological Distance.

## 1 Introduction

Digital technology has become an important driving force for economic development and enterprise growth. In the e-commerce platform, artificial intelligence technology has been used in many aspects, including marketing strategy, algorithm recommendation, intelligent customer service, intelligent warehousing and logistics. The entrepreneurial support provided by digital platform for entrepreneurs has a huge impact on entrepreneurs. Based on this background, this paper aims to explore the impact of AI Empowerment in entrepreneurship on Agility, and study the mediating role of Entrepreneurial Self-efficacy and the moderating role of AI Psychological Distance. The research model is shown in Figure 1.



**Fig. 1.** Modified Research Model

## 2 Research Hypotheses

### 2.1 Definition of Concepts

AI Empowerment in entrepreneurship. In this paper, AI Empowerment in entrepreneurship is defined as "various services and resources provided to entrepreneurs through AI technology", which mainly refers to instrumental support, including but not limited to marketing promotion, algorithm recommendation, intelligent customer service.

Entrepreneurial Self-efficacy. Drawing on the studies of many scholars on Self-efficacy (Bandura, 1977; Chen, et al., 1998; Alexander, et al., 1998)<sup>[2]-[4]</sup>, this paper defines Entrepreneurial Self-efficacy as the strength of entrepreneurs' belief that they can successfully play various roles and complete various tasks in entrepreneurship.

Agility. Agility represents the individual's tolerant and resilient mindset in the face of environmental change and the ability to actively seek favorable changes in behavior (Alavi, et al., 2014)<sup>[1]</sup>.

AI Psychological Distance. AI Psychological Distance refers to an individual's perception of distance to AI in different dimensions with reference to himself (Trope and Liberman, 2010)<sup>[9]</sup>.

### 2.2 AI Empowerment in Entrepreneurship and Agility

Relevant studies have found that digital ability is the main driver of individual agility (Ravichandran, 2018)<sup>6</sup>. AI Empowerment in entrepreneurship refers to the various digital services and resources provided to entrepreneurs, which will give them stronger digital capabilities, so it could help entrepreneurs adapt to changes in the environment, and even innovate products based on insight into customer needs (Sambamurthy et al., 2003; Škare & Soriano, 2021)<sup>[7]-[8]</sup>. Therefore, this paper proposes the following hypothesis:

H1: AI Empowerment in entrepreneurship positively impacts Agility.

### 2.3 The Mediating Role of Entrepreneurial Self-Efficacy

Entrepreneurial Self-efficacy refer to the self-confidence to use the knowledge and skills possessed to complete entrepreneurial activities. AI Empowerment in entrepreneurship can help entrepreneurs have stronger confidence to complete entrepreneurial activities. In addition, relevant studies have also proved that self-efficacy has a positive impact on agility (Maran, et al., 2022)<sup>[5]</sup>. This paper argues that entrepreneurs with strong entrepreneurial self-efficacy will respond more quickly to changes in the environment. Based on this, this paper proposes the following hypothesis:

H2: Entrepreneurial Self-efficacy mediates the positive impact of AI Empowerment in entrepreneurship on Agility.

## 2.4 The Moderating Effect of AI Psychological Distance

AI Psychological Distance affects entrepreneurs' judgment and utilization of AI Empowerment in entrepreneurship, thus changing the effect of AI Empowerment on Entrepreneurial Self-efficacy. Individuals with a long Psychological Distance from AI will have negative emotions of resistance or even aversion to AI technology. Based on this, this paper proposes the following hypothesis:

H3: AI Psychological Distance positively moderates the influence of AI Empowerment in entrepreneurship on Entrepreneurial Self-efficacy.

## 3 Research Design

### 3.1 Data Collection

A total of 202 valid questionnaires were obtained from July to October 2023, with a valid questionnaire rate of 83.13%. Among them, 44.1% were males and 55.9% were females; The population was spread out with 6.4% under the age of 25, 39.1% from 26 to 35, 32.7% from 36 to 45, 16.3% from 46 to 55, and 5.4% are over 56 years old. College degree or below 57.9%, bachelor degree 31.7%, master degree or above 10.4%; The number of years of start-up years was 34.2% for 1-3 years, 42.6% for 3-5 years, 22.8% for 5-10 years, and 0.5% for more than 10 years.

### 3.2 Variable Measurement

AI Empowerment. This paper draws on the research of the support of digital entrepreneurship, and forms the scale of AI Empowerment with 8 items, such as "the platform can provide me with intelligent marketing strategies".

Entrepreneurial Self-efficacy. This paper mainly refers to the studies of self-efficacy, and finally forms the Entrepreneurial Self-efficacy scale of this study, which contains 6 items, such as "I can cope with various emergencies in entrepreneurial activities well".

AI Psychological Distance. Psychological Distance includes four dimensions: hypothetical distance, spatial distance, time distance and social distance. Space, time and hypothetical distance all reflect people's perception of the location or the occurrence of things, while social distance reflects the perception of the distance between individuals and the environment at the level of social relations (Lieberman, et al., 2010)<sup>[9]</sup>, so this study focuses on the dimension of social distance. The measurement of AI Psychological Distance includes 4 items, such as "I have obvious strangeness to AI".

Agility. This paper adopts the agility scale in related studies, including four items such as "I quickly develop skills, adapt to new environments, and collect information".

Control variables. Demographic variables that may have an impact are taken as control variables, including gender, age, educational background.

## 4 Hypothesis Testing

### 4.1 Common Method Bias Test and Validity Test

The common method bias problem was not serious. Harman single factor test found that four factors with eigenvalues greater than 1 were extracted by unrotated factor analysis, and 87.561% of the variance was explained in aggregate, and the first factor explained 33.64% of the variance. Besides, the study has good discriminative validity, because the factor load of each variable and AVE value are greater than the threshold value of 0.5. And the combined validity is greater than 0.7, indicating that the convergent validity of this study is ideal.

### 4.2 Main Effect Test

This study uses multiple regression method to analyze the relationship among AI empowerment, entrepreneurial self-efficacy and agility in entrepreneurship (shown in Table 1). According to Model 4 in Table 1, AI Empowerment in entrepreneurship has a significant positive impact on agility ( $\beta=-0.151$ ,  $p<0.001$ ), so hypothesis 1 is supported.

**Table 1.** Results of regression model analysis of main effect and mediating effect

	ESE			A	
	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	-0.061	-0.029	0.035	0.057	0.064
Age	0	0.004	-0.04	-0.039	-0.039
Education Back-ground	0.019	-0.011	0.013	-0.005	-0.003
Start-up years	-0.041	-0.021	-0.003	0.01	0.015
AIE		0.303***		0.193***	0.112**
ESE					0.267***
$\Delta R^2$	.004	.093	.008	.102	.173

Note: \* denotes  $p<0.05$ , \*\* denotes  $p<0.01$ , \*\*\* denotes  $p<0.001$ . AIE = AI Empowerment, ESE = Entrepreneurial Self-efficacy, A = Agility.

### 4.3 Mediating Effect Test

According to Model 2 in Table 1, AI Empowerment has a positive impact on entrepreneurial self-efficacy ( $\beta=0.303$ ,  $p<0.001$ ). Models 4 and 5 shows that AI Empowerment has a positive impact on Agility ( $\beta=0.193$ ,  $p<0.001$ ), and Entrepreneurial Self-efficacy has a positive impact on Agility ( $\beta=0.267$ ,  $p<0.001$ ), so hypothesis 2 is supported.

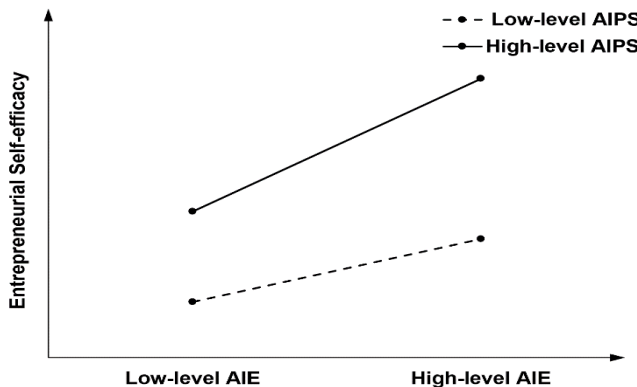
**Table 2.** Regression model analysis results of the moderating effect

	ESE		
	Model 1	Model 2	Model 3
Gender	-0.061	-0.026	0.043
Age	0	0.007	0.013
Education Background	0.019	-0.016	-0.011
Start-up years	-0.041	-0.02	-0.009
AIE		0.3***	0.125*
AIPD		0.034	-0.067
AIE * AIPD			0.609***
▲R <sup>2</sup>	.004	.095	.467

Note: \* denotes  $p < 0.05$ , \*\* denotes  $p < 0.01$ , \*\*\* denotes  $p < 0.001$ . AIE = AI Empowerment, ESE = Entrepreneurial Self-efficacy, AIPD = AI Psychological Distance.

#### 4.4 Moderating Effect Test

As can be seen from model 3 in Table 2, the interaction term of AI Empowerment in entrepreneurship and AI Psychological Distance has a significant positive impact on Entrepreneurial Self-efficacy ( $\beta = 0.609$ ,  $p < 0.001$ ). According to the graph of the moderating effect of AI Psychological Distance (Figure 2), the moderating effect of high-level AI Psychological Distance on entrepreneurial self-efficacy is stronger than that of low-level AI Psychological Distance, so hypothesis 3 is supported.

**Fig. 2.** The Moderating Effect

## 5 Conclusions

From the perspective of entrepreneurial self-efficacy, this study explores the impact of AI Empowerment in entrepreneurship on the Agility of entrepreneurs, emphasizes the role of AI Empowerment in cognitive and emotional aspects in entrepreneurship, and complements the research in this field. Through empirical research, this paper draws

the following conclusions: (1) AI Empowerment in entrepreneurship will positively affect the Agility of entrepreneurs and enhance the insight and adaptability of entrepreneurs to the environment. (2) Entrepreneurial Self-efficacy mediates the influence of AI Empowerment on Agility. The empowerment effect of AI affects the Agility of entrepreneurs by influencing their self-efficacy. (3) AI Psychological Distance positively moderates the influence of AI Empowerment on Entrepreneurial Self-efficacy. And there are some shortcomings: (1) The use of subjective data collection may be biased from the objective reality. (2) Limitations of self-compiled scales, and more empirical studies are needed to test it in the future. (3) Limitations of variables. The scope of variables can be broadened in the future.

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