Factors Research for Team Creativity: A Diversified Perspective

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Abstract. Team creativity is an important factor for an enterprise to gain sustained motivation in a competitive environment. How to improve the creativity of team members is a necessary topic for social research. Based on the research of relevant literature, this paper studies the creativity of organizational team members from a diversified perspective, explores the factors affecting team creativity from two dimensions (internal, and external factors) and three levels (national, organizational, and individual levels). Finally, the future research of team creativity is discussed.

1 Introduction

In the era of information, data, and technology, business owners believe that traditional management methods cannot meet the long-term development of enterprises. To be sustainable, innovation is necessary. Innovation is inseparable from people, especially those who are full of creativity and self-efficacy [1]. Therefore, enhancing team creativity is a key factor for companies to achieve sustained momentum. How to improve the creativity of organizational team members is an important topic for scholars from all walks of life. Many scholars have explored influencing factors of team creativity from different angles. But their research perspective lacks comprehensiveness. From the data, most scholars generally divide into individual and group levels when analyzing the influencing factors of creativity. Few scholars analyze team creativity under interaction. Based on the thinking of development facts and related literature research, this paper mainly studies the creativity of organizational team members from a dynamic perspective, tries to clarify the influencing factors that affect team creativity, and makes a prospect of creativity research based on the current economic development trend.

2 Literature review

2.1 Creativity and related concepts

Different scholars have different views on the definition of creativity. Through related research, we found that there are two categories for creativity: the process view and the result view. The articles holding the concept of process believe that creativity is a systematic process: from creating motivation to creating exploration, then creating and forming, and ultimately creating a complete process of creation [2]. The result of the concept is mainly to define creativity from the product of creativity. Gruber & Wallace argue that creativity is a unity of novelty and value. This view mainly emphasizes the usefulness of creativity. In addition, the discussion of creativity is to look at its attributes - general ability or special ability. Duan Jiyang believes that creativity is a comprehensive ability [3], but Xiang Zuqiang considers it to be an exclusionary ability [4].

Intelligence and creativity. In 1983, experimental research of German anatomist Friedrich Tedman opened a hot spot on intellectual research [5]. The study of intelligence has gone through three stages from shallow to deep: the composition of intellectual [6]; intellectual processing [7]; At the intellectual level, the first two processes are taken into account. According to the author's literature review, the current hot spot of intellectual research is children's intelligence development. Whether intelligence is determined by genetic factors or acquired culture can be raised as a topic of concern [8]. Duan Jiyang et al believe that creativity is related to intelligence, but this relationship is
not linear, that is, the change of one party does not follow the change of the other party [9][10]. Scholar Zhang Zhenhua (2002) also reached the same conclusion [11].

Innovation and creativity. Joseph Schumpeter, who first proposed the concept of innovation in the "Economic Development Theory" [12], believes that innovation is a recombination of factors of production. Amabile believes that the process of organizational innovation integrates knowledge and information [13]. Chinese scholar Chen Yuhe believes that innovation is the process of structural optimization [14]. Innovation and creativity are both connected and different [15][16]. From the concept, it can be seen that creativity is the premise and foundation of innovation, and innovation is the carrier of creativity. However, there are differences between the two: (1) Creation is not limited by the “effectiveness of results”, and innovation must have “effectiveness of results”. (2) Innovation is generally “having a new student”, and creation can also include “being out of nothing”.

2.2 Research Theory of Creativity

In this section, we mainly elaborate on three classic theories of creativity: The Three Factors Theory, The Theory of Investment, The Theory of Creativity Cultivation, and the latest development of the triangular theory.

2.2.1 Classic theory

(1) Composition model of creativity

Teresa M. Amabile formally proposed the componential model of creativity in 1983. The theory mainly includes three points: (1) The creation of creative products includes three important elements: Task motivation, Professional competence, and Create potential. The combination of these three components determines the level of creativity. (2) The process of creativity generation can be roughly five stages, find problems, find answers, choose answers, answer output, result verification (3) These three elements have an important influence on the production process [17][18].

(2) Investment Theory of Creativity

Sternberg proposed a creative investment based on the principle of “low buy and high sell” in stocks [19][20]. The theory holds that a creative person is like an investor, following the principle of low buy and high sell. “Low-buy” creativity refers to ideas that currently seem absurd and worthless, but they often have great potential. “High selling” creativity refers to the result of creativity acceptance.

(3) The theory of Creativity Training

The theory of creativity training, as the name implies, believes that creativity is not cultivated by people in nature, but can be cultivated the day after birth. There are two main ways: One is creativity skill training, and the other is practice deepening in teaching [21]. Taylor has proposed that creativity development needs to be improved from three aspects: knowledge filling, psychological influence, and teacher behavior practice. The theory of creativity training process is fundamentally different from the inherent qualities of creativity. And it has been valued by teaching.

2.2.2 Theoretical development

(1) A Triangular Theory of Creativity

Following the theory of creative investment, Sternberg has created a new theory of creativity-The Triangle of Creativity [21][22][23]. Sternberg believes that triangle theory extends his investment theory and three-model theory. His main points are as follows: (1) There are three kinds of resistance in creativity in this theory: the crowd, the self, and zeitgeist. Different combinations of resistances lead to different manifestations of creativity. (2) Creativity can be expressed not only by defeating traditional people, but also by self-deception, and will also be despised by the zeitgeist (which does not yet exist but assumes that it exists). (3) Creativity is basically seen as an attitude towards life and work, but it also has cognitive, emotional, motivational, and environmental factors. (4) We can directly test the triangle theory by experience.
Influencing Factors of Team Creativity

In this chapter, we will analyze the impact factors of creativity from two dimensions (Internal, and External factors) and three levels (National, Organizational, and Individual levels).

3.1 External factors

3.1.1 National level

(1) Cultural environment. Culture refers to the sum of material wealth and spiritual wealth created by human beings in the practice of economic and social life. Culture has a complex impact on creativity. Yi Xinfa et al. confirmed that individualism is more conducive to the development and expression of creativity than collectivism culture through the empirical study of Sino-German culture [24]. Qiu Xia obtained empirical research on 87 research teams in Zhejiang and Shanghai: Supportive culture and innovative culture are more conducive to team creativity than bureaucratic culture [25]. Wang Yanzi et al. believe that the existence of the “face” culture makes people inevitably maintain a harmonious and positive relationship with others in the “face” cultural context in order to earn a “face”, adopt social rules of cooperation to enhance creativity [26].

(2) Economic environment. Regarding the impact of the economic environment on creativity, Tian Qihong explored the economic impact on creativity by discussing the economic conditions of different regions and the relationship between family economic conditions and creativity [27]. Zhang Jie studies that social capital affects employee creativity [28].

(3) State support system and creative talent training. A country's support system can significantly influence talent development investment, improve the quality of talents, and thus enhance the enthusiasm and creativity of individuals and groups. Zhang Wei believes the internal and external traits, external organization, and the team support system have a significant difference for team creativity based on the research university research team. Intrinsic team differences (personal characteristics, professional skills, etc.) and positive leadership team support have a positive effect on creativity. External differences (gender, age, education) have a negative impact on team creativity [29].

3.1.2 Organizational level

(1) Organizational structure. There are two main extensions of the traditional pyramid structure and flat organizational structure. The most obvious feature of the pyramid structure is the high level of the organization, and the hierarchy, the poor communication of information, which will weaken the employee's work autonomy, and thus affect the team's creativity. Contrary to the flat organizational structure, in this organizational structure, employees can better exchange information and share knowledge, thus increasing employee creativity.

(2) Leadership. Leadership is one of the important factors affecting creativity. Scholars believe that the style of leadership plays an important role in the creativity of the team. Xiao Qi believes that transformation leadership has a positive effect on team creativity [30]. Zhao Hui et al. believe that transformational leadership has a dual impact on team creativity [31]. Luo Wei et al. used questionnaires and adopted regression analysis to believe that charismatic leadership's vision incentives, adventurous spirit, environmental personnel sensitivity, and unconventional behaviour can support employees from all aspects, thereby enhancing employee cohesion and enhancing their creative force [32].

(3) Organizational atmosphere. Hunter, S. T et al. examined the organizational climate as an effective indicator of creativity through quantitative research [33]. Somech, A. Drach-Zahavy, A. have discussed the relationship between team creativity, innovation atmosphere, and innovation implementation through empirical research. The author believes that the team atmosphere serves as an intermediary bridge that can promote team creativity and team innovation [34].

(4) Team composition. Generally speaking, we believe that there are two aspects to team composition, the external composition and the internal composition. The external composition of team including: the gender composition of the team members, the geographical area composition, and the age etc. The internal composition is mainly analysed from team cognition, team learning,
and so on. Gong, Y. P et al. empirical analysis shows that there is a positive correlation between team learning objectives and team performance methods and team creativity, while the team performance goal avoidance is negatively related to team creativity [35]. Aggarwal, I. Woolley, A. W. demonstrated that team cognition is a key mechanism for cognitive diversity to influence team creativity through 112 MBA student project teams [36]. Li, J. Zhao et al. study the diversity of the team's hometown is negatively related to creativity [37]. Wang, J et al. analysed from the perspective of team culture diversity that surfaces cultural diversity has nothing to do with team creativity, and deep cultural diversity Creativity is positively related [38].

3.2 Internal factors

Nothing is more complicated than a man. Different human quality also has different sensitivity to creativity. For an individual's influence on creativity, it is mainly from the individual “iceberg model”. The so-called iceberg model is to divide the different quality of the personnel into the part of the iceberg and the part under the iceberg according to the external or implicit. Above the iceberg are those that are easily understood and measured, including age, knowledge, and personal skills. Contrary to the characteristics of the iceberg, it refers to the personality, motivation, and thinking style that are difficult to measure. The inner quality is linked to creativity.

(1) Age and creativity. There are different opinions on the relationship between age and creativity. NBER, the US economic research institute, found that middle-aged people (35-45 years old) were most creative by investigating the ages of the great inventors and Nobel laureates in history. Paula Stefan and Sharon Levine, American researchers, also reached the same conclusion. But some scholars believe that creativity is irrespective of age.

(2) Knowledge and creativity. The relationship between knowledge and creativity is complex. Zhou Zhijin et al. argue that creative activities are not only influenced by the acquired knowledge, but the imprint of knowledge accumulation affects the individual's traits and ways of thinking [39]. Xie Weizhong believes that descriptive knowledge is an important foundation of innovation ability, and procedural knowledge constitutes an important component of innovation ability [40].

(3) Thinking style and creativity. It is generally believed that thinking style can predict and judge creative tendencies [41][42]. Thinking style refers to the way of behavioural thinking. Thinking style is not a kind of ability, but a way of thinking with ability. Highly creative people have a higher style in some respects than lower creators.

(4) Motivation and creativity. Motivation is a nature of human. It triggers people's activities and pushes people to stick to their goals. Motivation is endogenous and exogenous. Studies have shown that endogenous motivation produces positive creativity and exogenous inhibition of creativity [43]. There is disagreement about the impact of external motivation on creativity. In some ways, external rewards stimulate the glow of internal motivation and thus increase individual enthusiasm, initiative, and creativity.

4 Research Prospects

Based on relevant literature and practical thinking, the author believes that the study of group creativity should consider the following points:

4.1 Knowledge sharing and team creativity.

With the rapid development of social economy and technological innovation, the boundaries between organizations have gradually become blurred, and information transmission has also evolved from the traditional Y-type to the network. In knowledge sharing, employees share knowledge and create knowledge with each other, and ultimately translate into knowledge that promotes overall organizational creativity. Knowledge sharing as an intermediary plays a positive role in the influence of leadership behavior on creativity, organizational climate on creativity [44]. In the future, we will continue to study the mechanism of interaction between knowledge sharing and creativity.
4.2 Work motivation and team creativity.

People are purposeful animals. According to the relevant incentive theory, motivation is the premise of what people choose to do and how to do things. Throughout the literature research, most scholars consider the influence of team external conditions on team creativity, and rarely study from the motivation of individual team members. This is a challenging job, after all, people are complicated. The model under the iceberg is hard to know. The consequence of this is that even if we continue to improve the environment, we can't improve team creativity. Therefore, in the future, we should pay more attention to people and study the brain mechanism of human beings.

4.3 The social network and team creativity.

With the rapid development of information technology, we have to admit that people's social circle has become wider. Over time and geographical boundaries, people can use the instant messaging to vomit work and emotional infection. In particular, the emotional communication of informal organizations affects the working atmosphere of small groups within the organization, which in turn affects team creativity.

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