

THE EFFECT OF EMPLOYEES' PSYCHOLOGICAL CAPITAL ON EMPLOYEES' INNOVATIVE PERFORMANCE IN INTERNET TECHNOLOGY ENTERPRISES

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Abstract: The competitiveness of the times and the rapid development of science and technology, the competitive environment of enterprises is becoming more and more intense. Enterprise managers are constantly looking for new products and market strategies to adapt to the rapid changes in the environment, and enterprises need to innovate continuously. This paper takes the employees of internet science and technology enterprises as the research object and investigates its influence on the innovation performance of employees. Objectively, the psychological quality of employees is analyzed in many aspects, and the role of each factor in innovation performance is essential.

The objectives of the study are: 1) to explore whether optimism affects the innovative performance of employees in Internet technology enterprises; 2) to explore whether hope affects the innovative performance of employees in Internet technology enterprises; 3) to explore whether psychological resilience affects the innovative performance of employees in Internet technology enterprises; and 4) to explore whether self-efficacy affects the innovative performance of employees in Internet technology enterprises.

This study adopted the quantitative research method. A total of 500 questionnaires were distributed and 385 valid questionnaires were recovered, with an effective rate of 77.0%. This paper found that: 1) optimism has a significant positive impact on the innovative performance of employees in internet technology enterprises; 2) hope has a significant positive impact on the innovative performance of employees in internet technology enterprises; 3) psychological resilience has a significant positive impact on the innovative performance of employees in internet technology enterprises; 4) self-efficacy has a significant positive impact on the innovative performance of employees in internet technology enterprises. For recommendations, internet technology enterprises should focus on the following aspects: 1) maintaining employees' optimism; 2) enhancing employees' sense of hope; 3) improving employees' psychological elasticity; and 4) enhancing employees' sense of self-efficacy.

Keywords: Employees' Psychological Capital, Employees' Innovative Performance, Internet

Technology Enterprises

Introduction

With the progress and rapid development of science and technology, the competitive environment of enterprises is becoming more intense; managers are constantly looking for new products and market strategies to adapt to the rapid changes in the environment, and enterprises need to innovate continuously. Therefore, how to improve innovation ability has become one of the hotspots (Li et al., 2019).

The environment in which enterprises are located is complex and changeable, which makes the competitive environment in which enterprises are located more intense. Improving the innovative performance of employees in the operation and management of the enterprise has become the key to influencing whether the enterprise can win in the competition (Xu et al., 2022). In addition, more and more managers in the business world recognize that having good social capital is the basis for obtaining a competitive advantage, while psychological capital is the key to improving the innovative performance of employees. Psychological capital solves the psychological problems of employees by influencing the attitudes and behaviors of organizational members to improve the overall performance of the enterprise, and it is one of the most important sources for managers to gain a competitive advantage in the enterprise (Görgens-Ekermans & Herbert, 2013).

Enterprises encourage their employees and provide incentives for innovation, but they do not achieve results. Employee's innovation awareness is not improved because managers do not have a clear understanding of employee's innovation performance and do not realize what factors affect employee's innovation performance (Chen et al., 2019). Research on employee innovation performance and psychological capital has been improving, but there is less content on employee innovation performance and psychological capital in Internet technology enterprises. Internet technology enterprises are important in promoting economic growth and social development and are the trend of future enterprise development. This paper mainly takes the employees of Internet technology enterprises as the research object, takes psychological capital as the starting point, and studies its influence on the innovation performance of employees. The objective analysis of the psychological quality of employees in various contexts and the analysis of the role of each factor on innovation performance (Gengatharen & Suseno, 2017). Provide a decision-making basis for the management of the work attitude and behavior of employees in Internet technology enterprises.

With the dynamic development of the market environment in the new industrial era, innovation has become the focus and difficulty of organizational development. Learning organization, flat organizational structure, and other new organizational management models continue to enhance the creativity needs of jobs at all levels, with a high level of knowledge and skills, and as the knowledge carrier and innovation body of knowledge-based employees plays an increasingly

important role in the enterprise (Gengatharen & Suseno, 2017; Göçen, 2019).

Internet technology enterprise organizational innovation is the landing point of its employees, so one of the core tasks of the enterprise is to try to improve the enthusiasm of knowledge-based employees, encourage them to take the initiative to participate in the sharing of knowledge and knowledge creation (Göçen, 2019), and constantly develop new work processes, research, and development of new products or services, improve innovation performance, and achieve organizational innovation.

In the information economy, employees face stress mainly from work and family. The state of employees' psychological quality is not the best. Whether the psychological quality is strong enough and the work attitude is correct not only affects their performance and stability but also largely determines whether the enterprise can effectively improve organizational performance and market competitiveness. This paper explores the specific role relationship between psychological capital and employee innovation performance, which helps to deepen the understanding of the concept as well as the dimensions of psychological capital, and explores the relationship between employee psychological capital and employee innovation performance, which not only helps to expand the field of psychological capital and employee innovation performance based on the existing research but also extends the research in this field (Gengatharen & Suseno, 2017; Zhao & Hou, 2009).

A well-developed program and effective professional guidance are conducive to utilizing strengths. By improving their psychological capital capabilities, improve their personal innovation performance. At the same time, deepening organizational identity can enable managers to fully observe and understand the actual feelings and pressures of employees in the work process.

This paper establishes a theoretical model around the impact of psychological capital on employees' innovative performance after summarizing and sorting out the existing theories. The research results of this study can provide a decision-making basis for enterprise management, through the analysis of the psychological capital of employees on the impact of employee innovation performance and other factors, which can provide a reference for enterprise resource support, employee training, management support, and so on. To encourage psychological capital to improve employee innovative performance and cultivate the spirit of employee work dedication.

Research Objectives

- 1) To explore whether optimism influences employee innovation performance in Internet technology companies.
- 2) To explore whether hope affects employee innovation performance in Internet technology companies.
- 3) To explore whether psychological resilience affects the innovative performance of employees in Internet technology companies.

4) To explore whether self-efficacy affects the innovative performance of employees in Internet technology companies.

Literatures Review

Employee innovative performance

Employee innovative performance is the process by which an employee achieves relevant performance through a series of approaches. Employee innovation performance is defined as the process by which employees come up with novel ideas for problems in the workplace, and employee innovation performance is the implementation of new and actionable ideas by individual employees to increase efficiency in the organization (Alghamdi, 2018).

The concept of innovation performance can be broadly categorized into the following types: one is the comprehensive theory, the second is the process theory, and the third is the outcome theory. Based on the outcome theory, employee innovation performance must focus on the innovative performance of employees: The process theory believes that innovation is a long-term process, so it should be more focused on the output of the process such as new ideas, new processes, etc. (Cheng et al., 2020), and the attention should be focused on the results of innovation or the innovation process, which are not comprehensive in both approaches. This paper argues that employee innovation requires a long-time cycle, through the innovation of employees can further optimize the production process of the enterprise, and then the overall innovation of the enterprise will also have a significant enhancement, this process sometimes cannot be fully reflected in the results, this process is important (Shih et al., 2020).

Classification of the dimensions of employee innovation performance, employee innovation performance is divided into two dimensions: innovation behavior and innovation results (Shih et al., 2020; Zhao et al., 2020). Innovative behavior refers to a series of thinking activities and the collection of practical actions of employees to carry out innovative behavior, which contains all the ideas, concepts, and concepts before carrying out new activities and also contains the actions to realize these ideas, such as applying methods, developing new technologies, summarizing the work skills and so on. Innovation results are the results of an employee's ideas, methods, technical services, processes, and other aspects of innovation activities (Zhao et al., 2020), the results of innovation in addition to the output of innovation also include the application of the results and the results of the application of the results of the effectiveness.

Psychological capital

Psychological capital is a relatively stable psychological characteristic at the micro level, which mainly affects the following aspects: firstly, work efficiency, secondly, work attitude, thirdly, work motivation (Zhao & Hou, 2009), and one's self-esteem can be mapped out through one's psychological capital. Psychological capital is more stable, measurable, and improved through

acquired learning and influence. In recent years, the research on the relationship between psychological capital and enterprise innovation performance has become a hot research topic in the academic world, and the development and management of enterprise employees' psychological capital, so that employees can maintain a positive psychological capital.

Gengatharen & Suseno (2017) stated in their work, life, organizational communication, knowledge learning, and goal achievement, is one of the important issues facing the research on psychological capital at present. Scholars define psychological capital as a personal trait that can be changed, not something that is difficult to measure and change, and he believes that psychological capital includes four aspects: confidence, hope, optimism, and resilience (Gengatharen & Suseno, 2017). Confidence is the degree of self-efficacy of an individual in terms of his or her ability to put in the appropriate amount of effort and achieve success in a challenging task. Hope is the degree to which an individual displays a positive attitude toward accomplishing a task. Optimism is the degree to which the individual examines whether he or she can make positive attributions in the face of setbacks and difficulties. Resilience is whether an individual can persevere and recover quickly in difficult situations (Görgens-Ekermans & Herbert, 2013). Through combing through the literature, it is found that for the study of employees' psychological capital, a four-dimensional scale can be chosen to measure psychological capital, which is more suitable for this study, so this study chooses the four dimensions of psychological capital: optimism, hope, psychological resilience, and self-efficacy for the design of the scale.

Optimism

Optimism means that individuals have positive expectations for the future with challenges and achieve positive results in various situations. As a dimension of psychological capital, optimism involves not only an individual's positive expectation of future outcomes but also maintaining positive attitudes and beliefs in the face of adversity (Dawson, 2017). Optimistic employees are more likely to see the positive side of problems and tend to adopt creative approaches to solving them. This positive mindset stimulates employees to think creatively and improves innovative performance.

Optimism expands an individual's thinking and behavioral tendencies and enhances creativity and innovation. Optimistic employees tend to be more willing to adopt positive coping strategies rather than passive avoidance when facing challenges and dilemmas at work. This positive coping style helps to enhance their problem-solving ability, which in turn positively affects innovation performance. It has been found that optimistic employees can recover more quickly and learn from their failures when faced with them, accumulating valuable experience for future innovative activities (Zhao & Hou, 2009). Optimism in psychological capital has a significant positive impact on employee innovation performance.

Hope

In the study of the influence mechanism of psychological capital of employees in Internet

technology enterprises on employees' innovative performance, the hope dimension of psychological capital is considered to have an important contributing role. Employees with high levels of hope show higher motivation and creativity when facing innovation tasks. Hope enhances employees' goal-oriented behavior and enables them to innovate (Wong et al., 2021). This positive mindset and flexible coping strategies are important for innovation efforts, which are often accompanied by uncertainty and the risk of failure. In Internet technology enterprises, innovation is an important source of competitiveness, and the innovative performance of employees directly affects the development of the enterprise (Tsuboya et al., 2015).

It is hoped that stimulating employees' intrinsic motivation and enhancing their problem-solving abilities will play a key role in innovation performance. Several empirical studies support this view, for example, one study found that employees with high levels of hope are more likely to generate creative ideas and transform ideas into practical outcomes. The hope dimension has a significant impact on employee innovation performance in psychological capital, which promotes employees to remain active and flexible in the innovation process by enhancing their goal orientation and problem-solving abilities, thus improving overall innovation outcomes.

Psychological resilience

Psychological resilience is an important part of psychological capital. It plays a crucial role in investigating how employees' psychological capital in internet technology firms influences employee innovation performance. Psychological resilience refers to an individual's ability to adapt and recover quickly in the face of adversity, pressure, and setbacks (Jankowska, 2016). This ability is important in the volatile and challenging Internet technology industry, where employees often have to cope with rapidly changing market demands, technological updates, and high-intensity work environments. Psychological resilience can significantly affect employees' innovation performance. First of all, employees with high psychological resilience can quickly adjust their mindset and get back to work in the face of failures and setbacks. Instead of being easily defeated by momentary difficulties, they can learn from their failures and find new solutions. This adaptability and resilience allow them to keep moving forward in the innovation process and maintain high levels of creativity and productivity. Enhancing the psychological resilience of employees is important for the innovative performance of an organization (Fayombo, 2010). Companies can help employees increase their psychological resilience by providing mental health support, stress management training, and creating a positive work environment. In addition, encouraging employees to try new approaches at work and tolerate failure can also help develop their psychological resilience and innovative spirit. Leaders play a key role in this, and by modeling and supporting them, they can effectively enhance the psychological resilience and innovative performance of their teams.

Self-efficacy

Self-efficacy is a crucial dimension in the study of the mechanism of the influence of

employees' psychological capital on employees' innovative performance in Internet technology enterprises (Aliyev & Tunc, 2015). Self-efficacy refers to an individual's belief in his or her ability to accomplish a task or achieve a goal. In the highly competitive and fast-changing Internet technology industry, self-efficacy plays a key role in employees' innovation performance. Employees with high self-efficacy usually have greater self-confidence and initiative, which makes them more willing to try new methods and technologies and actively participate in innovation activities. They believe in their ability to meet complex and uncertain challenges, and this confidence makes them more adventurous and willing to explore the innovation process (Corbu et al., 2021).

Self-efficacy not only drives employees to set higher innovation goals but also makes them more persistent in the face of difficulties and look for multiple ways to solve problems. As a core dimension of psychological capital, self-efficacy has a profound impact on the innovation performance of employees in Internet technology companies. By enhancing employees' self-efficacy, companies can stimulate their innovation potential, improve team creativity and collaboration, and thus stay ahead of the game in a competitive market.

Methodology

The quantitative research method was used in this study. The questionnaire involves utilizing the psychological capital scale and the employee innovation performance scale. The questionnaire is divided into two parts, the first part is the basic information of the sample, and the second part is the psychological capital scale, including four dimensions of optimism, hope, psychological elasticity, and self-efficacy, with a total of 20 measurement items; and the employee innovation performance scale, including two dimensions of innovation results and innovation behavior, with a total of 10 items. The scale adopts a Likert five-level scale. A total of 500 questionnaires were distributed and 385 valid questionnaires were recovered, with an effective rate of 77.0%.

H1: Optimism has a significant positive effect on the innovation performance of employees in Internet technology enterprises.

H2: Hope has a significant positive effect on the innovation performance of employees in Internet technology enterprises.

H3: Psychological resilience has a significant positive effect on the innovation performance of employees in Internet technology companies.

H4: Self-efficacy has a significant positive effect on the innovation performance of employees in Internet technology companies.

Results

1). Reliability analysis

Cronbach's Alpha was used to measure the reliability of the questionnaire, and the value of

Alpha ranges from 0 to 1. The larger the Alpha coefficient is, the higher the reliability is, and the more reliable the results are. SPSS was used to analyze the reliability of the questionnaire, and the results are shown in Table 1. The Cronbach's Alpha of all the factors is higher than 0.8. According to Cronbach's Alpha criterion: a coefficient greater than 0.8 is good for reliability; between 0.7 and 0.8 is acceptable, and less than 0.7 is unacceptable. The reliability of the questionnaire in this study is acceptable and the internal consistency of the data is good.

Table 1: Reliability analysis

Variable	Dimension	Cronbach's Alpha	N of Items
Psychological Capital	Optimism	0.902	5
	Hope	0.900	5
	Psychological Resilience	0.878	5
	Self-efficacy	0.877	5
Innovation Performance	Innovative Behavior	0.893	5
	Innovative Outcomes	0.885	5

2). *Validity analysis*

KMO test and Bartlett's test for sphericity were used for validity. SPSS was used to perform "factor analysis" on the sample data. In the results of the analysis of employees' psychological capital, KMO=0.943, and P=0.000 of Bartlett's Test of Sphericity is less than 0.05, the two indexes meet the standard, and factor analysis can be done. Factor analysis verifies whether the dimension division of the questionnaire is reasonable. Factor analysis was conducted by principal component analysis, and four factors with eigenvalues greater than 1 were extracted as common factors, which were consistent with the conception of the study. The cumulative variance contribution rate reaches 70.137%, which exceeds the overall 60%, indicating that the screened factors are well represented, and the results of factor extraction are satisfactory. Using the maximum difference method to rotate the factors, the indicators, and the corresponding dimensions are consistent with the scale initially sorted out by the study, thus the dimensions divided by the study are more scientific and reasonable. The results of employee innovation performance analysis, KMO = 0.890 and Bartlett's Test of Sphericity of P = 0.000 are less than 0.05, the two indicators meet the standard and can-do factor analysis. Two factors were obtained through principal component analysis, and the cumulative variance contribution rate reached 69.678%, which exceeded the overall 60%, indicating that the screened factors were well represented, and the results of factor extraction were satisfactory. In conclusion, the reliability and validity of the questionnaire in this study passed the test and can be analyzed.

3). *Multiple regression*

Each variable was first centered. Then, stratified regression analysis was used. The path coefficient of optimism ($\beta=0.386$, $p=0.000<0.001$) in model 1 was significant. Model 2 after adding hope to model 1, the path coefficients of optimism ($\beta=0.293$, $p=0.000<0.001$), hope ($\beta=0.203$,

$p=0.000<0.001$) were significant, and the R Square was significantly increased from 0.252 to 0.303. Model 3 after adding psychological resilience, the path coefficients of optimism ($\beta=0.202$, $p=0.000<0.001$), hope ($\beta=0.130$, $p=0.000<0.001$), psychological resilience ($\beta=0.253$, $p=0.000<0.001$) had significant path coefficients, with R Square increasing significantly from 0.303 to 0.375. Model 4 added self-efficacy to Model 3 with optimism ($\beta=0.141$, $p=0.000<0.001$), hope ($\beta=0.112$, $p=0.000<0.001$), psychological resilience ($\beta=0.253$, $p=0.000<0.001$), psychological resilience ($\beta=0.253$, $p=0.000<0.001$), and psychological resilience ($\beta=0.160$, $p=0.000<0.001$), and self-efficacy ($\beta=0.244$, $p=0.000<0.001$) have significant path coefficients, and the R Square increases significantly from 0.375 to 0.417. The stratified regression illustrates that the effect of each variable on employee innovation performance is significant. See Table 2.

Table 2: Multiple regression

Model		Unstandardized Coefficients		t	Sig.	VIF	R Square	Adjusted R Square
		B	Std. Error					
1	(Constant)	2.294	0.126	18.217	0.000		0.252	0.250
	Optimism	0.386	0.034	11.369	0.000	1.000		
2	(Constant)	1.878	0.145	12.963	0.000		0.303	0.300
	Optimism	0.293	0.037	7.864	0.000	1.288		
	Hope	0.203	0.038	5.282	0.000	1.288		
3	(Constant)	1.561	0.146	10.726	0.000		0.375	0.370
	Optimism	0.202	0.038	5.320	0.000	1.485		
	Hope	0.130	0.038	3.406	0.000	1.407		
	Psychological Resilience	0.253	0.038	6.612	0.000	1.460		
4	(Constant)	1.303	0.149	8.744	0.000		0.417	0.411
	Optimism	0.141	0.038	3.660	0.000	1.633		
	Hope	0.112	0.037	3.029	0.000	1.419		
	Psychological Resilience	0.160	0.041	3.901	0.000	1.793		
	Self-efficacy	0.244	0.046	5.267	0.000	1.813		

a Dependent Variable: Innovation Performance

Discussion

Optimism has a significant positive effect on employee innovation performance in Internet technology companies. Optimism is a positive psychological state that enables employees to maintain a positive mindset and belief that they can overcome obstacles and achieve their goals when facing challenges and difficulties. This positive psychological expectation can inspire employees to work with higher enthusiasm and motivation, thus encouraging them to show more creativity and innovation at work. An optimistic mindset also improves the team atmosphere and work environment. When members are optimistic, they are more likely to support and encourage each other to overcome difficulties at work (Corbu et al., 2021; Fayombo, 2010). This positive team atmosphere not only

helps to improve individual innovation ability but also promotes collaboration and innovation of the whole team.

Hope has a significant positive effect on employee innovation performance in Internet technology companies. Hope is a positive psychological state that reflects employees' strong belief in future goals and their motivation to achieve goals. Employees with a high sense of hope usually possess clear goals and believe they can find ways and means to achieve them. This positive team environment not only promotes individual innovative performance but also contributes to the collaborative innovation and performance improvement of the whole team (Vella & Pai, 2019).

Psychological elasticity has a significant positive effect on the innovative performance of employees in Internet technology enterprises. Psychological resilience refers to an individual's ability to recover quickly and move on when facing pressure, setbacks, and adversity. Employees with high psychological resilience can adjust their mindset when they encounter challenges and failures at work so that they can continue to engage in their work (Wong et al., 2021). Psychological resilience also promotes collaboration and support among employees. Employees with high psychological resilience can not only maintain a positive mindset in the face of their difficulties but also help and support their colleagues around them, forming a mutually supportive team atmosphere. This team atmosphere can enhance team cohesion and collaboration, which promotes the team's overall innovation and performance (Dawson, 2017).

Self-efficacy has a significant positive effect on the innovation performance of employees in Internet technology enterprises. Self-efficacy refers to an individual's belief in his or her ability to accomplish a specific task. Self-efficacy also promotes employee learning and development. Employees with high self-efficacy usually have strong independent learning abilities and curiosity, and they actively seek new knowledge and skills. This process of continuous learning and development not only enhances their innovation ability but also brings more innovation resources and motivation to the team and the organization (Shih et al., 2020; Zhao et al., 2020).

Conclusions

In the study of the influence of psychological capital on employee innovation performance in Internet technology enterprises, optimism of psychological capital has a significant positive effect on employee innovation performance. The regression coefficient of optimism as an important component of psychological capital ($\beta=0.141$, $p=0.000<0.001$) indicates that optimism has a significant effect on the enhancement of employee innovation performance. Hypothesis H1 is valid. Optimism, as an important dimension of psychological capital, significantly contributes to the innovation performance of employees in Internet technology companies. When improving employees' innovation ability and performance, enterprises should pay attention to cultivating and maintaining employees' optimism, and enhance employees' psychological capital through various ways, to provide strong support for the

continuous innovation and development of the enterprise (Zhao et al., 2020).

The regression coefficient of hope as an important component of psychological capital ($\beta=0.112$, $p=0.000<0.001$) indicates that hope has a significant effect on the enhancement of employee innovation performance. Hypothesis H2 is valid. Hope, as an important dimension of psychological capital, significantly contributes to the innovative performance of employees in Internet technology companies. When improving employees' innovation ability and performance, enterprises should pay attention to cultivating and enhancing employees' sense of hope and enhance employees' psychological capital by setting clear goals and providing necessary support and resources, to provide strong support for the continuous innovation and development of the enterprise (Dawson, 2017).

Psychological resilience, as an important component of psychological capital, has a regression coefficient ($\beta=0.160$, $p=0.000<0.001$) that indicates that psychological resilience has a significant effect on the improvement of employee innovation performance. Hypothesis H3 is valid. Psychological elasticity, as an important dimension of psychological capital, significantly contributes to the innovative performance of employees in Internet technology companies. When improving employees' innovation ability and performance, enterprises should pay attention to cultivating and improving employees' psychological resilience, and enhance employees' psychological capital by providing psychological support, training, and development opportunities, to provide a solid foundation for the sustainable innovation and development of the enterprise (Cheng et al., 2020).

The regression coefficient of self-efficacy as an important component of psychological capital ($\beta=0.244$, $p=0.000<0.001$) indicates that self-efficacy has a significant effect on the enhancement of employee innovative performance. Hypothesis H4 is established. Self-efficacy, as an important dimension of psychological capital, has a significant positive effect on the innovation performance of employees in Internet technology enterprises. Enterprises should emphasize the cultivation and enhancement of employees' self-efficacy when improving their innovation ability and performance and enhance their psychological capital by providing training and development opportunities (Göçen, 2019), establishing a supportive work environment, and encouraging employees to learn on their own, to provide strong support for the sustainable innovation and development of the enterprise.

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