

Analysis of the Influencing Factors of Team Creativity to Organizational Innovation Based on QCA Analysis

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Objectives: Psychological capital is the core element that represents individual initiative, which lays an important foundation for individual to gain competitive advantage. In the team organization, the employee's active psychological resource is the main source of the organizational innovation power. Therefore, the factors that influence the organization innovation based on the team creativity of QCA analysis are analyzed in this paper. **Methods:** Based on the analysis of the basic principle of psychological capital and the atmosphere, motivation and performance of team innovation, the mechanism of interaction between mental capital and team innovation, it is found out that innovation is the embodiment of employee psychological capital are explored in this paper. **Results:** And a model of innovation power based on psychological capital is proposed. The validity and reliability of the model are validated by QCA analysis. **Conclusion:** The simulation results show that the research has found out the mechanism of team creativity on organizational innovation, and it has a good reference meaning and application value to improve the creative power of team innovation.

Keywords: QCA analysis; creativity; innovation; analysis

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With the advent of the Internet era, the speed of information data transmission, any field of team and organization to obtain a unique competitive advantage, are inseparable from innovative practice. The ability to create innovation is becoming the core force for team participation in competition¹. In the research team innovation power, the traditional way is from the human capital and social capital angle to answer, based on human capital theory, through the use of education, training and so on to increase the opportunity cost of education, to help employees improve production skills to improve business knowledge quality, so as to

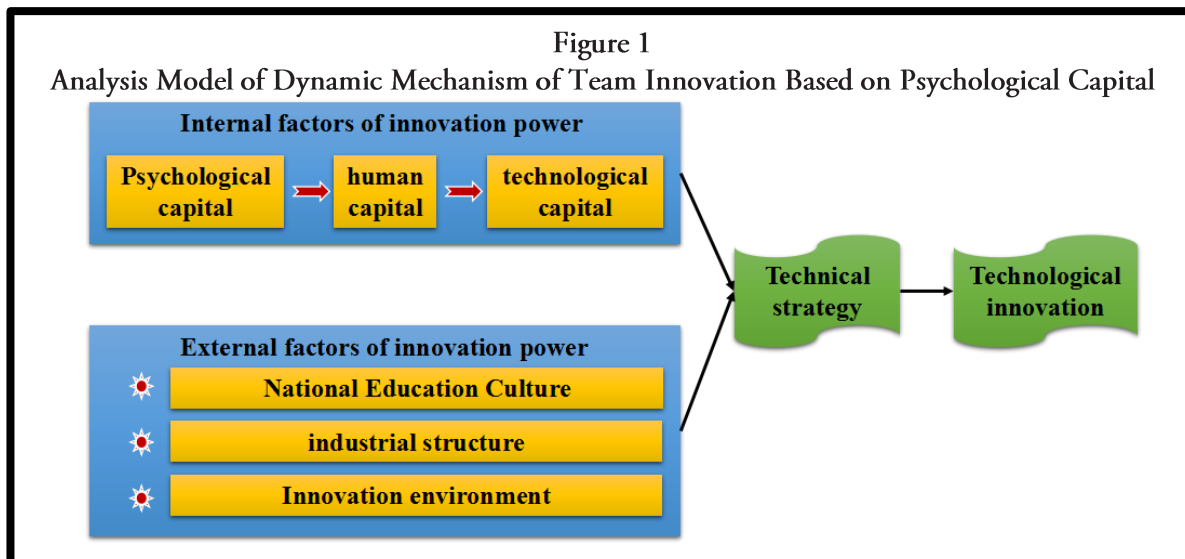
promote the realization of team innovation. On the surface, there is a correlation between this opportunity to increase education and training and the performance of team innovation². However, the researchers found that staff mastery of relevant knowledge and skills is only necessary for team to improve innovation performance, not sufficient conditions. In recent years, many enterprises appear in the case of employees jumping, and so on, only rely on low-cost, high return of human capital, through imparting knowledge and skills, and cannot guarantee the team to continuously and stably innovate development³. Based on the concept of

relationship and connection in social capital theory, the enterprise team and the internal and external development of beneficial links, can promote the external advanced technology, information and knowledge transfer to the enterprise team, thereby reducing the cost of innovation and promote the effectiveness of innovation⁴. In the years of practice examination of social capital theory, it is found that the utility of innovation cannot be maximized, for example, the combination of school and enterprise in higher professional colleges and universities is not very good⁵. Therefore, it is becoming the research direction of effectively improving innovation performance to start with human's subjective initiative and to find the impetus to promote team innovation in psychological factors.

Psychological capital, a new psychological theory presented at the beginning of this century, is the core point of the active psychology movement, which advocates the study of the correct and beneficial positive psychology⁶. Psychological capital, which is based on the research of human capital, social capital and economic capital, is defined as an important basis for individuals to gain competitive advantage⁷. Under the goal orientation of the team competitive advantage, it is bound to be closely related to the psychological capital level of the staff⁸. The size of team innovation ability and the strength of innovation performance are mainly derived from employees' creative potential and continuous innovation practice. Under this condition, psychological capital becomes the source of enterprise innovation Power, and represents the positive psychological resources of the staff team⁹. Psychological capital can bring the opportunity for the innovation and development of the team and enterprise activity, discuss the relationship between the level of the employee's psychological capital and the innovation performance, and it is an important extension to the Psychological Capital application field. In this paper, the innovation motive force is probed based on psychological Capital; the dynamic model of innovation is

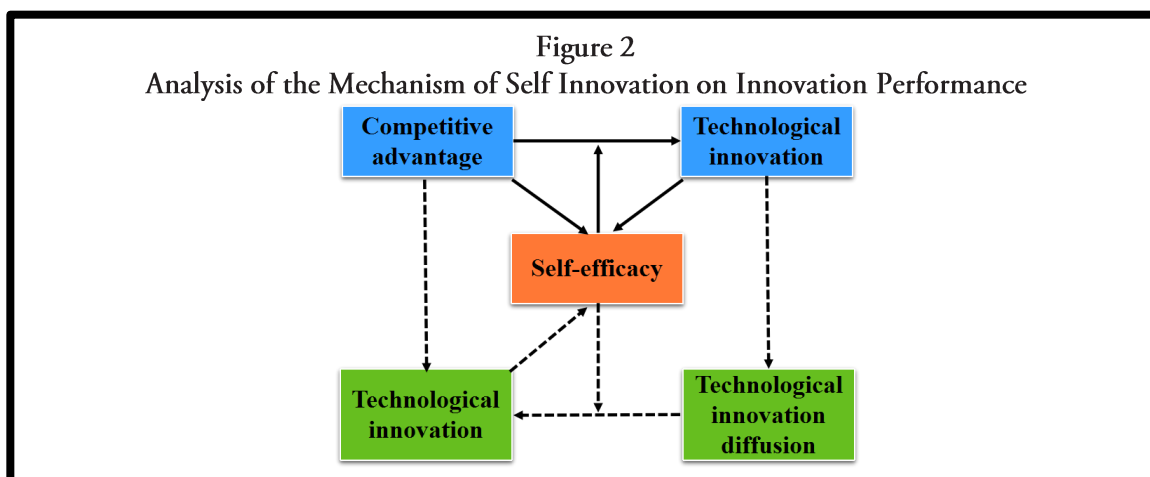
constructed, analyzing the interrelation between psychological capital, organizational trust and innovation performance. And the path coefficient is studied, establishing the mathematical model to find the intrinsic relationship among the elements, and scientific reference is provided for strengthening the team to create innovative ability, which can strengthen the psychological capital investment, improving the psychological capital value lay a solid theoretical foundation¹⁰.

The human capital in a team and enterprise is primarily a combination of knowledge, skills, information and wisdom through education training or experience to acquire skills knowledge and cognitive and competency roles¹¹. To obtain human capital, the main need for staff to have a good learning ability, executive power and strong team cohesion and collective sense of honor, this is the essential psychological capital of employee content. Psychological capital consists of four elements, the first is self-recognition and self-efficacy with conscious effort, challenge and difficulty. Second is the positive attitude of optimism upward. The third is always a clear goal of the work, around the target multiple choices and attempts. To face the problems and challenges correctly, we can achieve the goal by insisting and adjusting the strategy under the difficult situation¹². This high level of self-recognition and effectiveness among team members brings optimism and confidence to the development of the enterprise, as well as the level of hope. In the process of self-adjustment in the face of difficulties, through continuous study and practice, improve the individual's ability and knowledge and skills, so as to obtain a high level of intellectual wisdom and skills together¹³. Under this condition can promote the team overall human capital, the technical ability, the performance level promotion. Among them, employees' active learning, conscious practice and strong sense of belonging and devotion to the team will directly affect the ability and level of team innovation creation. Therefore, we can get the dynamic mechanism analysis model of team innovation based on psychological capital. As shown in Fig.1:



Self-efficacy is an important part of psychological capital. The competitive advantage of the team comes from creating different products or reforming the work flow, process and so on, with the technical ideas and products that other teams do not have, which has irreplaceable value in efficiency, cost, quality and function. To achieve this goal, employee Self-efficacy plays an important role¹⁴. This is because in the innovation and creation process, the staff with high self-efficacy will establish higher quality of work and goals, face difficulties and adjust the initiative to tackle the power and effort, the individual's thinking to action in a complex environment to maintain a good working efficiency and quality. This high self-efficacy is also embodied in the persistence and persistence of learning, and is good at acquiring advanced

experience and methods from outside the organization. When the technology innovation within the organization achieves effective diffusion, it can show the role of staff in the Innovation performance¹⁵. Fig. 2 is a mechanism chart of self-efficacy on organizational innovation performance. The more employees who have a high degree of self-efficacy within the organization, the greater the advantages they bring to the organization. In particular, the high efficiency of the staff into the management, can help employees to improve the organization's identity and professional affirmation, and through the use of authorization, timely resolution of disputes between employees, so that the management level to increase the positive impact of work performance.



There is a positive relationship between hope and organizational performance. The higher the level of hope of employees, the better their job satisfaction, well-being, and organizational performance will be. The more employees with the hope in the organization, the more they will bring about the development trend, and the more and more employees who give up their own. High-level employees will set a clear goal, choose the right way to achieve the method and through the willpower to ensure the realization of the goal. In the face of difficulties and setbacks, can also find alternative ways to achieve the goal, their transmission of positive effects, will bring innovation to the continuous power source ¹⁶. The optimistic psychological advantage is

accepted by most people. Optimism plays an important role in the development of the organization. The most important feature of the development of the times is always in a state of change. The development of an organization is also a dynamic process of change. Innovation is the core of change, if there is no positive attitude in the Organization, will inevitably lose the opportunity for development. The creative change curve is shown in Fig.3. In the early stage of innovation, performance often has a downward process. At the bottom of the performance point B is the most difficult. When the psychological capital of optimism and hope plays a role, employees can actively respond and change, thus winning the final victory.

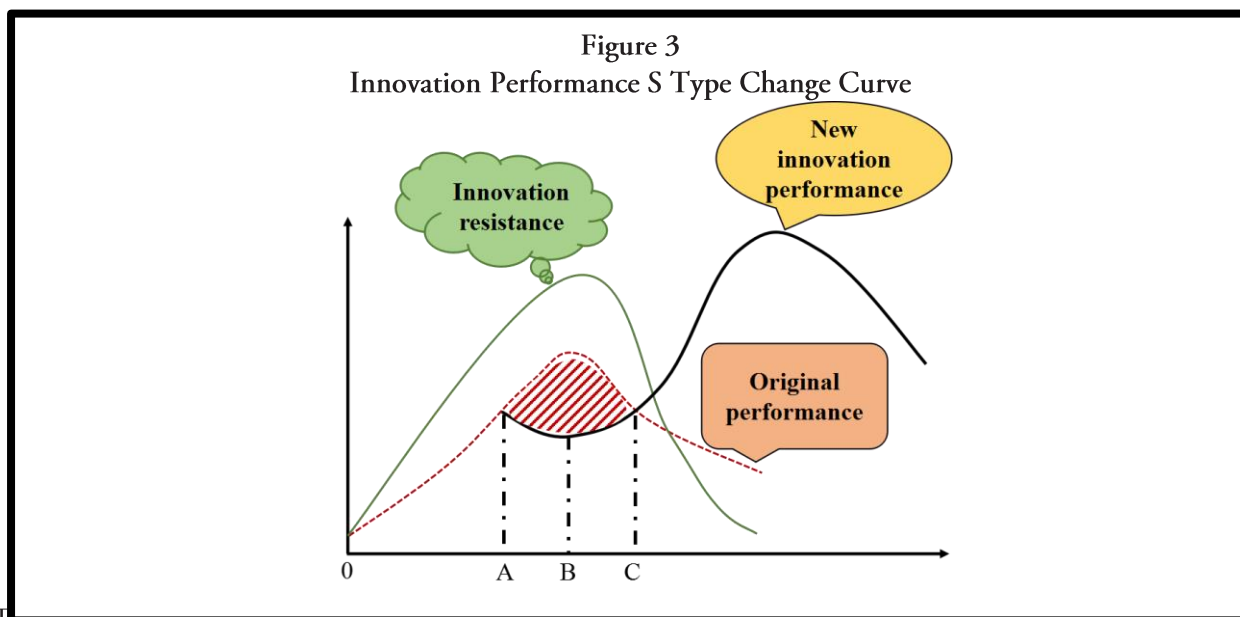
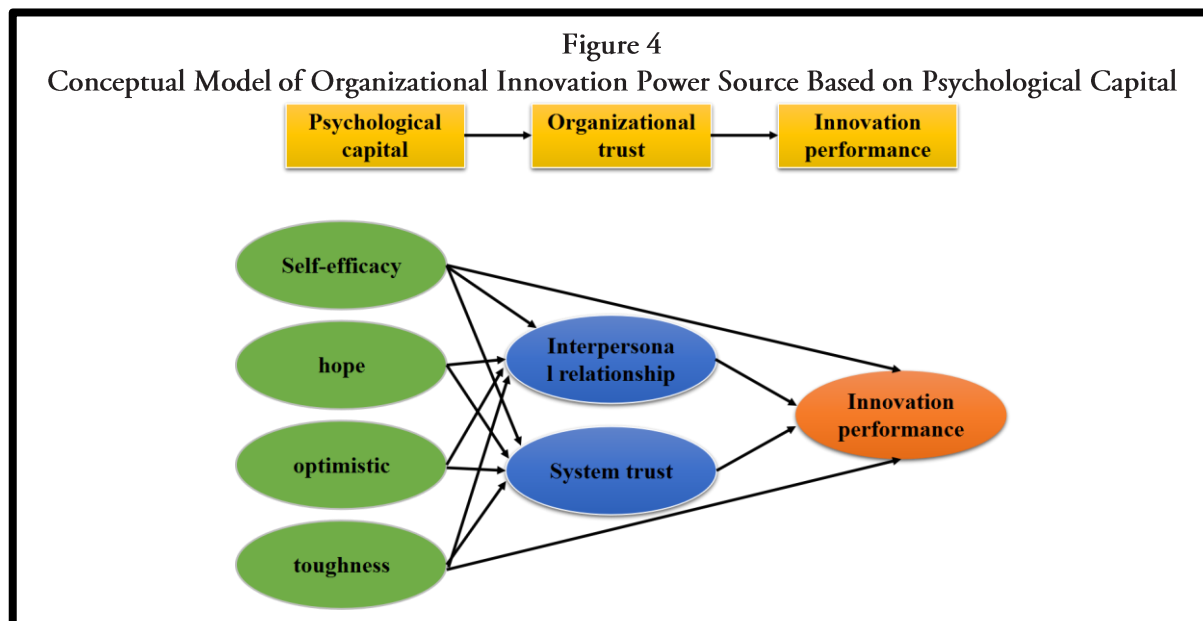


Figure 3
Innovation Performance S Type Change Curve

Toughness and organizational trust are also important parameters in mental capital. Under optimism, hope and resilience, trust brings together the mutual trust of all members of the organization and in doing so achieves the system's trust in the organization. Based on this

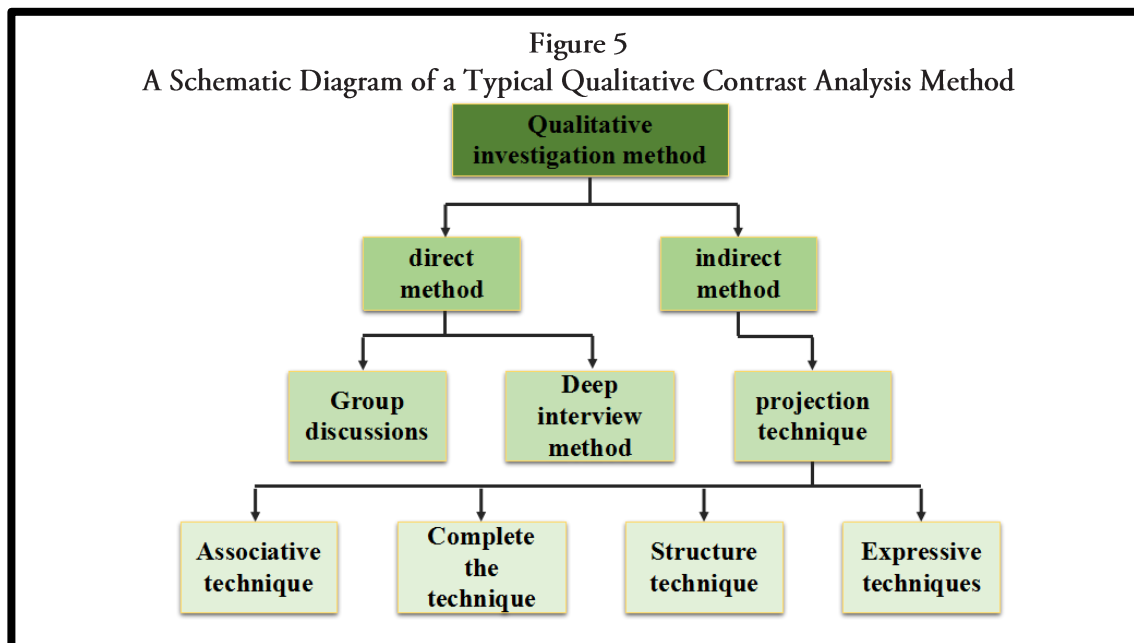
positive impact on innovation performance. Under this condition, a conceptual model of organizational innovation power source based on psychological capital is formed, as shown in Fig. 4.



METHODS

Qualitative Comparative Analysis (QCA) is a case-oriented research method that is widely used in small sample social science research and has the double advantages of both qualitative and quantitative aspects. Introducing the QCA approach into the analysis of the team's ability to create innovation primarily aims to promote the optimization and improvement of the innovation dynamics model through this approach¹⁷. QCA comes from the core idea of set theory. The algorithm uses Boolean algebra to find the membership between the subsets contained in the set, and analyzes the mutual causation between the subsets. As a mathematical model, QCA can use manual techniques to construct truth tables in less computational conditions¹⁸. In the case of the current variable and the increase of the research data, the computer aided platform is mainly relied on to realize the calculation. At present, there are two kinds of commonly used analytical techniques in QCA applications. The first is based on a clear set of QCA. QCA in design, you need to follow the

basic assignment of 1/01 for reason and result conditions. The path to the cause of the result in this case represents the deterministic factor in this result set¹⁹. The clear set of QCA methods is mainly applicable to cases where the binary partition can be clearly defined. For example, men and women in the social sciences, market needs and government needs can be clearly judged 1 or 0. Fig.5 is a schematic diagram of a typical qualitative comparative analysis method. The second is QCA based on fuzzy sets. Blur phenomenon is the most real state of the objective world. Fuzzy sets are more suitable for practical applications than clear sets²⁰. With the help of the characteristics of fuzzy sets, the study of the relationship between crossover, sufficiency and necessity can effectively explain the result variables by calculating the combination of different condition variables. Generally speaking, the calculation of the two parameters of the coverage and consistency of the result variable brought by the combination of different condition variables is generally performed in the calculation.



Qualitative comparative analysis based on fuzzy sets is a further expansion of the qualitative comparative analysis of clear sets, but the principles of the two methods are consistent. The process is to first observe the individual sub-sets to determine the degree of membership identity values brought by their causal characteristics. After that, the truth table is generated by using the numerical calculation, and the sub-sets of different features are divided according to the calculated result features. Finally, these feature features are refined and streamlined. The essential difference between the two approaches is the type of collection. In the qualitative comparison method based on fuzzy sets, some extra factors need to be considered. In the initial measurement accuracy is not high, the reliability of the results increased test indicators, the reading of the results and statistical parameters of the interpretation of the parameters are similar. Reliability metrics are calculated using consistency and coverage. As shown in formula (1) (2). Here X represents the composition of the factors in the cause of the degree of identity. Y represents the identity of the component in the result set. $\min(X_i, Y_i)$ represents the minimum value between two sets. The closer the $Consistency(X_i \leq Y_i)$ results to 1, the greater the

probability that the X set belongs to the Y set. The closer the $Coverage(X_i \leq Y_i)$ result is to 1, the smaller the probability that the X set belongs to the Y set. At present, the qualitative comparison method based on fuzzy sets has realized the computer software, and the use of fs / QCA can realize the calculation function of the truth table. The calculated result shows the coverage score and consistency score between the causal feature and the result feature as the important reference for the decision of the result.

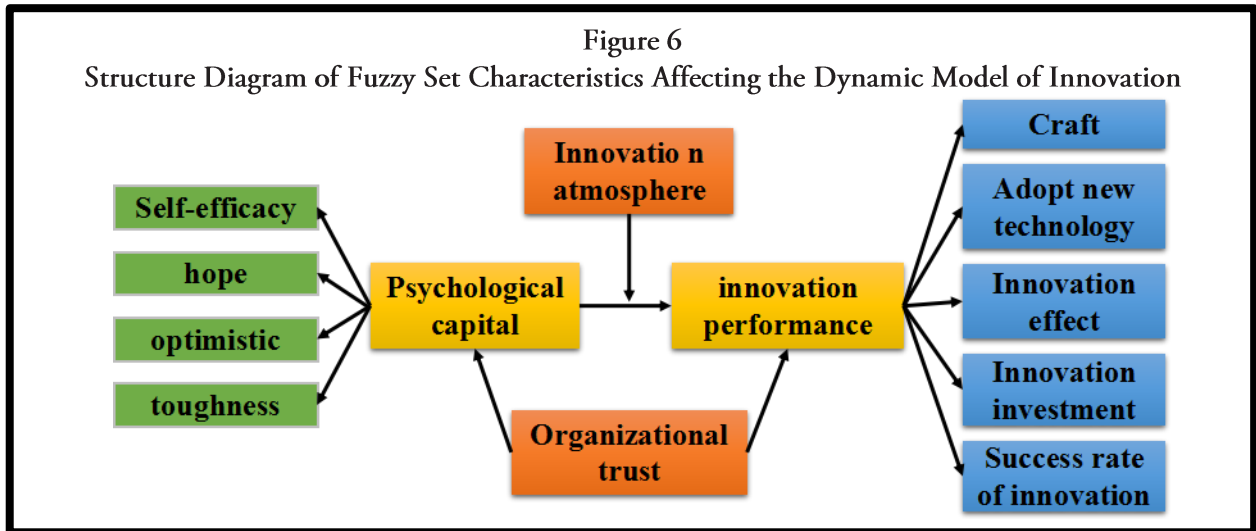
$$Consistency(X_i \leq Y_i) = \frac{\sum(\min(X_i, Y_i))}{\sum(X_i)} \quad (1)$$

$$Coverage(X_i \leq Y_i) = \frac{\sum(\min(X_i, Y_i))}{\sum(Y_i)} \quad (2)$$

The principle of optimizing the dynamic model of innovation based on fuzzy sets is to enhance the links before the initial model is formed. The principle of realization is that this method combines the background variables such as the measurement of innovation and the team's core competency to form the characteristic parameters in order to observe under what circumstances the individual's innovation ability can achieve the expected innovation performance index. And so on, you can build innovative momentum models that fit into any industry and organization. This shows that the innovation power model not only

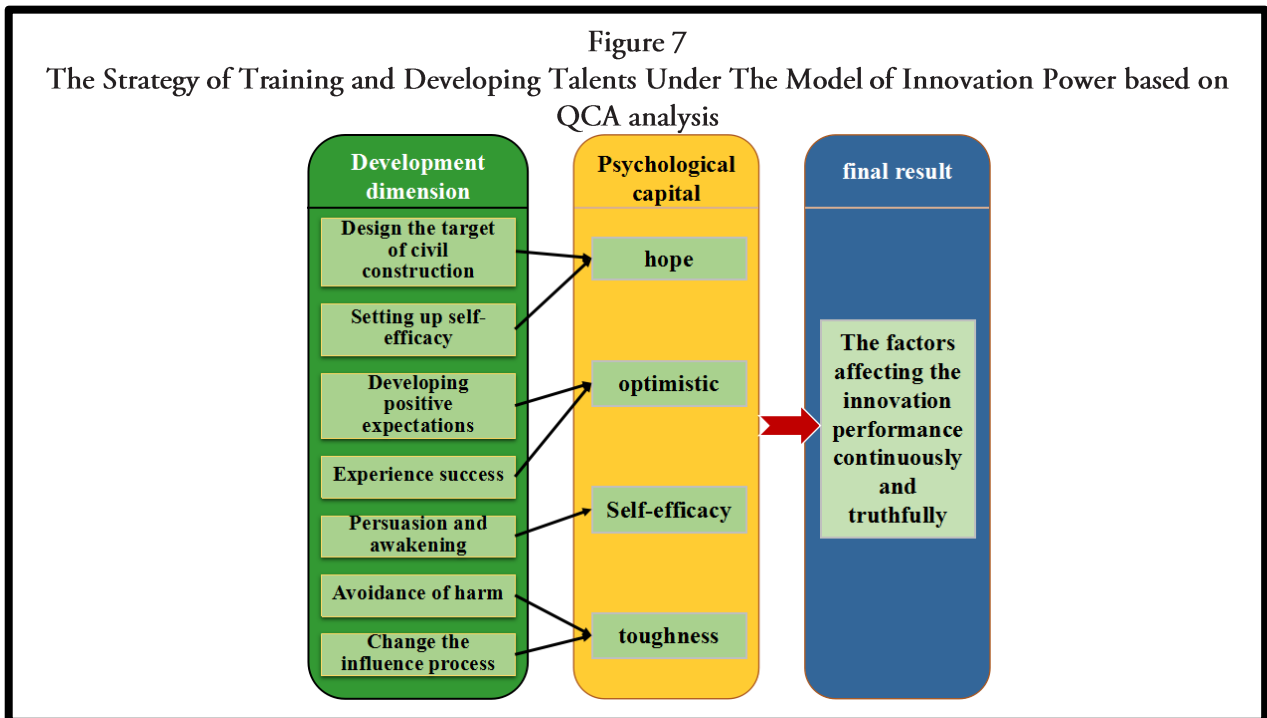
applies to a single industry, not only based on a strategy to build, but has good promotion of the use of similar organizations can be adopted in this kind of fuzzy set-based optimization

innovative dynamic model. Fig.6 is a structural feature diagram of fuzzy sets that affect the dynamical model of innovation.



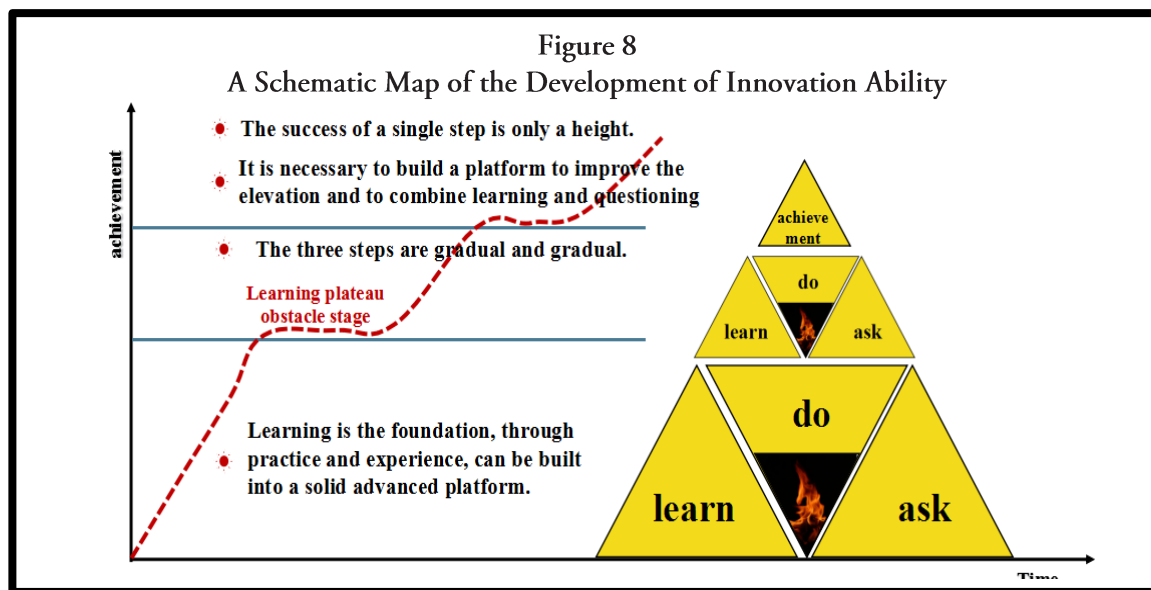
The method of qualitative analysis and comparison based on fuzzy sets is a kind of research idea of the same goal. The algorithm can effectively reduce the deterministic conclusion of the traditional qualitative methods, and find out all possible relationship paths between all the involved things on the positive influence of

different variables. The advantage of this method is that it can find all kinds of talents with different types of innovation but good innovation performance for the organization so as to enrich the unity and limitations of the selection of innovative talents. Fig.7 is based on QCA analysis of innovative driving force under the model of personnel training development strategy.



The basis of the innovation motivation model is to cultivate the innovation ability. There is a process of accumulation of innovative abilities, which can only be realized effectively after many steps such as seeing and hearing, learning and acting, and thinking and innovating are linked

together in a virtuous circle. In reality, innovation cannot achieve leapfrog growth. The continuous development of innovation cannot be separated from gradual and orderly progress. Fig.8 is a schematic diagram of the development of innovative capabilities.



RESULTS

Through the simulation experiment, the paper verifies the innovative dynamic model proposed in this paper. Mainly from two aspects of psychological capital and organizational innovation atmosphere to study the impact of innovation momentum model on innovation performance. First of all, we use the survey method to obtain the data of the variable group. The first level of the independent variable represents the psychological capital, and the dependent variable represents the innovation performance. The second level represents the organizational innovation divided. Let H4 represent the direct impact of employee psychological capital on organizational innovation performance. H5 represents the direct impact of organizational innovation on

organizational innovation performance, and H6 represents organizational regulation of employee mental capital and innovation performance. The data are collected from M site employees and site development. The measurement of organizational innovation atmosphere is based on the seven-point scale method. After the validity of the innovation atmosphere is verified by verifying the validity and reliability of the innovative atmosphere after 150 valid questionnaires are sent back to M website. In the process of KMO and spherical test, the test items of the unified variables were analyzed after the combination of the factor analysis. The results of testing the validity of the questionnaire of organizational innovation atmosphere are shown in Tab.1. From the table, we can see that the organizational innovation atmosphere used in this survey meets the statistical needs.

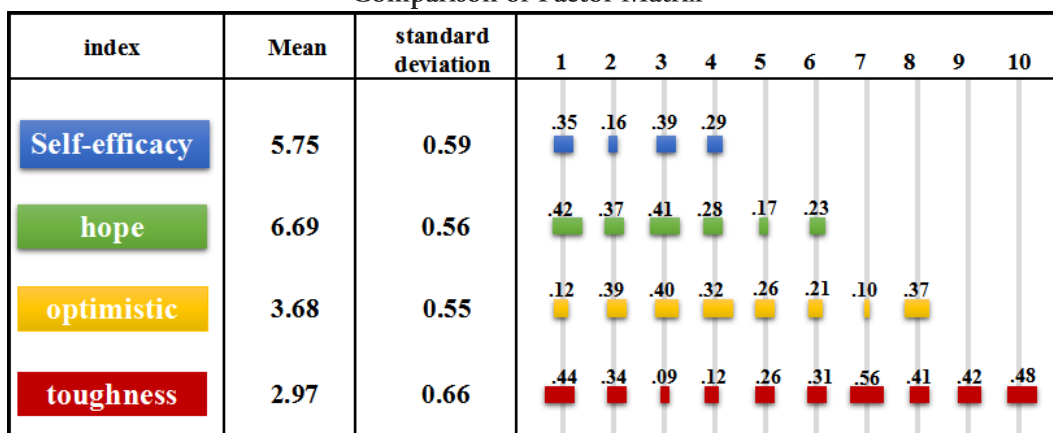
Table 1
Validity Test Results of Organizational Innovation Atmosphere Questionnaire

Factor	KMO	Chi square value	Minimum value of factor load	Cumulative equation interpretation	Significant level
Working environment atmosphere	0.716	149.127	0.631	71.623	0.000
Leadership style effectiveness	0.701	159.634	0.617	64.287	0.000
Work task characteristics	0.683	203.461	0.732	68.974	0.000

The analysis method used was inter-group variable analysis and inter-layer model analysis. In the experiment found that there is a strong correlation between variable factors. The comparative results obtained after the analysis of

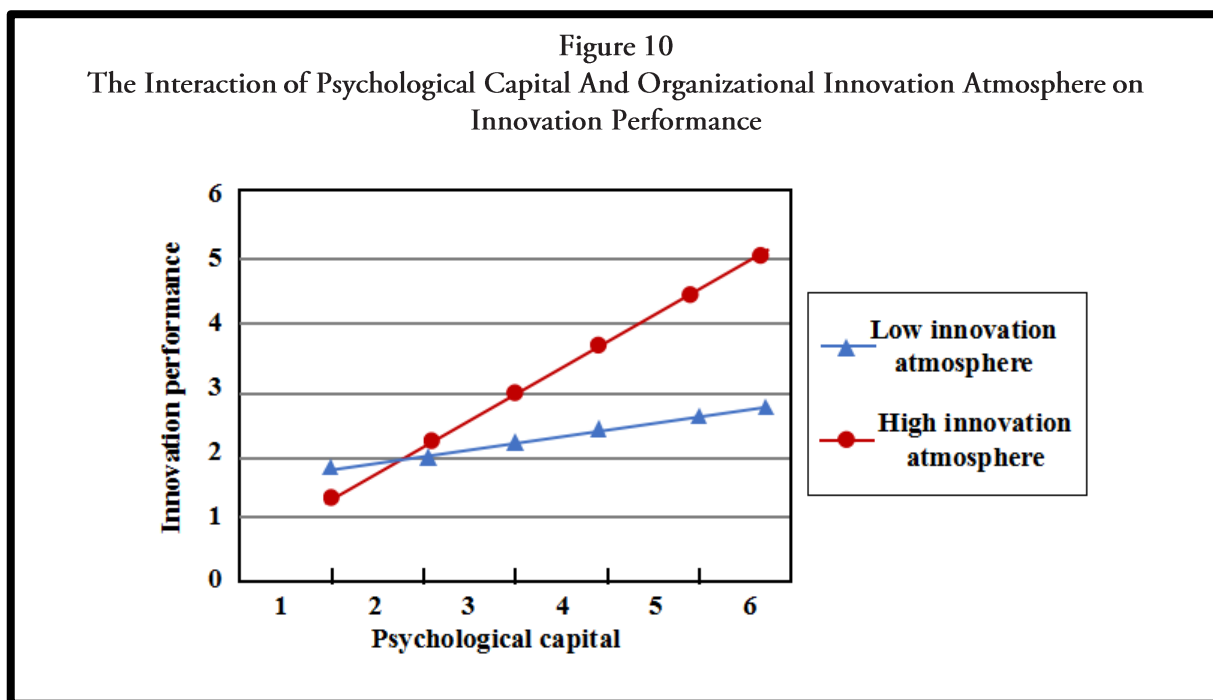
the 4-factor, 6-factor, 8-factor and 10-factor models are shown in Fig.9. 10-factor model of the best analysis, factor load levels are at the level of 0.05, the load factor between 0.70-0.89, proving this study has a good convergence effect.

Figure 9
Comparison of Factor Matrix



The relationship between the psychological capital and the organizational innovation performance will bring different effects to different teams and organizations. In this case, the adjustment effect between the mental capital

and the innovation performance is validated by using the slope detection equation and the stochastic regression parameter detection for different calculation. The result of the verification is shown in Fig.10.



After the use of F S/QCA software for data subset operation, the output of the truth analysis results as shown in Figure 11. The nljg represents the inverse value of the NLJG in the table. Therefore, NLJG in the table indicates that the ability to construct is in the existing state, and nljg represents the ability to construct in the non-existent state. This shows that individual

innovation ability is a necessary condition for team innovation, but individual innovation ability will have different performance in different individuals. Innovative ability can bring benefits to group innovation. Innovative ability and highly executive talent will create a higher innovation performance.

Figure 11
QCA Truth Table Analysis Results

	raw coverage	unique coverage	consistency
nljg*ZYCZ*ZX+	0.516524	0.278943	0.904781
NLJG*zycz*cx*ZX+	0.032694	0.134572	0.895715
solution coverage:0.667768			
solution consistency:0.954765			

DISCUSSION

Team creativity to play a positive contribution to the organizational innovation performance, we need staff with learning ability, execution, strong team cohesion and collective honor a higher level

of psychological capital. Using qualitative comparative analysis (QCA) to study the impact of employee psychological capital on team creativity and innovation performance is a scientific research project with good application

prospects. On the basis of discussing the formation principle and realization method of psychological capital, this paper builds an innovation dynamic model composed of employee psychological capital, team innovation performance and organizational innovation atmosphere. Afterwards, based on the fuzzy set QCA method, the two parameter equations covering the coverage and consistency of the result variables under different condition variables are updated to find the main factors that affect the innovation performance. Finally, the simulation experiment is carried out to verify the performance of the innovative dynamic model proposed in this paper. The experimental results show that enhancing the psychological capital of employees can effectively improve the team creativity and thus increase the steady flow of innovation for organizational innovation. The combination of innovation ability and high executive ability will create a higher innovation performance for the organization. Although this study has achieved good results, the next step is to continue to analyze in-depth analysis of the innovation momentum model and strive to adopt more advanced evaluation models to promote the improvement of employees' psychological capital.

Human Subjects Approval Statement

This paper did not include human subjects.

Conflict of Interest Disclosure Statement

None declared.

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