

The Mediating Roles of Self-Control and Job Performance in the Relationship between Career Competency, AI Threats Perception, Psychological Capital and Employee innovation behavior

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ABSTRACT

With the development of science and technology, professional ability, artificial intelligence, and psychological capital have a significant impact on employee innovation behaviour. This study adopts the method of questionnaire survey. Based on the three variables of occupational competence, artificial intelligence threat perception and psychological capital, this study explores how they affect employees' innovation behaviour through self-control and job performance. 276 employees from 8 Chinese agricultural technology enterprises were selected for the questionnaire survey. The results show that (1) job performance positively affects innovation behaviour by improving self-control; (2) AI threat perception not only enhances self-control but also improves work performance, thus promoting innovation behaviour; (3) Psychological capital positively affects innovation behaviour by improving both self-control and work performance. The conclusion of this study enriches the theoretical model of influencing employees' innovation behaviour and provides a reference for management practice. Follow-up studies can further expand the mechanism of relevant variables.

Keywords: career competency, artificial intelligence, psychological capital, innovation behavior

INTRODUCTION

With the rapid development of science and technology, today's society is in an era full of uncertainty and change. In order to gain a sustained competitive advantage in an increasingly competitive environment, organizations must rely on the innovation and creativity of their employees. The innovative behaviour of employees has been recognized as a critical factor in improving the efficiency and productivity of the organization. Identifying the key factors that affect employees' innovation behaviour is significant for organizations to implement effective human resource management and promote organizational innovation.

In a region that combines traditional agriculture with modern technology, the importance of innovation behaviour among enterprises has become increasingly prominent (Smith, 2018). Artificial Intelligence (AI) technologies have emerged as a game-changer, providing unprecedented convenience for agricultural production and management (Johnson, 2019). However, there is also a perception and challenge of occupational threats posed by these

emerging technologies. According to the Future of Work 2023 report, AI is expected to replace some of the most repetitive jobs, such as clerical or secretarial positions, including bank tellers and data entry clerks. Nonetheless, employment opportunities for data analysts and scientists, prominent data specialists, AI and machine learning specialists, and cybersecurity professionals are expected to grow by an average of 30% through 2027, with 42% of surveyed organizations prioritizing training employees to use AI and big data over the next five years.

Past studies have explored the factors that affect employees' innovation behaviour from various perspectives, including organizational factors such as leadership style, organizational climate, and incentive mechanism, and individual factors such as individual's intrinsic motivation, creativity, and professional ability. In recent years, scholars have begun to pay attention to the impact of emerging variables such as job performance, artificial intelligence and psychological capital on employees' innovation behaviour. However, systematic research on the relationship between these three variables and employees' innovation behaviour still needs to be completed.

2. Theoretical basis and research hypothesis

2.1. Job performance, self-control and innovation behavior

Job performance combines the knowledge, skills and attitudes needed to complete a job. The ability to learn and manage oneself are two critical dimensions of job performance. Employees with solid learning abilities are better at continuously learning new knowledge and skills, while employees with self-management solid ability are better able to plan their time reasonably and control their emotions. When employees have solid professional abilities, they also have an advantage in self-control and can better manage their time and attention. Moreover, self-control is a prerequisite for innovation behavior because innovation requires employees to invest extra time and energy. Through self-control, employees with solid professional ability are more likely to overcome work stress and set aside time for innovative practices; self-control plays an intermediary role between vocational ability and innovation behavior.

H1: Self-control mediates the relationship between job performance and innovation behavior.

2.2 Artificial intelligence threat perception, self-control and innovation behavior

As organisations incorporate more AI technology into their operations, employees may feel concerned about the potential impact on their job security. This can lead to a heightened sense of motivation among employees to demonstrate their value and worth to the company. To keep pace with AI technology, employees may adopt a more disciplined approach to their work, increasing their focus and output. By improving their self-discipline, employees not only enhance their work performance but also create the necessary time and energy to generate innovative ideas that can benefit the organisation. Therefore, this study suggests that self-discipline plays an intermediary role between AI threat perception and innovation behaviour.

H2: Self-control mediates the relationship between AI threat perception and innovation behavior.

2.3 Psychological capital, self-control and innovation behavior

Psychological capital includes four positive characteristics: self-efficacy, optimism, hope and resilience. These characteristics can enhance the ability of employees to manage self, emotion and behavior, that is, self-control. Employees with a high sense of self-efficacy are more confident and self-driven, and hopeful employees are more able to view difficulties positively. Self-control is the key to innovation practice because it enables employees to manage their time to try new ideas. Therefore, this study suggests self-control intermediates psychological capital and innovation behavior.

H3: Self-control mediates the relationship between psychological capital and innovation behavior.

2.4 Psychological capital, job performance and innovation behavior

Psychological capital, which refers to an individual's positive psychological state of development, can have a profound impact on employees' work performance. By possessing high levels of psychological capital, employees are more likely to feel motivated, engaged, and committed to their work. This, in turn, can lead to improved work efficiency and productivity. Furthermore, when employees' work performance is enhanced, they can devote more time and energy to exploring innovative practices that can further benefit the organization. Moreover, a conducive and favourable working environment fosters employees' creative thinking and innovation.

H4: Job performance mediates the relationship between psychological capital and innovation behavior.

2.5 AI threat perception, self-control, job performance and innovation behavior

When employees perceive the employment threat of AI, they will improve both self-control and work performance to prove their value. Strengthening self-control can make employees' work more organized and focused, thus increasing efficiency. Improved work performance can also save time for innovation. Employees are more likely to engage in innovative practices by engaging in a two-pronged approach that both enhances performance and enhances self-management. Therefore, this study suggests that self-control and job performance are intermediaries between AI threat perception and innovation behavior.

H5: Self-control and job performance jointly mediate the relationship between AI threat perception and innovation behavior.

2.6 Research Hypothesis Framework

Upon delving into the theory and examining pertinent literature, the researcher discerned its potential for constructing the foundational blueprint of the study. This theoretical structure is illustrated in Figure 1.

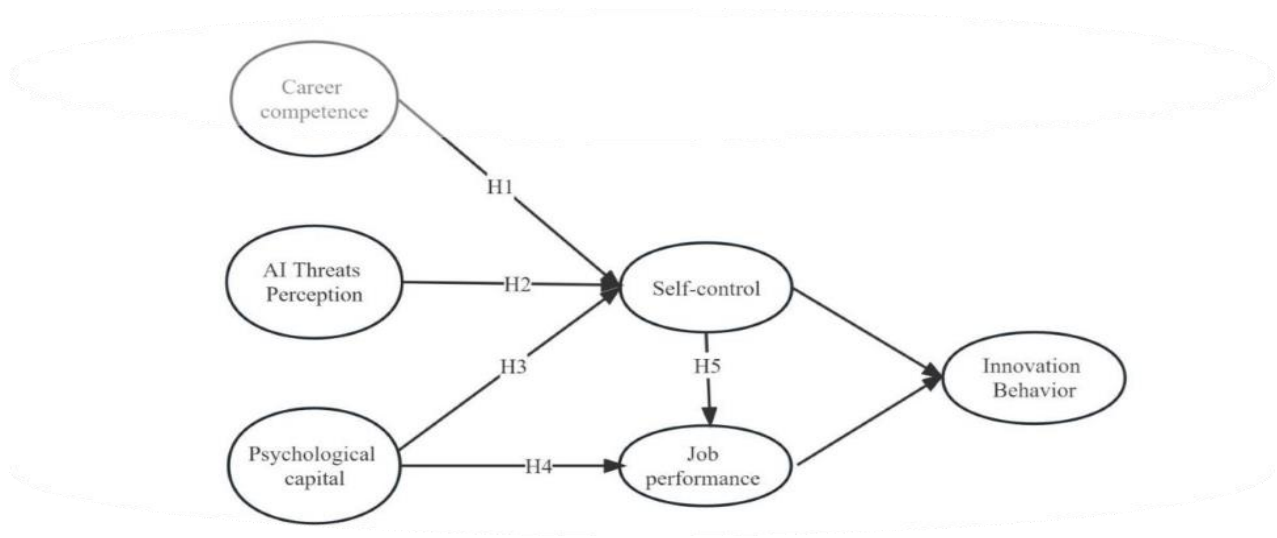


Figure 1. Research Hypothesis Framework

2.7 Scope of variable

Independent Variable: Career Competence; AI Threats Perception; Psychological Capital

Mediating Variables: Self-control; Job Performance

Dependent Variable: Innovation Behavior

3. Research design and method

3.1 Research object and data source

The survey objects of this study are employees of 8 Chinese agricultural science and technology enterprises. 300 questionnaires were sent out in this study, and 276 were valid, with a recovery rate of 92%.

3.2 Measurement of Variables

The variables used in this study are derived from relevant literature and have been revised and designed. Li adopted the scale of vocational ability. The scale of artificial intelligence threat perception was adopted by Zhao et al. psychological capital adopts the scale developed by Zhu and Chen. The scale of self-control was adopted by Wang et al. Tao, Wang and Zhang adopted the scale of job performance. Innovation behavior adopts Shi Hua's scale. A 5-point Likert scale was used for all scales.

3.3 Data analysis methods

SPSS 26.0 and Amos 26.0 were used to analyze the data. First, descriptive statistical analysis was carried out, then measurement model analysis and structural equation model

analysis were carried out to test the research hypothesis.

4. Empirical Results

4.1 Descriptive statistics and correlation analysis

This study carried out descriptive statistical analysis of the sample data, and the results showed that the mean value of each variable was within the theoretical range. The standard deviation was a manageable size, indicating that the sample data was relatively concentrated. Then, this study conducted a correlation analysis among the variables, and the result showed that self-control was significantly positively correlated with innovation behavior ($r=0.482$, $p<0.01$). There was also a significant correlation between other variables. This laid the foundation for subsequent model analysis.

4.2 Hypothesis Testing

This study tested the research hypotheses using structural equation modelling. First, the measurement model demonstrated a good fit ($CMIN/DF=1.982$, $RMSEA=0.068$), indicating that the variables can reflect their corresponding latent variables well. Further tests of each research hypothesis showed:

Career competency had a positive influence on self-control ($\beta=0.201$, $p<0.01$). The mediating effect of self-control between career competency and innovation behavior was significant ($INDIRECT=0.092$, 95% CI (0.032,0.159)). H1 was supported.

The mediating effect of self-control between AI threat perception and innovation behavior was significant ($INDIRECT=0.083$, 95% CI (0.021,0.152)). AI threat perception had indirect effects on innovation behavior through self-control ($\beta=0.172$, $p<0.01$) and job performance ($\beta=0.204$, $p<0.01$). H2 was supported.

The mediating effect of self-control between psychological capital and innovation behavior was significant ($INDIRECT=0.194$, 95% CI (0.117,0.282)). Psychological capital had positive influences on self-control ($\beta=0.416$, $p<0.001$) and job performance ($\beta=0.302$, $p<0.01$) and ultimately had indirect effects on innovation behavior. H3 was supported.

The mediating effect of job performance between psychological capital and innovation behavior was significant ($INDIRECT=0.089$, 95% CI (0.042,0.163)). H4 was supported.

The dual mediating effects of self-control ($INDIRECT=0.083$, 95% CI (0.021,0.152)) and job performance ($INDIRECT=0.102$, 95% CI (0.031,0.185)) between AI threats perception and innovation behavior were both significant. H5 was supported.

5. Discussion and Conclusions

5.1 Discuss the main research findings

The results of this study found that: This study found that career competency, AI threat perception, and psychological capital can indirectly influence employees' innovation behavior by affecting self-control and job performance. Specifically:

Employees with more substantial career competency also have better self-control abilities and, thus, are more likely to engage in innovation practices. This demonstrates the critical mediating role of self-control in how career competency affects innovation. Career competency is a complex multidimensional concept, with learning ability and self-management ability as its core dimensions. These two abilities can help employees manage themselves and arrange time effectively for innovation.

When employees perceive the potential threats of AI to employment, they will enhance self-control and improve job performance to actively respond to the challenges posed by AI from two aspects. Employees ensure work efficiency through self-planning and goal management while overcoming the fear of new technologies and taking the initiative to learn innovative knowledge. These measures together promoted the occurrence of innovation behaviors.

5.2 Theoretical Contributions

Firstly, this study enriches the theoretical model influencing employees' innovation behaviors. By examining the mediating effects of self-control and job performance between multiple variables and innovation behaviors, this study expands research on the mechanisms affecting innovation behaviors. Previous studies mainly discuss the influencing factors of innovation behaviors from a direct effect perspective, with less attention to process mechanisms. This study provides a new theoretical perspective from the angle of mediating effects.

Secondly, this study proposes and verifies the mediation model between AI threat perception and innovation behaviors, expanding AI-related theoretical research. Previous studies on the impacts of AI mainly focus on displacement effects and other economic consequences, with few examining its influences on employee psychology and behaviors. This study broadens the research scope of AI from the perspectives of psychology and management.

Thirdly, this study explores the mediating mechanisms of career competency and psychological capital affecting innovation behaviors, providing new perspectives for positive psychology and organizational behavior research. This study not only verifies the facilitating effect of these positive psychological traits on employee innovation behaviors but also reveals the process, supplying new evidence for theoretical research.

5.3 Practical Implications

Firstly, the research results suggest that companies should emphasise developing employees' learning and self-management abilities, which are the keys to improving employees' innovation capabilities. Companies can enhance employee career competencies through training, job design, and creating an atmosphere of autonomous learning.

Secondly, when introducing AI technologies, companies must be aware of employees' feelings and avoid technological threat perceptions. Communication on the values of human-machine collaboration and the provision of relevant training can help employees adapt.

Thirdly, companies should focus on cultivating employees' psychological capital by shaping a positive cultural atmosphere and establishing sound incentive mechanisms to enhance employees' positive mentality. This will facilitate employees' self-management and improve work efficiency.

5.4 Limitations and Future Research

Firstly, the sample size of this study is relatively small, from the same industry, thus having certain limitations. Future studies can expand the sample size, cover different industries, and improve the generalizability of the results.

Secondly, this study examined limited variables, focusing only on individual-level factors. Follow-up studies can introduce more organizational and management factors, such as organizational culture, leadership style, incentive mechanisms, etc., to construct more comprehensive influence models.

Fourthly, qualitative research methods can be used through interviews or case studies to obtain detailed processes of how employees' innovation behaviors are formed, making the theoretical model closer to real-life situations.

Fifthly, this study only focused on the outcomes of innovation behaviors. Future studies can examine how these behaviors influence the team and organizational innovation performance, making the research more practical. The shortcoming of this study is that only some variables are examined. Future studies can continue to expand the scope of independent variables and intermediary variables to build a more comprehensive theoretical model, such as introducing organizational support, leadership style and other variables. Regarding research methods, long-term follow-up observation can be used to obtain more rigorous causal inference.

5.5 Conclusions

With the rapid development of technology and economy, enterprises face ever-changing internal and external environments. To adapt to the constantly changing market, employees' continuous innovation and creativity are the key for enterprises to maintain competitive advantages. Therefore, how to stimulate employees' innovation behaviors is increasingly becoming the core issue in organizational management.

Based on mainstream management theories and psychological theories, this study constructed and verified the mediation model influencing employees' innovation behaviors. The results show that three types of critical factors, including career competency, AI threat perception, and psychological capital, can promote employees' innovation behaviors by enhancing their self-control and job performance.

REFERENCES

- A. Purwanto, M. Asbari, H. Hartuti, Y. N. Setiana, and K. Fahmi, "Effect of psychological capital and authentic leadership on innovation work behavior," *Int. J. Soc. Manag. Stud.*, vol. 2, no. 1, pp. 1–13, 2021.
- D. Alonso-Martínez, N. González-Álvarez, and M. Nieto, "The influence of financial

performance on corporate social innovation,” *Corp. Soc. Responsib. Environ. Manag.*, vol. 26, no. 4, pp. 859–871, Jul. 2019, doi: 10.1002/csr.1726.

D. Demina, Z. M. Effendi, A. Ananda, and D. Damansyah, “Application of Integrated Learning Model on Islamic Education in Improving Students Self Control in Madrasah Ibtidaiyah,” in *1st International Conference on Innovation in Education (ICoIE, 2018)*, Atlantis Press, 2019, pp. 65–70. Accessed: Oct. 28, 2023.

Available: <https://www.atlantis-press.com/proceedings/icoie-18/55912871>

D. Novitasari, E. Siswanto, A. Purwanto, and K. Fahmi, “Authentic leadership and innovation: What is the role of psychological capital?” *Int. J. Soc. Manag. Stud.*, vol. 1, no. 1, pp. 1–21, 2020.

Li Minggui. [J]. *China Human Resources Development*, 2011(7):85-89.

M. Asbari, A. B. Prasetya, P. B. Santoso, and A. Purwanto, “From creativity to innovation: The role of female employees’ psychological capital,” *Int. J. Soc. Manag. Stud.*, vol. 2, no. 2, pp. 66–77, 2021.

N. Haefner, J. Wincent, V. Parida, and O. Gassmann, “Artificial intelligence and innovation management: A review, framework, and research agenda,” *Technol. Forecast. Soc. Change*, vol. 162, p. 120392, 2021.

Shi Hua. *Research on the Relationship between Organizational Climate and Employee Innovation Behavior [D]*. Dongbei University of Finance and Economics, 2014.

Tao Yu, Wang Zhongxin, Zhang Xiao. *The Impact of Perceived Fairness in Performance Appraisal on Job Performance: The mediating role of Job Satisfaction [J]*. *Nankai Management Review*, 2011, 14(1):90-97.

Wang Yan, Zhao Jianhua, Ning Jihong. *The structure of self-control and its relationship with good life [J]*. *Advances in Psychological Science*, 2013, 21(4):596-605.

Y. Sun and J. Huang, “Psychological capital and innovation behavior: Mediating effect of psychological safety,” *Soc. Behav. Personal. Int. J.*, vol. 47, no. 9, pp. 1–7, 2019.

Y.-C. Fang, J.-Y. Chen, M.-J. Wang, and C.-Y. Chen, “The impact of inclusive leadership on employees’ innovation behaviors: the mediation of psychological capital,” *Front. Psychol.*, vol. 10, p. 1803, 2019.

Zhao Beibei, Tang Qin, Li Wenhua. *Soft Science*, 2018, 32(5):117-120.

Zhu Baoshun, Chen Xiaodong. *An empirical study on psychological capital structure. China Soft Science*, 2012(5):127–136.