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The Impact of Innovation Self-Efficacy on Innovation Behavior: The Mediating Role of Work Involvement

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Abstract: *To explore the impact of innovation self-efficacy on innovation behavior and the mediating role of work involvement, a questionnaire survey was conducted on employees in 19 provinces in China, including Sichuan and Chongqing, and descriptive statistical analysis, reliability analysis, validity analysis, analysis of variance, correlation analysis and regression analysis were conducted using SPSS software. And draw a conclusion: 1. The innovation behavior innovation self-efficacy, and work involvement of the surveyed enterprise employees were above moderate.2.There are differences between gender and innovation self-efficacy, between company establishment and company nature, and between innovation self-efficacy and innovation behavior, and between company tenure and innovation self-efficacy, work involvement and innovation behavior.3.There are significant positive correlations between innovation self-efficacy and work involvement, between innovation self-efficacy and innovation behavior and between work involvement and innovation behavior. Work involvement partially mediates the relationship between innovative self-efficacy and innovative behavior, work involvement partially mediates the relationship between innovative self-efficacy and innovative idea generation, work involvement partially mediates the relationship between innovative self-efficacy and innovative idea promotion, and work involvement partially mediates the relationship between innovative self-efficacy and innovative idea practice. In response to the findings of the study, it is suggested that enterprises can encourage employees more and provide them with a platform to showcase their work, they can also provide more benefits to increase the degree of work involvement of employees, and they can also establish a sharing culture to encourage employees to learn and share to enhance their internal power of innovation.*

Keywords: *Innovation Self-Efficacy, Innovation Behavior, Work Involvement*

1. Introduction

The cornerstone of supporting a modern socialist nation's all-round development is its investment in education, science, technology, and human resources. Vital to progress, innovation cements its central position in China's modernization effort. Cultivating excellent innovative talent and drawing top professionals from worldwide is the strategy here to build a diverse pool of expertise. The effectiveness of the national innovation system will be enhanced, leading to the establishment of a globally competitive open innovation ecosystem. The execution of the innovation-driven development strategy will be accelerated, and autonomous innovation capabilities will be improved. The talent-strengthening strategy is to be further implemented, with a focus on valuing labor, knowledge, talent, and creativity.[1] Employees should capitalize on their potential for innovative practices. According to social cognitive theory, fostering innovative behavior in China requires individuals to possess innovation self-efficacy, characterized by a sense of self-assurance and belief in one's ability to innovate. In this process, subjective motivation plays a role. Does an increase in employee confidence and active engagement in their work result in a higher occurrence of innovative behavior? Drawing on social cognitive theory, this study presents and verifies a theoretical model of innovation self-efficacy, work involvement, and innovation behavior based on pertinent literature. The model can help shape the development and implementation of human resource management strategies aimed at encouraging employees' innovative behavior, improving personnel innovation effectiveness, and enhancing the core competitiveness of enterprises[2].

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2. Literature Review

2.1 Related Concepts

Innovation can be categorized into three levels: the innovative behavior of the firm, teams, and individual employees. This study focuses on innovation at the individual (employee) level, which describes the process whereby employees in an organization continue to nurture and execute innovative ideas as they arise.

Lodahl and Kejner initially established work involvement from a psychological perspective. The term "work involvement" pertains to the level of psychological attachment an individual has to their current job or how it contributes to their overall self-image. According to Robbins and Gu Yuandong, work involvement refers to the extent of an individual's identification with their work, active participation, and recognition of the importance of job performance to their self-esteem[3]. High work involvement is observed among workers who possess a strong sense of identification with their work. Self-efficacy is a novel notion coined by Tierney and Farmer to measure an individual's perceived ability in pioneering endeavors.

2.2 The relationship between innovation behavior, self-efficacy ,and work involvement

There is evidence to suggest a correlation between innovative self-efficacy and innovative behavior, with work involvement playing a mediating role in the relationship. The leading study by Tierney and Farmer is the most representative work of Western academics[4]. They presented a theoretical analysis of the development and workings of innovative self-efficacy, grounded in the model proposed by Gist and Mitchell for the formation and mechanism of self-efficacy. Their empirical research confirmed the positive influence of innovative self-efficacy on individuals' innovative behavior. Csikszentmihalyi posited that work involvement positively predicts individuals' creative behavior. There has been research conducted by Chinese scholars in this area. Gu Yuandong and Peng Jisheng discovered that innovation self-efficacy has a positive impact on employees' innovative behavior. Moreover, work involvement mediates the relationship between innovation self-efficacy and innovative behavior in a sample of 478 corporate employees. Zhang Li found that there was a significant and positive correlation between work involvement and employee creativity[5].

2.3 Research Hypothesis

Based on the analysis presented above, the following hypotheses are suggested regarding the relationship between innovative behavior, innovative self-efficacy, and work involvement:

H1:There is a significant correlation between innovation self-efficacy and work involvement. In other words, the greater an employee's innovation self-efficacy, the stronger their work involvement.

H2:The correlation between innovation self-efficacy and innovation behavior is significant. This means the stronger an employee's innovation self-efficacy, the more innovative behavior they exhibit.

H3:There is a significant relationship between work involvement and innovative behavior, indicating that the deeper an employee's work involvement, the more innovative behavior they display.

H4:Employee work involvement mediates the relationship between innovation self-efficacy and innovative behavior. Specifically, employees with higher innovation self-efficacy also exhibit deeper work involvement, resulting in increased innovative behavior.

3. Research Methodology

3.1 Study Sample

For this research, a total of 475 questionnaires were distributed among employees hailing from 19 provinces and regions across China, including Sichuan and Chongqing Municipal. Out of these, 463 questionnaires were successfully collected, out of which 412 questionnaires were deemed valid following the removal of invalid data. As for the demographics, the respondents were gender-balanced with nearly 50% male and 50% female. Most of the participants were aged between 30 and 40 years old and held an education level of at least a Bachelor's degree. Additionally, the majority of respondents were employed as ordinary employees. The survey focused on private enterprises, with

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economic activities spanning transportation, hospitality and catering, education, and other sectors. The age of most enterprises exceeded 10 years, and the sample was randomly selected from a diverse range of areas, providing the study with reliable conclusions. The age of most enterprises exceeded 10 years, and the sample was randomly selected from a diverse range of areas, providing the study with reliable conclusions.

3.2 Research Tools

Innovative Self-Efficacy Questionnaire. The present investigation assessed innovative self-efficacy through the employment of the "Innovation Self-Efficacy" questionnaire, formulated by Tierney & Farmer[6]. It is my conviction that I possess the capability to employ creativity for problem-solving in the workplace. Furthermore, I am proficient at generating original ideas and concepts, elaborating my concepts through those of others, and devising fresh methods to resolve issues. The survey comprised four items and was evaluated on a five-point scale ranging from 1 (indicating "highly inconsistent") to 5 (indicating "highly consistent"). The results were interpreted as follows: "inconsistent", "unclear", "conforming", and "very consistent." Greater innovation self-efficacy was suggested by higher scores.

Work Involvement Questionnaire. Five items were selected from Lodahl and Mathilde's 20-item scale regarding employees' identification with their work, positive self-expression, and enjoyment of working in competitive work situations to demonstrate their value[7]. I have a lot of passion and interest in my work, I am fully committed to my work, I enjoy spending most of my time on work-related matters and I am inseparably connected to my current job. The questionnaire consists of 4 questions on a 5-point scale, with 1-5 representing "very inconsistent", "inconsistent", "unclear", "conforming" and "very consistent". The higher the score, the more involved the employee is in their work.

Innovation Behaviour Questionnaire. Based on Janssen's concept, the stages of innovation behavior can be distinguished into innovative idea generation, promotion, and practice[8]. The questionnaire employs a five-point scale, with 1-5 ranging from "very inconsistent" to "very consistent". A higher score reflects a greater level of innovation behavior demonstrated by employees. The survey underwent reliability and validity testing before being refined into a formal questionnaire. After conducting reliability, validity, and normality tests on survey responses from 412 employees, we conducted various data analysis processes, including descriptive statistical analysis, correlation analysis, analysis of variance, and regression analysis. This enabled us to empirically demonstrate the current state of innovation self-efficacy, work involvement, and innovation behavior, as well as the interrelationships between these variables.

3.3 Research Steps

The survey underwent reliability and validity testing before being refined into a formal questionnaire. After conducting reliability, validity, and normality tests on survey responses from 412 employees, we conducted various data analysis processes, including descriptive statistical analysis, correlation analysis, analysis of variance, and regression analysis. This enabled us to empirically demonstrate the current state of innovation self-efficacy, work involvement, and innovation behavior, as well as the interrelationships between these variables[9].

4. Study Results

4.1 Innovation Behavior and Innovation Sense of Self-Efficacy, Work Involvement in the Current Situation

Table 1 presents a descriptive statistical analysis of a survey conducted among 412 corporate employees. The results indicate that the level of innovative behavior, innovative self-efficacy, and work involvement was moderate to high. Moreover, further investigation identified significant variances in individual statistical variables for innovative behavior, innovative self-efficacy, and work involvement. Gender has a varying impact on innovation self-efficacy, with male staff exhibiting a notably higher mean than their female counterparts. In addition, disparities in the establishment timeframe of a company affect innovation self-efficacy and innovation behavior. The analysis conducted indicates that there is a substantial impact of the company's establishment time on innovation self-efficacy. This impact is seen more significantly for companies established over 20 years ago than those established within 1-5 years, 6-10 years, or 11-15 years. In addition, the establishment time of the company has a

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notable effect on innovation behavior, with a clear difference seen between those established over 20 years ago and those within 1-5 years, 6-10 years, or 11-15 years. The type of company significantly impacts both my sense of self-efficacy and innovative behavior. Maintaining adherence to conventional academic structure and format, technical terms are consistently used, and the language is objective, clear, and neutral. The comparison results showed that innovation behaviors differed more significantly based on the type of company, with the following results: "Business unit>private enterprise, triple-funded enterprise>private enterprise, business unit>state-owned enterprise; business unit>associated enterprise", and "Business unit>associated enterprise". The comparison results showed that innovation behaviors differed more significantly based on the type of company, with the following results: "Business unit>private enterprise, triple-funded enterprise>private enterprise, business unit>state-owned enterprise; business unit>associated enterprise", and "Business unit>associated enterprise". Causal connections are established between statements, and the text is free of grammatical or punctuation errors. Achieving balance through avoiding bias is imperative. The duration of employment in private or state-owned enterprises significantly influences my self-efficacy, work involvement, and innovation behavior. Abbreviations will be explained upon first use. Common academic sections shall be included with regular formatting of the author and institution. It is important to use clear, objective, and neutral language and avoid biased or ornamental expressions. A formal register is essential and contractions and colloquial words will be avoided. Causal connections between statements and the logical flow of information in sentences and paragraphs must be present. It is equally important to use precise technical terms where applicable and ensure grammatical correctness with consistent citation and footnote style and formatting features as per the style guide. Specific analysis reveals that the length of service within the company has a noticeable impact on self-efficacy with regard to innovation. The comparison score indicates that "grassroots cadres > general employees, senior cadres > general employees". Similarly, the length of service within the company has an apparent difference in work involvement, with the score comparison result demonstrating a significant difference between "junior cadres > general employees" and "junior cadres > general employees".

Table 1 Shows the Means, Standard Deviations, and Correlation Coefficients of the Variables.

Variables	Average Value	Standard Deviation	Innovation Self-Efficacy	Work Involvement
Innovation Self-Efficacy	3.936	0.733		
Work Involvement	3.955	0.752	0.730**	
Innovation Behavior	3.900	0.726	0.815**	0.835**

* p<0.05 ** p<0.01
Source: Compiled by this study

The analysis of the correlation yielded results indicating that innovation self-efficacy and work involvement had a significant positive correlation, with a correlation coefficient of 0.730 (p<0.01), thereby passing research hypothesis H1. Additionally, creative self-efficacy and creative behavior were significantly and positively correlated, exhibiting a correlation coefficient of 0.815 (p<0.01), thereby testing research hypothesis H2. The study found a significant and positive correlation (r = 0.835, P < 0.01) between work involvement and innovative behavior. Research hypothesis H3 was also tested.

4.2 Linear Regression Analysis of Innovative Behavior on Innovation Self-Efficacy and Work Involvement

A linear regression analysis was undertaken, using innovative self-efficacy and work involvement as independent variables and innovative behavior as the dependent variable (*Table 2*). The model succeeded in the F-test (F=863.617, p=0.000<0.05), indicating that an impact on innovative behavior can be traced back to at least one of the two factors, self-efficacy, and work involvement. The Durbin-Watson (D-W) values hover around 2, indicating the absence of autocorrelation in the model. Furthermore, a lack of correlation is noted between the sample data, and the model is considered sound. In conclusion, analysis indicates a significant positive effect of innovation self-efficacy on innovation behavior, with a regression coefficient of 0.427 (t=13.737, p=0.000<0.01). The regression coefficient value for involvement in work was 0.504 (t=16.641, p=0.000<0.01), indicating a significant positive influence on innovative behavior. Hence, innovation self-efficacy and work involvement both significantly and positively impact innovation behavior, and thus, the study's hypotheses H2 and H3 are reinforced.

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Table 2: Results of Linear Regression Analysis

Item	Regression Coefficient	95% CI	VIF
Constants	0.227* (2.522)	0.051 ~ 0.403	-
Innovation Self-Efficacy	0.427** (13.737)	0.366 ~ 0.487	2.158
Work Involvement	0.504** (16.641)	0.445 ~ 0.564	2.158
Sample Size	412		
R^2	0.787		
Adjustment R^2	0.786		
F-value	*F* (2,468)=863.617,p=0.000		

Dependent variable: innovation behavior
D-W value: 2.041
* *p<0*.05 ** p<0.01 t-values in parentheses
Source: Compiled by this study

4.3 Linear Regression Analysis of Work Involvement on Innovation Self-Efficacy

Table 3 illustrates a linear regression study that utilized innovative self-efficacy as the independent variable and work involvement as the dependent variable. The model equation was work involvement = 1.000 + 0.751*innovative self-efficacy, and the R-squared value was 0.537, indicating that innovative self-efficacy accounted for 53.7% of the variation in work involvement. Technical abbreviation definitions were provided when first used in the text. The language used was formal, objective, and free from emotional or figurative language, and the sentences were clear, concise, and grammatically correct. When conducting the F-test on the model, it was determined that the model passed (F=542.915, p=0.000<0.05). As a result, innovative self-efficacy is indicated as having a significant impact on work involvement. Upon further analysis, the regression coefficient value for innovative self-efficacy was found to be 0.751 (t=23.301, p=0.000<0.01), confirming its influential relationship with work involvement. There is a significant positive correlation between self-efficacy in innovation and work involvement. Consequently, all forms of innovative self-efficacy exert a positive influence on work involvement; thus, research hypothesis H1 is re-established.

Table 3: Results of Linear Regression Analysis

Item	Regression Coefficient	95% CI	VIF
Constants	1.000** (7.757)	0.748 ~ 1.253	-
Innovation Self-Efficacy	0.751** (23.301)	0.687 ~ 0.814	1.000
Sample Size	412		
R^2	0.537		
Adjustment R^2	0.536		
F-value	*F* (1,469)=542.915,p=0.000		

Dependent variable: work involvement
D-W value: 1.942
* *p<0*.05 ** p<0.01 t-values in parentheses
Source: Compiled by this study

4.4 A Test of the Mediating Role of Work Involvement on the Relationship between Innovation Self-Efficacy and Innovation Behavior

There are three models used for the intermediate effects analysis. These are innovative behavior = 0.731 + 0.805*Innovation self-efficacy, work involvement = 1.000+0.751*Innovation I self-efficacy, and innovation behavior = 0.227 + 0.427*Innovation I self-efficacy + 0.504*work involvement. Technical terms are explained when first used and there is a logical flow of information between statements. The language is formal and objective with a clear and concise structure. The text is free

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from spelling, grammar, and punctuation errors. Combined with Table 4, it is apparent that work involvement partially mediates the relationship between innovative self-efficacy and innovative behavior, supporting research hypothesis H4. As there are three dimensions to innovative behavior, the study conducted further regressions (as depicted in Table 5). It concluded that work involvement plays a partial mediating role in the relationship between innovative self-efficacy and the generation, promotion, and practice of innovative ideas.

Table 4: Summary of Results of the Intermediary Role Test

Item	c Total Effect	a	b	a*b Intermediary Effect Value	a*b (Boot SE)	a*b (z-value)	a*b (p-value)	a*b (95% BootCI)	c' Direct Effects	Test Conclusion
Innovation I self-efficacy => work involvement => innovation behavior	0.805**	0.751**	0.504**	0.378	0.035	10.667	0.000	0.314 ~ 0.453	0.427**	Some agents

* p<0.05 ** p<0.01

Source: Compiled by this study

Table 5: Summary of Intermediary Effect Size Results

Item	Test conclusion	c Total effect	a*b Intermediary effect	c' Direct effects	Formula for calculating the effect share	Effectiveness ratio
Innovation I self-efficacy => work involvement => innovative idea generation	Some agents	0.749	0.350	0.400	a * b / c	46.674%
Innovation I self-efficacy => work involvement => innovative ideas promotion	Some agents	0.825	0.406	0.419	a * b / c	49.220%
Innovation I self-efficacy => work involvement => innovative ideas in practice	Some agents	0.841	0.380	0.461	a * b / c	45.158%

Source: Compiled by this study

Based on the above research, it is concluded that: 1. The innovation behavior, innovation self-efficacy, and work involvement of enterprise employees surveyed were above moderate. 2. Differences were found between gender and innovation self-efficacy, between company establishment and nature, and between innovation self-efficacy and behavior, as well as between company tenure and innovation self-efficacy, work involvement, and behaviour. 3. There are significant positive correlations between innovation self-efficacy and work involvement, between innovation self-efficacy and behaviour, and between work involvement and behaviour. Work involvement partially mediates the link between innovative self-efficacy and innovative behaviour, idea generation and promotion, as well as idea practice.

5. Conclusion

Research has demonstrated that innovation self-efficacy has a noteworthy effect on the innovative behavior of employees, and job involvement is a crucial element in this connection[10]. Companies can provide a platform for employees to showcase their innovative ideas and effective work events in the workplace. This allows for public recognition and rewards for their innovative skills. Moreover, offering more benefits can enhance employees' commitment and their engagement with work, leading to an increased sense of innovation self-efficacy which fosters innovative behavior. Organizations can foster a culture of sharing to facilitate employees' collaboration and idea exchange, ultimately enhancing their internal innovativeness. This, in turn, boosts self-efficacy for innovation and catalyzes the emergence of original and inventive behavior.

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