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The Relationship between Participative Leadership and Subordinates' Innovative Behavior: The Serial Multiple Mediating Effects of Knowledge Sharing and Creativity

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참여적 리더십이 구성원의 혁신행위에 미치는 영향: 지식공유와 창의성의 직렬다중 매개효과

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Abstract Organizational members' innovative behavior is a key element that promotes organizational growth and sustainability. With today's unstable environment of economic and market , the importance of employees' innovative behavior is being emphasized. The reason is that employees' innovative behaviors play an important role in securing a organizational competitiveness. Based on this, this study focused on ways to improve employees' innovation behavior. Specifically, the causal relationship between participatory leadership and employees' innovative behavior was identified and the influence of innovative behavior was also verified. Furthermore, in the process of participatory leadership influencing employees' innovative behavior, the serial multiple mediating effect of knowledge sharing and creativity was verified. In order to demonstrate the hyphotheses, this study focused on 237 employees who work in Chinese SMEs. The results of the empirical analysis showed that participatory leadership had a positive effect on knowledge sharing, creativity, and innovative behavior. In addition, the serial multiple mediating effects of knowledge sharing and creativity on the relationship between participatory leadership and innovative behavior was significant. Overall, this study verified the positive role of participatory leadership that enhances employees' innovative behavior in Chinese SMEs and contributed to expanding the research field related to employees' innovative behavior through serial multiple mediating model.

Key Words : Participative leadership, Knowledge sharing, Creativity, Innovative behavior, Serial multiple mediation model

요 약 조직구성원의 혁신행동은 기업의 성장과 지속가능성을 촉진할 수 있는 중요한 요소이다. 오늘날 경제 시장 환경이 불안정함에 따라 조직구성원들의 혁신행동의 중요성이 날로 강조되고 있는 실정이며 이러한 혁신행동이 기업의 경쟁력을 확보하는데 중요한 역할을 한다. 이를 바탕으로 본 연구는 혁신행동의 향상 방안에 초점을 맞추었다. 구체적으로 참여적 리더십과 구성원의 혁신행동 간의 인과관계를 규명하고 영향력을 검증하였다. 더 나아가 참여적 리더십이 혁신행동에 영향을 미치는 과정에서 지식공유와 창의성의 직렬다중 매개효과도 검증하였다. 이를 검증하기 위해 중국 중소기업에 종사하는 구성원 237명을 대상으로 설문조사를 실시하였다. 실증분석 결과에서 참여적 리더십은 지식공유, 창의성, 혁신행동에 긍정적인 영향을 미치는 것으로 나타났다. 또한 참여적 리더십과 혁신행동 간의 관계에서 지식공유와 창의성의 유의한 직렬다중매개효과가 검증되었다. 전반적으로 본 연구는 중국 중소기업 조직에서 혁신행동을 이끌어 낼 수 있는 참여적 리더십의 긍정적인 역할을 검증하였으며 직렬다중매개효과를 통해 혁신행동에 대한 연구 영역을 확장하는데 기여하였다.

키워드 : 참여적 리더십, 지식공유, 창의성, 혁신행동, 직렬다중 매개 모형

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1. Introduction

In an environment where forecasts for the future are uncertain and the management function changes rapidly, innovation is being emphasized as an essential element in organizations. Active innovative behavior is regarded as the main source of power for enterprises to maintain a sustainable competitive advantage and pursuing innovation may become a major challenge for enterprises [1]. The reason for this is that innovative behavior affects innovation of the entire organization. Thus, managers and scholars are interested in organizational members' innovative behavior [2]. Organizational members are regarded as the core resources of an organization and play various important roles in improving the capacity for organizational innovation[3]. Based on this, this study seeks ways to improve subordinates' innovative behavior and presents a research model.

The level of subordinates' innovative behavior is expected to be determined by their leader as leadership style affects subordinates' individual cognition and emotion and affects their innovative behavior [4]. Therefore, this study focuses on participatory leadership, which is different from transformational leadership emphasized in previous studies.

In particular, there is now an increased emphasis on the importance of participative leadership, which can be seen as a predictor of members' innovative behavior. Previous research confirms that participative leadership has a positive effect on members' innovative behavior [5]. When participative leadership creates a positive atmosphere in an organization, it can effectively stimulate knowledge sharing and creativity of members, improve the spontaneity of members, and increase innovative behaviors [6].

Based on the considerations noted above, in the context of clarifying the importance of innovative behaviors, this study focuses on participative leadership and uses innovative behaviors as the leading element to explore how to improve organizational members' innovative behaviors. Therefore, it is worthwhile to explore the ways in which participative leadership leads to innovative behavior.

In relation to participative leadership leading to innovative behavior, when leaders participate in decision-making with subordinates, knowledge is actively shared among workers and leaders, which can ultimately drive their innovative behavior. In these processes, we expect that subordinates will ultimately contribute to their innovative behavior through their creativity. Therefore, we elucidate the influence of participative leadership on organizational members' innovative behavior through knowledge sharing and creativity through serial multiple mediating effects.

Compared to previous studies, this study has the following differences and contributions.

First, this study focuses on participative leadership and explores the impact of participative leadership on organizations in the context of organizational culture with Chinese characteristics in small and medium-sized enterprises in China. From the perspective of the relevant contents of participative leadership, in China's small and medium-sized enterprises, the existing studies mainly explore the relationship between participative leadership and voice behavior, employee well-being and other variables [7, 8]. However, there is a lack of research on the impact of participative leadership on employee innovation behavior. As a leadership style of participating in decision-making with employees and sharing decision-making rights [9], participative leadership is a change in the high degree of decision-making style of leaders in Chinese organizations for a long time. It has an important impact on stimulating the innovative behavior of employees of small and medium-sized enterprises in China. In addition, Chinese people pay attention to reciprocity, and employees will feel supported and respected by leaders based on their increased oppor-

tunities to participate in decision-making, and will correspondingly improve their enthusiasm to use their own knowledge and abilities to give back to leaders and organizations. and then carry out more useful innovations within the organization [10]. Therefore, this study explores the effect of participative leadership on employees' innovative behavior, which makes up for China.

Second, in previous studies, the mechanism of participative leadership behavior affecting employee innovation behavior is not clear[11]. Innovation behavior not only requires employees to have strong internal motivation, but also requires them to have the corresponding ability[12]. This study takes knowledge sharing and creativity as media variables to find the important reasons for connecting participative leadership and employee innovation behavior, and to show the path of participative leadership leading to innovation behavior.

Third, most studies explore a single intermediary variable that induces innovation behavior or focus on exploring regulatory variables that regulate the level of innovation behavior. However, we expand the scope of innovation behavior research and explore the path influence of participative leaders on subordinates' innovation behavior in serial multiple mediating effects. In addition, we proposed and verified the serial multiple media research model.

Overall, this study conducts empirical research on members of Chinese SMEs. The purpose is to identify the role of participative leadership in Chinese organizations and provide a research model for increasing the level of innovative behavior. In addition, in the context of China's economic transformation, it is worthwhile to explore the serial multiple mediation effects of knowledge sharing and creativity. Finally, this study contributes to expanding the research field of innovative behavior using a serial multiple mediation model and provides directions for future research.

2. Theoretical Background

2.1 Participative Leadership

Participative leadership entails consulting with members, soliciting advice, considering their ideas before making a decision, and meeting with members to discuss issues and make decisions together [13]. Participative leadership is defined as the supervisor making decisions jointly with the organization's member, or at least sharing the influence on the decision, thereby providing a variety of potential benefits [9]. Participative leadership can play a key role in enabling emotionally devoted members to break free from external constraints and focus on unconventional, creative and organized business activities that result in an organization [14]. Participative leadership is defined as leadership that involves members at different levels in decision-making [15]. Participative leadership involves members in the making and implementation of decisions, seeking members' input on important decisions and valuing the perspectives of others. Participatory systems allow members to use their voices to influence internal and external strategies and protect the organization's freedom to express opinions [16]. Participative leadership is characterized by consultation with members for advice and careful consideration before making a decision [14].

Furthermore, participative leadership reflects the extent to which a leader or manager involves others in making decisions and executing them [17]. Participative leadership is at the center of an important transformation of a business, and this new leadership style has a major impact on the sustainability of the business [16].

According to the results of a questionnaire survey answered by executives and subordinate members collected by a Chinese telecommunications company, for subordinate members of the management department, participative leadership behavior has a positive impact on job performance and OCBO through psychological empowerment, and for non-

managerial subordinate members, participative leadership behaviors have a positive impact on job performance and OCBO through members' trust in leadership [18]. Participative leadership positively impacts teacher empowerment and school staff team innovation [19]. The supervisor's level of participative leadership and members' perceptions of the participatory strategic planning process positively influence high levels of job satisfaction [20].

Based on these theories, this study can regard participative leadership as a behavior in which leaders refer to members' opinions when making decisions and make decisions together after discussion.

2.2 Knowledge Sharing

Knowledge sharing is defined as the sharing of organization-related information, ideas, advice, and expertise among individuals [21]. Knowledge sharing is an important part of knowledge management because it helps organizations store available knowledge and increase it over time [22]. Knowledge sharing is basically the act of providing knowledge to others in the organization. Knowledge sharing among individuals refers to the process of transforming knowledge possessed by individuals into a form that can be understood, absorbed, and used by others[23]. Knowledge sharing facilitates the exchange of information, problem solving, teamwork, and decision making [24].

Furthermore, knowledge sharing assumes that there is a relationship between at least two parties, where one party owns the knowledge and the other party acquires it. One party shall consciously or voluntarily communicate its knowledge in any form, and the other party must be able to recognize and understand the expression of such knowledge [25]. Knowledge sharing is important because it provides a link between individuals and organizations, through which knowledge belonging to individuals is transferred to the organizational level and translated into economic and competitive value for the organization [25].

Previous studies have found that motivational factors such as interactive benefits, knowledge self-efficacy, and the enjoyment of helping others have a positive impact on members' attitudes and willingness to share knowledge [26]. And knowledge sharing has a positive impact on the innovation ability of enterprises [27]. Innovation self-efficacy and knowledge sharing play a mediating role between organizational innovation support and innovation behavior, and innovation self-efficacy further positively affects members' innovative behavior through knowledge sharing among organizational members [28]. The results show that knowledge sharing plays a partial mediating role between transformational leadership and team creativity, and transformational leadership has a positive impact on team creativity through knowledge sharing [29].

Based on these theories, this study understands knowledge sharing as the act of providing knowledge and understanding and using knowledge among members or members to an organization. Knowledge sharing contributes to organizational members' behaviors such as performance and innovation.

2.3 Creativity

Creativity refers to individuals or groups of people working together to create, conceptualize or develop new, useful ideas, processes or procedures [30]. The innovation of an organization is inseparable from the creativity of its members, and the creativity of members is a source of continuous innovation for an enterprise [31]. Creativity is a common term used to describe a person's attitude, ability, and style of creative thinking that leads to organized, purposeful activity, whether mentally or physically. Such activities can involve individuals or groups that occur and interact within specific temporal, political, economic, social, and cultural contexts. Creative activities aim to realize the creative potential of creators and produce tangible or

intangible products that are original, useful, and desirable at least to the creator. Creative products are suitable for ethical and constructive purposes [32]. In a rapidly changing and challenging business environment, creativity is increasingly seen as a key factor in team success and maintaining an organization's competitive advantage [33].

In addition, creativity is the source and premise of enterprise innovation, and is the key factor for enterprise technology improvement and value creation [34]. The creative thinking and ability of organizational members play an important role in corporate strategy and management innovation [35].

According to previous research, humble leadership has a positive effect on members' creativity [31]. Transformational leadership positively impacts team creativity through team learning behaviors [36]. Challenging stress has a positive impact on the creativity of organizational members, while hindrance stress has a negative impact on the creativity of organizational members [37]. Empowering leadership has a positive impact on the creativity of organizational members [38].

Based on these theories, this study understands creativity as the act of an individual generates new and valuable ideas. Creativity helps enterprises to continuously develop technology, innovate enterprises, and expand their competitive advantages.

2.4 Innovative Behavior

Creativity and innovative behavior at work is the process of trying to develop new ways of working. The creative phase of a process refers to the generation of an idea, and the act of innovation refers to the subsequent phase of implementing an idea for a better program or product. Creativity and innovative behavior can occur at the level of individuals, business teams, organizations, or at multiple levels [39]. The innovative behavior of organizational members can effectively improve the innovation achievements of enterprises and enhance the competitiveness of enterprises [6]. Innovative behavior is defined as a process entailing more than one stage as an individual recognizes a problem, generates new ideas and solutions to the problem, and works to promote those ideas and build solutions [40]. Innovative behavior is very important for companies that want to find their place in the market and ensure long-term survival [41].

In addition, innovative behaviors lead to better organizational functioning or increased psychological benefits for organizational members, such as being able to perceive job demands, match more appropriate resources, improve job satisfaction, and enhance interpersonal communication [42].

According to previous research results, an organizational innovation climate has a positive impact on organizational members' innovative behavior [43], and authentic leadership has a positive impact on organizational members' innovative behavior [44]. It is found that the positive personality of organizational members has a positive impact on innovative behavior [6]. Creative efficacy has a positive effect on the innovation behavior of research developers [45].

Based on these theories, this study understands innovative behavior as the process by which individuals or teams identify problems, generate ideas, and solve them. Innovative behavior enables organizational members to overcome the difficulties and challenges they face and adapt to the current changing environment.

3. Methods and Hypotheses

3.1 Participative Leadership and Knowledge Sharing

Participative leadership within an organization provides an open discussion context for members to participate in decision-making and encourages colleagues across the organization to share knowledge [46]. Participative leadership can give members the opportunity to express their opinions and encourage them to express suggestions, in which case the

input from team members has a high probability of actually influencing the decision. Informing and empowering autonomy motivates greater collaboration attempts through knowledge sharing inside and outside the team, leading to members helping each other to find solutions [47]. Leaders who actively encourage relevant participation are especially able to foster the willingness of members to "disclose ideas and information", leading to more knowledge-sharing activities, which in turn influences leaders' perceptions of organizational capabilities and performance potential [48]. When participative leaders give organization members the opportunity to voice their opinions and make suggestions, they learn from each other important work-related skills and experiences, engage in knowledge-sharing behaviors, and help the members carry out their responsibilities [15]. Therefore, participative leadership is a positive factor in promoting knowledge sharing. Based on this background, this study proposes the following hypotheses.

Hypothesis 1. Participative leadership will positively influence on subordinates' knowledge sharing.

3.2 Participative Leadership and Creativity

When participative leaders involve members in decision-making and problem-solving, members are encouraged and supported, and they make creative contributions [5]. By participating in decision-making, members tend to spend more time searching and coding information for better, more creative solutions to work problems [49]. Participative leadership allows members to use participation as an opportunity to demonstrate their abilities and use their knowledge to come up with creative ideas and solutions [50]. Participative leadership can play a key role in freeing emotional organization members from external constraints to devote their energy to creative business activities [14]. Based on the above content, we can explain why participative leadership improves the creativity of members, and this study thus puts forward the following hypothesis.

Hypothesis 2. Participative leadership will positively influence on subordinates' creativity.

3.3 Participative Leadership and Innovative Behavior

Through members' participation in the decision-making process, participative leaders create opportunities for members' skills and career development, which in turn promotes members' innovative behavior [51]. Participative leaders successfully encourage team-level innovation by keeping members engaged throughout the project, while giving members the freedom to develop new solutions, thereby fostering innovative behavior among members [52]. Participative leadership gives organizational members more voice and discretion, and gives organizational members the opportunity to achieve innovative behaviors [53]. Participative leadership can create an atmosphere in which all members can express their opinions freely and this leadership style will encourage individual self-identity and motivate members to engage in exploratory and innovative behaviors [54]. It can be seen that participative leadership promotes members' innovative behavior. Therefore, this study proposes the following hypothesis.

Hypothesis 3. Participative leadership will positively influence on subordinates' innovative behavior.

3.4 Knowledge Sharing and Creativity

The exchange of disparate information helps to increase the expertise, technical material, and knowledge base available to the organization so that the organization can utilize and integrate resources to perform complex tasks such as developing new products or programs [55]. Members can achieve higher levels of creativity if the organization can activate relevant knowledge and deliver it to members for knowledge sharing [56]. Through the exchange

and sharing of knowledge, members of the organization vigorously promote the generation of creative solutions, new thinking, and new ideas [29]. Members take the initiative to share valuable knowledge with colleagues and help colleagues at work. Members actively accept and apply the knowledge shared by colleagues. This willingness to utilize resources such as knowledge, information, and technology is relatively high and can produce creative results [57]. Positive knowledge sharing behavior promotes members' creativity. Therefore, this study proposes the following hypothesis.

Hypothesis 4. Knowledge sharing will positively influence on subordinates' creativity.

3.5 Knowledge Sharing and Innovative Behavior

Knowledge sharing behaviors of members, such as knowledge gathering and knowledge donation, can activate the innovation process, promote the implementation of new ideas, and then influence members' innovative behaviors [58]. Knowledge sharing helps to complete tasks, acquire knowledge, increase knowledge reserves, and improve knowledge structure, and thereby members can broaden their innovative horizons, discover innovative opportunities, create innovative ideas, and put innovative ideas into practice [59]. Knowledge sharing is conducive to increasing and improving members' knowledge reserves, and is conducive to members stimulating innovative ideas and implementing innovative behaviors [60]. In the process of knowledge sharing and absorption, new valuable knowledge can be generated, members' innovative thinking can be stimulated, and innovative behaviors can be promoted [61]. This explains why knowledge sharing promotes members' innovative behavior. Therefore, this study proposes the following hypothesis.

Hypothesis 5. Knowledge sharing will positively influence on subordinates' innovative behavior.

3.6 Creativity and Innovative Behavior

Creative members feel confident in their knowledge and skills, resulting in new ideas and their implementation in the organization, resulting in innovative behaviors [62]. If members provide many new ideas and creative ideas in product innovation, they can further optimize product functions, continuously improve product performance, and achieve innovation [63]. The stronger the creativity of organizational members is, the greater the investment in the work will be, and more innovative behaviors are accordingly then shown in the work process [64]. Creative members come up with novel ideas and then successfully implement creative ideas and solutions at the organizational level, resulting in innovative behaviors [65]. Therefore, creativity can be seen as a positive factor leading to innovative behavior. This study thus proposes the following hypothesis.

Hypothesis 6. Creativity will positively influence on subordinates' innovative behavior.

3.7 The Serial Multiple Mediating Effects of Knowledge Sharing and Creativity

Through the management method of participative leadership, interaction and knowledge sharing among members can be promoted, and the innovative behavior of members can be further promoted [66]. Participative leadership facilitates knowledge sharing by building mutual trust, effective communication systems, and shared organizational norms, and they expect members to participate in the process. This facilitates knowledge sharing, leading members to research new technologies and prompting them to demonstrate innovative behavior [67].

In addition, by participating in leadership in organizational decision-making with their superiors, organizational members can draw on the broad perspectives and ideas of different members, thereby further increasing creative resources and increasing

their own innovative behaviors [68]. The act of participative leadership enables organizational members to make decisions that greatly motivate and help organizational members generate creative ideas and apply them in innovative ways [66]. In a participative leadership environment, creativity is induced by encouraging discussion and consideration of alternatives to existing information, which will lead to a comprehensive and innovative solution [69].

Participative leaders encourage members to interact, exchange and share knowledge, and engage in innovative behaviors by identifying problems, generating creative ideas, and proposing solutions before arriving at a final solution [70]. The leader consults and participates in decision-making with subordinate members who inspire creativity and encourage innovative behavior by sharing their views with the leader and other members [71]. Participative leaders can spark ideas and drive innovative behavior by consulting with members before making a decision, allowing leaders and members to share their knowledge and discuss other solutions [72].

Based on this background, this study posits that participative leadership creates a free atmosphere by making joint decisions with members, allowing members to share knowledge with each other. After members accept new and valuable knowledge, they can initiate creative thinking, provide new solutions, and achieve innovative behavior. Therefore, this study proposes the following hypothesis.

Hypothesis 7. Knowledge Sharing sharing will positively mediate the relationship between participative leadership and subordinates' innovative behavior.

Hypothesis 8. Creativity will positively mediate the relationship between participative leadership and subordinates' innovative behavior.

Hypothesis 9. Knowledge Sharing and creativity will have serial multiple mediating effect on the relationship between participative leadership and subordinates' innovative behavior.

3.8 Measures

Participative leadership refers to the use of information and input from organizational members to encourage organizational members to express their ideas and opinions when making decisions [73]. We use the scale developed by Arnold et al.(2000) scale to measure participative leadership. The measurement tool consists of 6 items [73]. The sample items included "Encourages work group members to express ideas/suggestions." and "Listens to my work group's ideas and suggestions." . In order to be more consistent with the purpose of this study, two of the items was deleted.

Knowledge sharing is a person's positive feelings about sharing knowledge [74]. To measure knowledge sharing, we leveraged the tools used in the study by Bock & Kim (2002). The knowledge sharing measurement item consists of 5 questions [74]. The sample items included "I will share my knowledge with more organizational members" and "I intend to share my knowledge with other organizational members more frequently in the future." . In order to be more consistent with the purpose of this study, one of the items was deleted.

Creativity is an individual-level phenomenon defined as the generation of novel ideas by members of an organization [75]. To measure creativity, this study used the measurement items of Jaiswal & Dhar (2015). The measurement tool consists four 4 items[75]. The sample items include "This subordinate identifies opportunities for new ways of dealing work" and "This subordinate seeks new ideas and ways to solve problems" .

Innovative behavior means that members generate new and useful ideas and help and support the three sequential processes of realizing ideas, namely idea generation, promotion of ideas, and realization

of ideas [76]. To measure members' innovative behavior, we used Scott & Bruce(1994)'s scale [76]. The tool to measure innovative behavior consists of 6 items. The sample items include "I search out new technologies, processes, techniques, and/or product ideas" and "I generate creative ideas" . In order to be more consistent with the purpose of this study, one of the items was deleted.

All items use a 7-point Likert scale, with responses ranging from "1(strongly disagree)" to "7(strongly agree)", with the higher the score, the stronger the above intent. The research model is shown in(Fig. 1).

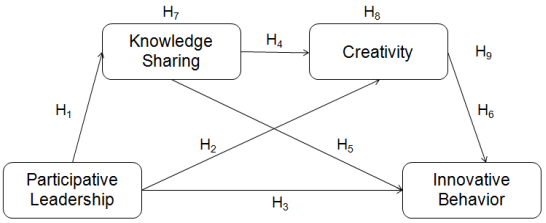

Fig. 1. The research model

4. Results

4.1 Sample characteristics

The purpose of this study is to show how employees can improve their innovative behavior. We conducted a questionnaire survey on employees of small and medium-sized enterprises in China from June 15 to 25, 2022. Our interviewees included 212 employees of small and medium-sized enterprises from Zhejiang, Gansu, Jiangsu and Jiangxi provinces in China. The main types of enterprises are finance, education, medical care, etc., with an annual turnover of about 50-200 million RMB, and most of them have been established for more than 5 years. Most of the employees who participated in the survey were subordinates. We distributed and collected our samples through an online questionnaire survey. Finally, the questionnaire data collected are statistically analyzed by SPSS, and verified by structural equation model analysis by AMOS.

Regarding the characteristics of the participants in this study, there were 80 males (37.7%) and 132 females (62.3%). In terms of age, 3(1.4%) people were under the age of 20 years old, 67(31.6%) people were between the ages of 20 and 29 years old, 31(14.6%) people were between the ages of 30 and 39 years old, 76(35.8%) people were between the ages of 40 and 49 years old, and 35(16.5%) people were the age of 50 years old or over. In terms of educational level, 62(29.2%) respondents graduated from high school, 37(17.5%) from junior college, 80(37.7%) graduated from college, 12(5.7%) people held master degrees, 4(1.9%)people held doctorate degrees or higher, and 17(8.0%) people were categorized in others. Regarding the form of employment, there are 155(73.1%) regular employees and 57(26.9%) informal employees. The length of tenure is distributed across categories: 19(9.0%) were less than 1 year, 33(15.6%) were between 1 year and 3 years, 31(14.6%) were between 3 and 5 years, 18(8.5%) were between 5 and 7 years, and 111(52.4%) were more than 7 years. Classification by job types was as follows: 36(17.0%) in education, 24(11.3%) in financial, 17(8.0%) in medical, 8(3.8%) in catering service, 24(11.3%) in manufacturing, and 103(48.6%) in others. Other specific demographic characteristics are displayed in Table 1.

4.2 Statistical Analysis

In order to analyze demographics, reliability, descriptive statistics and correlation analyses of the model, we use the software SPSS 23.0. In addition, CFA were performed using AMOS 22.0. Finally, for hypothesis testing, this study uses Model 6 for analysis in SPSS PROCESS Macro 3.4 program.

4.3 Confirmatory Factor Analysis

This study first conducted a confirmatory factor analysis. Confirmatory factor analysis (CFA) is a type of structural equation modeling that deals specifically with measurement models; that is, the rela-

Table 1. Data characteristics

		Number of Respondents	Percentage of Respondents(%)
Gender	Male	80	37.7
	Female	132	62.3
Age	Under 20	3	1.4
	20-29	67	31.6
	30-39	31	14.6
	40-49	76	35.8
	Over 50	35	16.5
Education	High school graduate	62	29.2
	Junior college degree	37	17.5
	Bachelor's degree	80	37.7
	Master's degree	12	5.7
	Doctorate degree	4	1.9
	others	17	8.0
Employment	regular employee	155	73.1
	informal employee	57	26.9
Service Year	Less than 1	19	9.0
	1-2	33	15.6
	3-4	31	14.6
	5-6	18	8.5
	More than 7	111	52.4
Job types	education	36	17.0
	financial	24	11.3
	medical	17	8.0
	catering service	8	3.8
	manufacturing	24	11.3
	others	103	48.6

tionships between observed measures or indicators (e.g., test items, test scores, behavioral observation ratings) and latent variables or factors [77]. EFA and CFA both aim to reproduce the observed relationships among a group of indicators with a smaller set of latent variables. However, EFA and CFA differ fundamentally by the number and nature of a priori specifications and restrictions made on the latent variable measurement model. Because of the nature of the identification restrictions in EFA, factor models must be specified under the assumption that measurement error is random. In contrast, correlated measurement error can be modeled in a CFA solution provided that this specification is substantively justified and that other identification requirements are met [77]. Therefore, based on the existing theory, this study simulates the measurement model of potential variables, and uses CFA to analyze the data to determine the fitting quality of the model. We used the following criteria to evaluate the model fit : average residual correlations as measured by the root mean square error of approximation (RMSEA), where an RMSEA below .08 indicates an acceptable model fit, and an RMSEA below .05 indicates good model fit; Normed Fit Index(NFI) and Comparative Fit index (CFI) above .90 [78,79]. In terms of model fit, the absolute fit index was $X^2(p)$=156.236(.000), X^2/df=1.517, RMSEA=.049, and the incremental fit index was NFI=.959, CFI=.985, and the parsimonious adjusted index was PGFI=622, PNFI=.726. Therefore, the model fit can be regarded as an acceptable value.

To verify the feasibility of the model, we derive the Average Variance Extracted (AVE) and Composite Reliability (CR). The average variance extracted (AVE) is a statistic to test the internal consistency of structural variables in statistics. The higher the ave value is, the higher the reliability and convergence validity of the construct is, and the ideal standard value must be greater than 0.5 [80]. In terms of the AVE value, participative leadership was 0.678, knowledge sharing was 0.659, creativity was 0.796

Table 2. The result of convergent validity and reliability analysis

Variables		Estimate	S.E.	C.R.	*p*	Standardized Regression Weights	AVE	C.R	Cronbach's Alpha
Participative Leadership (A)	A1	1.206	0.071	17.039	***	.857	.678	.817	.923
	A2	1.244	0.066	18.763	***	.900			
	A3	1.068	0.076	14.146	***	.774			
	A4	1				.756			
Knowledge Sharing (B)	B1	1				.793	.659	.834	.891
	B2	.993	0.066	15.099	***	.790			
	B3	1.003	0.054	18.631	***	.876			
	B4	0.985	0.066	14.99	***	.787			
Creativity (C)	C1	1				.862	.796	.923	.949
	C2	1.006	0.042	24.168	***	.919			
	C3	1.038	0.041	25.1	***	.929			
	C4	0.987	0.05	19.738	***	.858			
Innovative Behavior (D)	D1	1				.874	.753	.910	.949
	D2	1.073	0.047	22.639	***	.901			
	D3	1.089	0.056	19.419	***	.853			
	D4	1.067	0.051	21.023	***	.878			
	D5	1.055	0.058	18.26	***	.832			
Model Fit Index		$\chi^2(p)$=156.236(.000), χ^2/df=1.517, RMSEA=.049, IFI=.986, CFI=.985, NFI=.959, TLI=.981, AGFI=.887, GFI=.924, RMR=.145, PGFI=.622, PNFI=.726, AIC=256.236							

and innovative behavior was 0.753; note that these values are all greater than 0.5. Composite reliability(CR) refers to a measure that specifically evaluates the potential structural reliability reflected by a variable[81], and a value greater than 0.7 indicates that the variable has a good construction reliability [82]. Regarding the value of CR, participative leadership was .817. knowledge sharing was .834, creativity was .923, and innovative behavior was .910; these values are all greater than 0.7. Through such a result, convergent validity is ensured.

Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale. it describes the extent to which all items in the test measure the same concept or structure, so it is related to the interrelation of the items in the test [83]. In terms of the reliability analysis, when the Cronbach's Alpha coefficient base is above 0.7, the reliability is considered to be guaranteed [84]. The reliability analysis results of each variable in this study are as follows: participative leadership is .923, knowledge sharing is .891, creativity is .949, and innovative behavior is .949. All values are above .7, thus ensuring confidence in each variable. Table 2 shows the results of the analysis of convergent validity and reliability.

4.4 Exploratory factor analysis

This study makes a further analysis of EFA. In order to determine the CMB problem, we conducted a single factor verification. The result is 27.745, less than 50%. Table 3 shows the results of exploratory factor analysis.

4.5 Descriptive Statistics and Correlation Analysis

Descriptive statistical analysis is a statistical description of the relevant data of the variables in the survey, including the frequency analysis of the data, the degree of dispersion analysis and the distribution of the data [85]. In this study descriptive statistical analyses included mean and standard deviations. The mean values of participative leadership, knowledge sharing, creativity and innovative behavior were 5.217, 5.409, 5.349 and 5.117, respectively. The standard deviations of participatory leadership, knowledge sharing, creativity and innovative behavior were 1.394, 1.098, 1.140, and 1.204, respectively.

Table 3. The result of exploratory factor analysis

Variable	Item	Component			
		1	2	3	4
Participative Leadership (A)	A1	.187	.858	.240	.102
	A2	.214	.864	.191	.182
	A3	.130	.798	.203	.289
	A4	.387	.815	.153	.048
Knowledge Sharing (B)	B1	.285	.363	.711	.128
	B2	.336	.143	.798	.138
	B3	.258	.289	.739	.345
	B4	.284	.173	.750	.277
Creativity (C)	C1	.566	.226	.353	.572
	C2	.516	.282	.320	.658
	C3	.516	.240	.355	.674
	C4	.506	.227	.317	.656
Innovative Behavior (D)	D1	.793	.273	.340	.199
	D2	.807	.226	.322	.253
	D3	.763	.199	.369	.236
	D4	.767	.295	.264	.299
	D5	.754	.259	.198	.347
Eigenvalues		4.717	3.609	3.328	2.374
Dispersion(%)		27.745	21.230	19.574	13.966
Cumulative(%)		27.745	48.975	68.549	82.515
KMO=.952(sig=.000)					
Bartlett's test of sphericity=3472.847					

Correlation analysis refers to the analysis of two or more variables with correlation, so as to measure the closeness of the two variables [86]. Correlation analysis results showed that participative leadership have a positive correlation with knowledge sharing (r=.572, p<.001), creativity (r=.582, p<.001), innovative behavior (r=.593, p<.001). Additionally, knowledge sharing was positively correlated with both creativity (r=.745, p<.001) and innovative behavior. (r=.719, p<.001). There was a positive correlation between creativity and innovative behavior (r=.866, p<.001). 〈Table 4〉 shows the results of the descriptive statistics and correlation analysis.

4.6 Discriminant Validity

This study used the criteria proposed by Fornell-larker(1981) to determine the discriminant validity[87]. According to this criterion, a model has discriminant validity if the square root of the AVE of each variable is greater than the correlation coefficient between that variable and the other variables in the measurement model[87].

According to the results of discriminant validity in this study, the results were not ideal and satisfactory.

The result of discriminant validity showed the AVE value of participative leadership is .678, which is higher than the r^2 value of other variable(.321, .306, .315). The AVE value of knowledge sharing is .695, which is higher than the r^2 value of other variable(.606, .547, .321). The AVE value of creativity is .796, which is higher than the r^2 value of other vari-

Table 4. The results of descriptive statistics and correlation analysis

	Mean	S.D	Participative Leadership	Knowledge Sharing	Creativity	Innovative Behavior
Participative Leadership	5.217	1.394	–			
Knowledge Sharing	5.409	1.098	.572***	–		
Creativity	5.349	1.140	.582***	.745***	–	
Innovative Behavior	5.117	1.204	.593***	.719***	.866***	–

***p<.001, **p<.01, *p<.05

Table 5. The results of discriminant validity

	Participative Leadership	Knowledge Sharing	Creativity	Innovative Behavior
Participative Leadership	(.678)			
Knowledge Sharing	.567(.321)	(.695)		
Creativity	.554(.306)	.779(.606)	(.796)	
Innovative Behavior	.562(.315)	.740(.547)	.885(.783)	(.753)

able(.783, .606, .306). And the AVE value of innovative behavior is .753. However, it showed lower than .783(r^2=Creativity and innovative behavior) . Table 5 shows the results of discriminant validity.

4.7 Hypothesis Test

For hypothesis testing, this study uses Model 6 for analysis in SPSS PROCESS Macro 3.4. The results of the analysis are as follows: Participative leadership had positive effects on knowledge sharing (t=10.113, p<.001), creativity (t=4.274, p<.001), and innovative behavior (t=2.540, p<.05). Therefore, Hypothesis 1, Hypothesis 2, and Hypothesis 3 are supported. In addition, knowledge sharing was found to have positive effects on creativity (t=11.372, p<.001) and innovative behavior (t=2.535, p<.05). Therefore, Hypothesis 4 and Hypothesis 5 are supported. And creativity has a positive effect on innovative behavior (t=13.5816, p<.001). Therefore, Hypothesis 6 is supported.

The validation of the mediation effect was validated by a bootstrapping analysis. The indirect effect of knowledge sharing in the relationship between participative leadership and innovative behavior is .064, with a lower limit of -.0016 and an upper limit of .145. If 0 is included between the upper and lower values, the effect of the parameter can be considered insignificant. Thus, Hypothesis 7 is rejected. However, the indirect effect of creativity in the relationship between participative leadership and innovative behavior is .140, with a lower limit of .068 and an upper limit of .232. The display does not contain 0 between the upper and lower values, and therefore the effect of the parameter can be considered significant. Hence, hypothesis 8 is

Table 6. The results of serial multiple mediation

(Participative Leadership→Knowledge Sharing→Creativity→ Innovative Behavior)

Direct effect	Effect	S.E.	t	p	LLCI	ULCI
Participative Leadership→Knowledge Sharing	.450	.0446	10.113	.000	.362	.538
Participative Leadership→Creativity	.188	.0441	4.274	.000	.101	.275
Participative Leadership→ Innovative Behavior	.092	.0365	2.540	.011	.020	.164
Knowledge Sharing→Creativity	.636	.0560	11.372	.000	.526	.747
Knowledge Sharing→Innovative Behavior	.143	.0566	2.535	.012	.031	.254
Creativity→Innovative Behavior	.746	.0549	13.581	.000	.637	.854

Indirect effect	Effect	Boot S.E.	Boot LLCI	Boot ULCI
Total Indirect Effect ($X \rightarrow M_1 \rightarrow Y$, $X \rightarrow M_2 \rightarrow Y$, $X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$)	.4193	.0560	.3129	.5370
Participative Leadership→Knowledge Sharing→Innovative Behavior ($X \rightarrow M_1 \rightarrow Y$)	.0646	.0370	−.0016	.1452
Participative Leadership→Creativity→Innovative Behavior ($X \rightarrow M_2 \rightarrow Y$)	.1406	.0414	.0684	.2325
Participative Leadership→Knowledge Sharing→Creativity→Innovative Behavior ($X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$)	.2141	.0400	.1415	.2969

supported. Finally, on the serial multiple mediation effects of knowledge sharing and creativity, the indirect effect is .214, with a lower limit of .141 and an upper limit of .296. From such a result, it can be confirmed that 0 is not included between the lower limit value and the upper limit value. Therefore, hypothesis 9 is supported. Table 6 presents the results of the serial multiple mediation effects of knowledge sharing and creativity.

5. Conclusion

This study specifically explored whether the serial multiple mediating effect of knowledge sharing and creativity is significant in the relationship between participative leadership and subordinates' innovative behavior in Chinese SMEs. According to the results, we present implications, limitations, and directions for future research.

5.1 Theoretical Implications

In terms of improving subordinates' innovative behavior, there are relatively few studies related to participatory leadership. The contribution of this study is mainly focused on expanding the research field of innovative behavior and using a serial multiple mediation model to test the ways to improve subordinates' innovative behavior. It not only verifies the direct influence of participative leadership on innovative behavior, but also the serial multiple media effects of knowledge sharing and creativity. Accordingly, the results and theoretical implications of this study are summarized as follows.

First, this study confirms that participatory leadership plays a vital role in the organization. We verify the relationship between participatory leadership and knowledge sharing, creativity and innovative behavior respectively. The results show that the positive impact of participative leadership on knowledge sharing. Previous research has shown that participative leadership behaviors can increase members' competencies in knowledge sharing within an organization [88]. The results of this study show that the more the supervisor participates in decision-making with members, the greater knowledge-sharing among members is. Participative leaders provide a free discussion atmosphere that encourages knowledge sharing among members of the organization. This study validates the positive impact of participative leadership on creativity. The results showed that higher levels of participative leadership were associated with higher levels of successful creativity. Participative leadership further enhances creativity by encouraging members to continuously engage in creativity-related activities [89]. When leaders involve members in decision-making, members feel encouraged and supported, and more creativity occurs. This study further confirms that participative leadership has a positive impact on innovative behavior. Organizations with higher levels of participative leadership also experience increased innovation by members. Consistent with the results of Fatima, Majeed & Saeed (2017), participative leadership has led to an increase in member innovation behavior [5]. Therefore, this study combines the previous research on participative leadership and innovative behavior to explore the internal mechanism of the interaction of these two variables, and further complements the research on the impact of active leadership on innovative behavior.

Second, this study determines the causes of innovation behavior and confirms the positive impact of knowledge sharing and creativity on subordinates' innovation behavior. The results show that knowledge sharing has a positive effect on creativity. The results of this study showed that members' behavior of sharing knowledge with other members in the organization increases members' creativity. The level of knowledge sharing is improved, and team creativity can be greatly improved [29]. Different exchanges of information increase an organization's pool of expertise, enabling it to carry out complex tasks and generate new ideas. This

study confirms the positive effect of knowledge sharing on innovation behavior. The results showed that when members actively share their own knowledge in the organization, they can acquire knowledge shared by other members at the same time, and finally increase innovative behavior. Knowledge sharing helps members acquire more diverse knowledge and skills and conduct innovative behaviors more easily [90]. Consistent with the results of this study, organization members acquire knowledge through knowledge sharing behaviors, increase knowledge reserves, broaden their horizons, create new ideas, and increase innovative behaviors. In addition, this study confirms the positive impact of creativity on innovative behavior. The results showed that the higher the creativity of members is, the more innovative behavior occurs. According to the results of prior research, members with high creativity are willing to engage in innovative activities and demonstrate their creativity, thereby enhancing the level of innovative behavior [91]. Consistent with the results of this study, organization members have a lot of creativity in their work, and can continuously optimize products, improve planning programs, and carry out innovative behaviors.

Third, this study examined whether knowledge sharing and creativity can play a mediating role between the independent variable participative leadership and the dependent variable innovative behavior. Through verification, this study found that the mediation effect of knowledge sharing was not significant in the influence of participative leadership on innovative behavior. Preliminary research has shown that organizations can use participative leadership to promote exploratory innovative behaviors of members through multiple channels, including colleagues' knowledge sharing and absorptive capacity [68], inconsistent with the results of this study. Although the media effect of knowledge sharing is not significant in this study, the relationship between knowledge sharing and innovative behavior is relevant. Therefore, knowledge sharing implies that it can also act to improve innovative behavior. Furthermore, the results of this study suggest that creativity plays a mediating role between participative leadership and innovative behavior. This leads to an increase in members' creative ideas when participative leadership is high, which ultimately leads to an increase in innovative behavior. When leaders participate in decision-making with members of the organization, innovative behaviors can be fostered by fostering open debate and encouraging creative ideas and exchanges.

Finally, through the validation of Hayes(2013) of Process Model 6 [92], this study confirmed that knowledge sharing and creativity have a serial multiple mediating effect between participative leadership and innovative behavior. Participative leaders consult with members before making a decision, a process that allows leaders and members to share their knowledge and discuss different options in the organization, thereby sparking creative ideas and ultimately innovative behaviors. This means that when participatory leadership plays a role, it will have a positive impact on the innovative behavior of subordinates through knowledge sharing and creative multi-media. On the basis of exploring the influence path of participatory leadership on innovation behavior, this study adopts more methods to induce innovation behavior, which provides a plan for exploring more efficient innovation methods. And this study has important reference value for sorting out the influence process of leadership behavior, and broadens the perspective of leadership behavior research to a certain extent.

5.2 Practical Implications

First, participative leadership has a positive effect on innovative behavior. When leaders allow subordinates to participate in decision-making, members are allowed to actively express their opinions, and members are free to develop new sol-

utions and make innovative behaviors. Therefore, as participative leadership is an important leadership style, organizations must take several measures to increase the participatory behavior of leaders. Leaders should give reasonable powers according to the characteristics of members, and provide members with the resources needed for business when necessary. They should also guide members to explore new ways to solve problems and improve subordinates' innovation ability.

Second, knowledge sharing improves subordinates' creativity and innovative behaviors are examined. Because members have more diverse knowledge, they can broaden their horizons, improve their creativity, and promote innovative behavior. Therefore, organizations must be more aware of the importance of knowledge sharing, and organizations should strive to encourage knowledge sharing behaviors and increase knowledge sharing behaviors among members. They should also actively establish an innovation incentive mechanism and a knowledge sharing platform inside and outside the organization to improve the innovation efficiency of members. Organizations can build a knowledge sharing platform through technology and tool support to further promote resource sharing among organizational members, especially the mutual exchange of new ideas and methods.

Third, in the process of triggering members' innovative behavior, creativity can be regarded as a key factor. When leaders let members participate in major decisions of the organization, they will create an atmosphere for members to enter the core part of the organization. These signals induce members to more actively create creative ideas and gain approval from their bosses. This process will eventually produce more innovative behavior. Therefore, attention should be paid to the importance of various innovation incentives within and outside the organization. When members perceive that the internal leaders of the organization have given more support for innovation, for example, the organization invests more technology, equipment, and funds to help them innovate, and the leaders support members' innovative ideas, they can stimulate members' innovative behavior and encourage members to engage in innovative activities.

Finally, in this study, it is verified that participative leadership can improve members' knowledge sharing. This in turn enhances members' creativity, which ultimately leads to members' innovative behavior. Therefore, organizations should focus on enhancing the creativity of members, empowering members, giving members more opportunities for free decision-making, and allowing members to freely share knowledge, so as to produce more creativity and ultimately increase innovative behaviors. Both inside and outside the organization should focus on letting members use innovation self-efficacy, knowledge sharing, and other means to jointly formulate innovation-related policies, and ensure the effectiveness of the policies. This will have important implications for innovation management practices.

5.3 Limitations and Future Research

From the perspective of positive leadership behavior, this study provides practical enlightenment for improving subordinates' innovative behavior.

There were various limitations when conducting this study. The limitations and future research directions are summarized as follows.

First, with regard to the types of leadership that improve innovative behavior, this study only focuses on participative leadership. Through previous research, it can be found that there are various leadership styles that can stimulate innovative behavior. Therefore, future research should focus on various types of leadership, explore the impacts on innovative behavior, and conduct research to elucidate which types of leadership are the most central ones.

Second, this study only focuses on innovation be-

havior for dependent variables. The positive correlation between innovative behavior and organizational growth can be confirmed by prior research. Therefore, in future research, it will be necessary to reveal what outcomes can be led by innovative behaviors.

Third, regarding the impact of participative leadership on innovative behavior, the serial multiple mediating effect of knowledge sharing and creativity is verified. However, the moderator variables that could determine the level of innovative behavior were not explored. Future research will examine the moderating effects influencing the level of innovative behavior by examining the interaction of participative leadership and innovative behavior.

Fourth, the result of this study on the problem of discriminant validity is not ideal, and there is a certain degree of similarity between variables. Therefore, in the future research, we will consider choosing more appropriate variables to customize the model.

Fifth, the data in this study were all collected from a single cohort over the same period, and the findings are highly similar, and the results of this study should take into account the issue of common method bias. Single factor analysis is often used to test common method bias(CMB) by exploratory factor analysis, suggesting that there is a method factor to explain the common variation of all items with different traits in a study, and methods the more variation explained by the factor, the more serious the deviation [93]. If the single factor explanation variation obtained by EFA (not rotated) is less than 50%, then CMB is not serious [94]. However, the result of single factor analysis showed the first accounted for 68.919% of total variance. Therefore, the result is considered to have the problem of CMB. Therefore, in future research, it is necessary to separate the survey subjects. Questions about leadership should be asked to members, and questions on members' behaviors or attitudes should be asked to leaders.

Finally, this study focused on improving subordinates' innovative behavior. Innovative behavior can eventually lead to organizational innovation performance. Innovation performance can be divided into several categories such as product innovation efficacy [95], administrative innovation performance, and technical innovation performance [96]. In future studies, it would be worthwhile to conduct research on the ways to increase these types of innovation performance and various types of innovation performance should be explored.

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