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# Servant Leadership, Organizational Innovation Climate, and Innovation Performance: The Mediating Role of Innovation Capability

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## Abstract

*This study investigates the direct impact of servant leadership, organizational innovation climate, and innovation capability on innovation performance, with a focus on the mediating role of innovation capability. The quantitative research was adopted to collect and analyse the quantitative data. The service-oriented Chinese enterprises involved 200 employees were selected as the research focus. Correlation and regression analyses were applied, supplemented by the Preacher and Hayes technique and Bootstrap technique for mediating effect validation. The findings demonstrate positive and significant relationships between servant leadership, organizational innovation climate, innovation capability, and innovation performance. Notably, innovation capability fully mediates the connections between servant leadership and innovation performance as well as between organizational innovation climate and innovation performance. In today's highly competitive market, achieving business innovation performance is crucial. This study contributes a robust theoretical framework for organizations aiming to enhance overall performance. Emphasizing the pivotal role of innovation in driving success, the research underscores the significance of cultivating an innovative culture for businesses to effectively compete and sustain a competitive advantage.*

**Keywords:** *servant leadership; organizational innovation climate; innovation capability; innovation performance*

## 1. Introduction

Innovation serves as an effective means for enterprises to cope with market volatility and complexity (Le & Do, 2023) as well as to gain competitive advantage and ensure long-term sustainability (Al-Sharif et al., 2023). Innovation performance is one of the pivotal factors contributing to a company's competitive edge and organizational prosperity (Le & Do, 2023). Innovation performance refers to the company's efficacy in engaging in innovative activities concerning both products and processes (Hurtado-Palomino et al., 2022). According to (Al-Sharif et al., 2023), innovation performance is regarded as the pinnacle of outputs generated by an organization's efforts to renew and improve ideas, services, or products at various stages within the innovation system. The pursuit of antecedents of innovative performance has been the central focus of numerous scholars (Andersson et al., 2020; Le & Do, 2023). Among these

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antecedents, it is noteworthy that innovative capability holds a pivotal position in exerting influence over innovation performance (Hurtado-Palomino et al., 2022; Zhao et al., 2018). This capability enables firms to adapt and thrive amidst dynamic market environments, thereby augmenting their competitive prowess (Hernandez-Perlines & Araya-Castillo, 2020) and contributing significantly to innovation success (Ferreira, Coelho, & Moutinho, 2020). The investigation of how to enhance the innovation capability of enterprises to achieve superior innovative performance warrants exploration and consideration. Upon reviewing the existing body of literature, it becomes evident that there exists a robust association between servant leadership and innovation capability (Hernandez-Perlines & Araya-Castillo, 2020). Additionally, scholarly investigations have established a connection between organizational innovation climate and innovation capability (Huimin, 2019), as well as between organizational innovation climate and innovation performance (Shuang & Chen, 2022). Nevertheless, there is a lack of research that explores the underlying intrinsic mechanisms connecting these variables. Building upon existing literature, the present study endeavors to explore the inherent interrelationships among servant leadership, organizational innovation climate, innovation capability, and innovation performance.

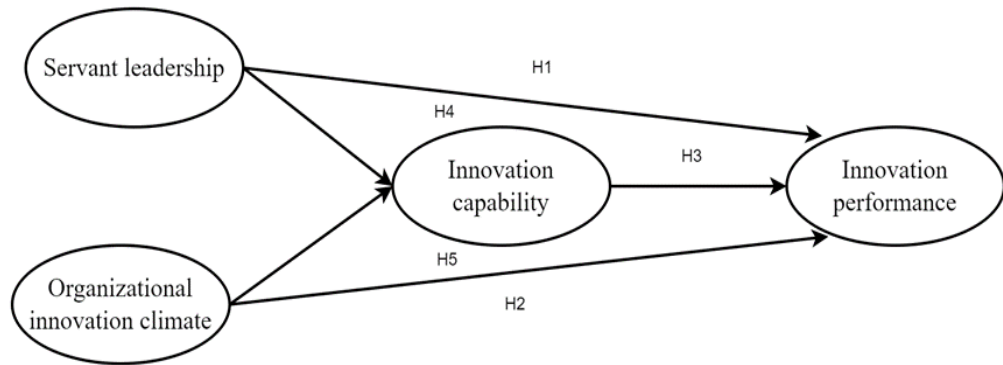
Innovation capability has been defined as an organization's capacity to effectively adopt and implement novel ideas, processes, or products (Gupta et al., 2020; Hernandez-Perlines & Araya-Castillo, 2020; Hult et al., 2004; Hurley & Hult, 1998; YuSheng & Ibrahim, 2020; Y. Zhang et al., 2023). The definition in question has garnered significant acceptance and utilization among scholars within the respective academic discipline. Over time, the scope of innovation capability has expanded to encompass business models (Andersson et al., 2020; Zawislak et al., 2012) and services (Yusof et al., 2022). Based on a comprehensive review of existing scholarly literature, innovation capability involves the capacity to generate or apply innovative activities, improve or develop products or services, introduce novel products or services to the market, enhance or create production or management processes (Akman & Yilmaz, 2008; Hogan et al., 2011; Hult et al., 2004; Y. Zhang et al., 2023), achieve business model development (Andersson et al., 2020; Zawislak et al., 2012), and effectively address customer needs for the overall benefit of the organization (Hurtado-Palomino et al., 2022; Urgal et al., 2011). Existing literature indicates that innovation capability is intrinsically linked to servant leadership, organizational innovation climate, and innovation performance. While the mediating role of innovation capability between servant leadership and organizational performance has been confirmed by (Hernandez-Perlines & Araya-Castillo, 2020), it remains to be explored whether a similar mediating role exists between servant leadership and organizational innovation performance. Furthermore, although some scholars have examined the relationship between organizational innovation climate and innovation performance through mediating variables such as knowledge absorptive capacity (Shuang & Chen, 2022), tacit knowledge sharing (Xin et al., 2021), and employees' willingness to innovate (Jinfeng et al., 2017), the potential mediating role of innovation capability in the relationship between organizational innovation climate and innovation performance has not been explored. To address these research gaps, the primary objective of this study is to conduct a comprehensive examination of the mediating role played by innovation capability in the relationship between servant leadership and innovation performance, as well as between organizational innovation climate and innovation performance. Additionally, this study seeks to provide a detailed understanding of the specific mechanisms through which these factors exert their influence.

Servant leadership is acknowledged as a holistic leadership approach (Liden et al., 2015; Saleem et al., 2022) that prioritizes the needs of followers (Greenleaf, 1970), facilitates their

development and growth (Saleem et al., 2022), encourages the full realization of their potential, provides both material and emotional support (Liden et al., 2014), and ultimately contributes to organizational success (Ahmad et al., 2021). Numerous studies have provided evidence of the positive impact of different leadership styles on innovation performance. These styles include transformational and transactional leadership (Cui et al., 2022), knowledge-oriented leadership (Gürlek & Çemberci, 2020; Le & Do, 2023), ethical leadership (Ullah et al., 2021), and ambidextrous leadership (Gerlach et al., 2020). Nevertheless, the correlation between servant leadership and the performance of innovation has not been thoroughly investigated. Several scholars have posited that the implementation of servant leadership within an organization can yield favorable outcomes in terms of organizational performance (Hernandez-Perlines & Araya-Castillo, 2020; Huang et al., 2016; Liden et al., 2014) and employee innovation performance (Y. Sun, 2016). However, there remains a dearth of research that specifically examines the impact of servant leadership on enhancing innovation performance at the organizational level. In light of this, the present study seeks to delve deeper into the underlying mechanism linking servant leadership and organizational innovation performance, with the purpose of contributing novel insights to the existing literature on leadership and organizational theory.

Organizational innovation climate refers to employees' perceptions of the level of support for innovation within the work environment (Amabile, 1997). Expanding on the aforementioned basis, organizational innovation climate is defined as an individual's subjective perception of the level of support for innovation provided by organizational policies, management behaviors, organizational processes, and other elements within the organizational environment. Essentially, organizational innovation climate represents the social support employees receive in their work environment, encompassing support from colleagues, supervisors, and the organization itself (Ding et al., 2022; Liu & Shi, 2009). When employees perceive robust organizational support, they are inclined to exhibit a higher propensity for engaging in innovative activities (Shanker et al., 2017). The organizational innovation climate encompasses various attributes, including the promotion of creative ideation, the acquisition of leadership endorsement, the allocation of resources, the provision of autonomy, the cultivation of a culture characterized by trust and collaboration, and the implementation of performance feedback and incentives for innovation. The aforementioned traits have been found to be beneficial in fostering creativity (Bibi et al., 2020) and enhancing the capacity for organizational innovation (Hassan et al., 2013; Tai & Mai, 2016). Therefore, the importance of the innovation atmosphere in enhancing competitive advantage and achieving superior business performance for firms has been acknowledged (Bibi et al., 2020). Despite numerous scholars having confirmed the positive correlation between innovation climate and innovation performance (Shuang & Chen, 2022; Yihua, Xiaoting, & Yanling, 2021), there remains a need for additional investigation into the underlying mechanisms that explain how the innovation climate exerts its influence on innovation performance. Thus, this research endeavors to consider the innovation climate as a crucial predictor variable affecting innovation performance, with the intention of providing additional insights to the extant scholarly literature.

In essence, the principal objective of this study is to examine the direct effects of servant leadership, organizational innovation climate, and innovation capability on innovation performance. Furthermore, the research seeks to delve into the potential mediating role of innovation capability in the linkages between servant leadership and innovation performance, as well as between organizational innovation climate and innovation performance. The research model and proposed hypothesis are visually depicted in Figure 1.



**Figure 1:** Research Model.

To accomplish the aforementioned objectives, this research will be structured into several sections: introduction, literature review, research methodology, analysis, discussion, and conclusion. Additionally, the study will explore its significance, limitations, and future research directions in the final part.

## 2. Literature Review

### 2.1. Servant Leadership and Innovation Performance

The potential impact of servant leadership on organizational innovation performance can be attributed to its ability to facilitate the generation and successful implementation of novel ideas (Gerlach et al., 2020), which is crucial in ensuring the attainment of organizational innovation performance. Specifically, servant leadership prioritizes the development of employees (Saleem et al., 2022), nurtures their skills (Alblooshi, Shamsuzzaman, & Haridy, 2020), and cultivates a culture of innovative thinking, which is conducive to stimulating employees to generate creative ideas (Khan et al., 2021). Moreover, research indicates that servant leadership promotes the implementation of innovative behaviors, including product innovation, process innovation, and business model innovation (Iqbal et al., 2022; Iqbal, Latif, & Ahmad, 2020; Khan et al., 2021; Zeng & Xu, 2020; Zhu & Zhang, 2019). This is achieved through practices such as granting employees decision autonomy (Hernandez-Perlines & Araya-Castillo, 2020), providing material and psychological support (Liden et al., 2014), and cultivating trust and emotional bonds (stable relationships). According to the definition of innovation performance (Y. Sun, 2016), these new ideas and behaviors related to innovation activities contribute to the realization of organizational innovation performance. The research conducted by (Y. Sun, 2016) has already demonstrated the capacity of servant leadership to promote the enhancement of employees' innovative performance. Given that employees function as contributors to organizational innovation (J. Tang et al., 2013), the generation and practical realization of their novel ideas, such as the development of new products or services, substantially contribute to the emergence of organizational innovation performance (Dedahanov et al., 2017). Therefore, we propose the following hypothesis:

**H1:** *Servant leadership positively influences innovation performance.*

### 2.2 Organizational Innovation Climate and Innovation Performance

Organizational innovative climate is one of the crucial factors influencing organizational innovation performance (Yanfei & Yu, 2005). Essentially, the organizational innovative climate is an environmental

atmosphere that exerts an influence on the perception of employees within a company. This perception, in turn, affects employees' attitudes, beliefs, values, and innovative behaviors (Shuang & Chen, 2022; Yong, 2019), thus creating conditions conducive to the enhancement of corporate innovation performance (Ye et al., 2021). A favorable organizational innovation climate encourages employees to generate innovative ideas, provides them with material, financial, and emotional support, and creates a sense of psychological security to reduce the fear of failure, which drives employees to engage in more innovative activities (G. Zhang, Zhang, & Wang, 2022), and thus promotes the improvement of organizational innovation performance. The existing literature consistently highlights the positive impact of organizational innovation climate on innovation performance (Sanqing & Jing, 2014; Shuang & Chen, 2022; Xin et al., 2021; Yihua et al., 2021; Yong, 2019; Zheng, 2009). Consequently, we propose the following hypothesis:

**H2:** *Organizational innovation climate positively influences innovation performance.*

### 2.3 Innovation Capability and Innovation Performance

Current research indicates that innovation capability plays a pivotal role in facilitating organizations attainment of innovation performance. Innovation capability facilitates enterprises in integrating crucial capacities and resources (Vu, 2020), swiftly embracing and implementing novel technologies, optimizing internal processes to enhance cost-effectiveness (Y. Zhang et al., 2023), and successfully innovating and developing new products, services, and business models for successful market penetration (Hurtado-Palomino et al., 2022; Y. Zhang et al., 2023). The achievement of innovation performance is reliant on the use of diverse management techniques by firms (Hurtado-Palomino et al., 2022). Innovation performance has been examined in terms of product innovation performance and process innovation performance (J. Tang et al., 2013), where product innovation performance refers to the successful introduction of goods and services into the market (T.-W. Tang et al., 2020), while process innovation performance pertains to the implementation of new processes within a firm's business activities (Hurtado-Palomino et al., 2022). (Hurtado-Palomino et al., 2022; YuSheng & Ibrahim, 2020) have provided empirical evidence that establishes a noteworthy and positive correlation between innovation capability and innovation performance. A study by (Irwanti et al., 2020) argued that there is a significant positive relationship between innovativeness and product innovation performance in terms of the four dimensions of innovativeness, i.e., knowledge and technology management capability, idea management capability, project development capability, and commercialization capability. Recent empirical research has provided evidence to support the notion that there is a positive relationship between innovation capability and innovation performance (Al-Sharif et al., 2023). Consequently, we posit the following research hypothesis:

**H3:** *Innovation capability positively influences innovation performance.*

### 2.4 Innovation Capability Mediates Servant Leadership and Innovation Performance

Servant-leadership contributes to organizational innovation capability, which is attributed to the characteristics of servant-leadership and the multiple dimensions it has (Liden et al., 2015; Liden et al., 2008). Prioritizing the interests of followers (Bavik, 2020; Greenleaf, 1970; Iqbal et al., 2020) is a prominent characteristic of servant leadership, setting it apart from other leadership styles (Alblooshi et al., 2020; Hernandez-Perlines & Araya-Castillo, 2020). Focusing on this characteristic, firstly, servant leadership primarily emphasizes creating opportunities to foster the growth and development of employees (Bavik, 2020; Hartnell et al., 2023; Liden et al., 2015, 2014; Zhou et al., 2022) and fully realizing their potential (Liden et al., 2014) to enhance employees' knowledge and skills (Alblooshi et al., 2020). As a result, this strengthens

the organization's innovation capability (Liden et al., 2014). Secondly, servant leadership empowers employees, encouraging them to take ownership of their work (Alblooshi et al., 2020; Liden et al., 2015; Yagil & Oren, 2021) and promoting an environment where they feel empowered to generate new ideas and solutions (Ahmad et al., 2021). The autonomy and initiative afforded to employees under servant leadership foster a greater likelihood of demonstrating innovative behaviors (Y. Sun, 2016). Thirdly, recognizing the inherent challenges and risks associated with innovation (He et al., 2019; Nawrocki & Jonek-Kowalska, 2022), servant leaders exhibit tolerance and acceptance of mistakes made by employees during the innovation process (Giolito et al., 2020) while providing necessary support (Yang et al., 2019). This culture of continuous innovation and trial-and-error contributes to the development of the organization's innovation capability. Fourthly, servant leadership, through trust and emotional healing (Giolito et al., 2020; Liden et al., 2008; Setiawan, 2020), facilitates the establishment and maintenance of long-term, stable, and trustworthy relationships with employees (Ghayas et al., 2023; Miao et al., 2014). As the sustained growth of a firm's innovation capability demands long-term investment and efforts, this stable relationship of trust serves as a facilitator for continual improvement in the organization's innovation capacity (X. Sun, Zhao, Zhang, & Tian, 2022).

Simultaneously, the enhancement of organizational innovation capability will further influence organizational innovation performance. Innovation capability manifests as the organization's internal capacity for innovation activities, the development of new products or services, process improvements, and problem-solving abilities (Rajapathirana & Hui, 2018). Organizations with higher innovation capabilities are more adept at adapting to market fluctuations and satisfying customer demands (AlTaweel & Al-Hawary, 2021), leading to improved product quality, efficiency (Ahmed et al., 2020), and competitive advantage (Fitz-Oliveira & Wasgen, 2023), ultimately resulting in higher innovation performance. Moreover, servant leadership has been shown to indirectly influence organizational performance through the mediating role of innovation capability (Hernandez-Perlines & Araya-Castillo, 2020). In summary, in the relationship between servant leadership and innovation performance, servant leadership positively affects innovation capability, and innovation capability positively affects innovation performance. Consequently, this study proposes the following hypothesis:

**H4:** *Innovative capability mediates the relationship between servant leadership and innovative performance.*

## **2.5 Innovation Capability Mediates the Link between Organizational Innovation Climate and Innovation Performance**

Organizational innovation climate plays a vital role in fostering and enhancing organizational innovation capability (Huimin, 2019). In a favorable organizational innovation climate, employees experience support from colleagues, supervisors, and the organization as a whole (Ding et al., 2022; Liu & Shi, 2009), which contributes to the development of organizational innovation capability (Ye et al., 2022). Specifically, an innovative organizational atmosphere encourages mutual support and assistance among colleagues and fosters active communication and exchange, thus facilitating knowledge sharing (Ye et al., 2022; G. Zhang et al., 2022). Such knowledge-sharing processes and behaviors exert a positive impact on organizational innovation capabilities (Aulawi, 2018; Yeşil et al., 2013). Additionally, supervisors' encouragement and support for innovation, along with the development of employees' innovation skills (Malibari & Bajaba, 2022), provide valuable information and positive feedback that fosters employee creativity. Employee creativity has been found to have a significant and direct positive relationship with organizational innovativeness (Hassan et al., 2013; Tai & Mai,

2016), thus contributing to organizational innovation capability. In addition, the organization's encouragement and support for innovation (G. Zhang et al., 2022) as well as the provision of rewards for innovative efforts (Bibi et al., 2020; Newman et al., 2020; Ye et al., 2021) coexist with a culture that tolerates failure and fosters psychological safety for employees engaged in innovative activities (Bibi et al., 2020). Psychological safety has been positively correlated with the ability to innovate products, processes, services, and business models (Andersson et al., 2020; Tu et al., 2019). Moreover, by cultivating a collaborative, harmonious, and tolerant atmosphere for innovation (Ye et al., 2021), the organization encourages employees to explore novel products and services using existing ones (Visser & Scheepers, 2022), thereby elevating the company's willingness to innovate and improving its innovation resources, including financial and human capital. Consequently, this leads to an overall augmentation of the enterprise's innovation capacity (Huiimin, 2019).

As mentioned earlier, organizational innovation climate is of utmost importance in improving innovation capability, which simultaneously affects organizational innovation performance. Existing studies have mainly focused on exploring the influence mechanisms of organizational innovation climate on innovation performance through mediating variables (Jinfeng et al., 2017; Shuang & Chen, 2022; Xin et al., 2021). Therefore, it is reasonable to consider innovation capability as a potential mediating variable in the relationship between organizational innovation climate and innovation performance. In this context, this paper proposes the following hypotheses:

**H5:** *Innovation capability mediates the link between organizational innovation climate and innovation performance.*

### 3. Research Methodology

#### 3.1 Research Methods

The present study utilized a quantitative research methodology, employing a questionnaire as the major instrument for data collection. The collected data underwent several statistical analyses, such as correlation, regression, and structural equation modeling (SEM) approaches. To investigate the mediating role of innovation capability, the methodology proposed by (Preacher & Hayes, 2004, 2008) was employed, utilizing 5000 Bootstrap replicated samples. The selection of this analytical methodology was made in order to enhance the precision and accuracy of the evaluation pertaining to the relationships and effects under investigation in the study.

#### 3.2 Data Collection and Sampling

The data was gathered by disseminating the questionnaire through the Questionnaire Star online platform. To ensure the questionnaire's validity and reliability, only employees from service-oriented firms are selected to participate. The questionnaire is specifically tailored and distributed individually to each employee. The survey was conducted in two parts. Firstly, a pre-survey was administered, and a total of 70 questionnaires were gathered. Subsequently, the obtained data was analyzed, revealing a higher degree of alignment with the research hypothesis. Consequently, the sample size was further increased. Ultimately, a total of 212 questionnaires were gathered, with 12 being consistently excluded. Consequently, a final count of 200 legitimate surveys was acquired. The survey consisted of two portions. The first component included questions related to the research variables, including servant leadership, organizational innovation climate, innovation capability, and innovation performance. The following section provides essential information pertaining to the organization.

Out of the total 200 samples obtained, in terms of the nature of the organization, 57 of the 200 respondents were from state-owned enterprises, 124 were from private enterprises, and 19 were from mixed-ownership enterprises. In terms of the range of the number of employees in their companies, there are 58 companies with less than 50 employees, 27 with 51–100 employees, 42 with 101–500 employees, 40 with 501–1000 employees, 10 with 2001–10000 employees, and 23 with more than 10000 employees. In terms of customer sources, there are 171 and 29 company employees from domestic and overseas customers, respectively.

### **3.3 Measurement Scale**

In this study, the responses were rated on a 7-point Likert scale, ranging from “1” = “totally disagree” to “7” = “totally agree”. The measurement scales employed in this research were derived from established and well-validated scales developed by reputable scholars both domestically and internationally. These scales were carefully adapted to align with the specific research objectives and requirements of the study.

**Servant Leadership.** The seven-item scale developed by (Liden et al., 2014) was utilized to measure servant leadership. This scale was derived by simplifying a larger 28-item scale originally introduced by (Liden et al., 2008). The correlation between the 7-item scale and the 28-item scale was found to be highly significant at 0.97, with corresponding reliabilities of 0.87 and 0.96, respectively. Sample items include “My leader can tell if something work-related is going wrong” and “My leader makes my career development a priority” (Cronbach’s alpha = 0.930).

**Organizational innovation climate.** The twelve-item scale developed by (Liu & Shi, 2009) was utilized to measure organizational innovation climate. This scale has been referenced in prior research conducted by (Khan et al., 2021; G. Zhang et al., 2022) and is well-suited to the Chinese context. Sample items include “At work, my colleagues support and assist each other” and “At work, my colleagues are happy to share each other’s methods and techniques” (Cronbach’s alpha = 0.927).

**Innovation capability.** The four-item scale developed by (Hurtado-Palomino et al., 2022) was utilized to measure innovation capability. This scale represents an enhancement of the scale originally introduced by (Akman & Yilmaz, 2008) and has been utilized in several prior studies, including those conducted by (Rodrigo-Alarcón et al., 2020; Rutti et al., 2021). Sample items include “We can use knowledge from different resources for product development activities efficiently and rapidly” and “Our organization is able to reflect changes in market conditions to its own products and processes as soon as possible” (Cronbach’s alpha = 0.890).

**Innovation performance.** The five-item scale developed by (Hurtado-Palomino et al., 2022) was utilized to measure innovation performance. This scale was adapted to the Chinese context for the purposes of this research. Sample items include “Our organization emphasizes the use of product quality or service performance to enhance core competencies” and “Our organization could benefit from a new product or service” (Cronbach’s alpha = 0.927).

## **4. Empirical Results and Analysis**

In this research, Structural Equation Modeling (SEM) was employed to validate the measurement model and the structural model. First, the measurement model was validated. The confirmatory factor analysis (CFA) was conducted to verify the model for good reliability and validity and to assess the degree of fit of the hypothesized model; second, the structural model was also evaluated. Regression analysis was used to validate the research hypotheses in the theoretical mode (Hair et al., 2010).



#### 4.1 Measurement Model Analysis

Reliability analysis was conducted to assess the internal consistency of the questionnaire items in the present study, by employing two well-established reliability measures: Cronbach's alpha and composite reliability (CR). The Cronbach's alpha values, as displayed in Table 1, ranged from 0.89 to 0.93, all of which exceeded the acceptable threshold of 0.7. Similarly, the CR values varied from 0.89 to 0.93, surpassing the recommended level of 0.7 (Hair et al., 2013). These findings indicate the measurement scale's excellent reliability, ensuring the consistency and stability of the data collected for the research constructs.

The validity of the scales employed in this study was rigorously evaluated through different approaches. Content validity was ensured as the scales were based on well-established measures published in reputable national and international journals. Convergent validity was assessed by measuring the correlation of individual items within each construct. As shown in Table 1, the factor loadings ( $> 0.5$ ) (Hair et al., 2010) and Average Variance Extracted (AVE) values ( $> 0.5$ ) (Hair et al., 2013; Hair et al., 2019) demonstrated that the measurement model met the criteria for convergent validity. Discriminant validity was evaluated to determine the extent to which individual constructs were distinct from each other. The square root of the AVE in Table 3 (indicated by the bolded diagonal font) was greater than the correlation coefficients between all the constructs in the measurement model (Fornell & Larcker, 1981).

**Table 1:** Results of Factor Loading, Alpha, CR and AVE.

Construct	Items	Factor loading	Cronbach_alpha	CR	AVE
SL	SL1	0.814	0.930	0.930	0.657
	SL2	0.878			
	SL3	0.802			
	SL4	0.833			
	SL5	0.742			
	SL6	0.803			
	SL7	0.800			
OIC	OIC1	0.722	0.927	0.927	0.516
	OIC2	0.660			
	OIC3	0.777			
	OIC4	0.724			
	OIC5	0.773			
	OIC6	0.571			
	OIC7	0.740			
	OIC8	0.725			
	OIC9	0.771			
	OIC10	0.768			
	OIC11	0.667			
	OIC12	0.734			
IC	IC1	0.801	0.890	0.892	0.673
	IC2	0.885			
	IC3	0.850			
	IC4	0.744			
IP	IP1	0.772	0.927	0.929	0.721
	IP2	0.861			
	IP3	0.873			
	IP4	0.876			
	IP5	0.856			

**Note(s):** SL = Servant Leadership; OIC = Organizational Innovation Climate; IC = Innovation Capability; IP = Innovation Performance; CR: Composite Reliability; AVE: Average Variance Extracted.

Model fit analysis was performed based on the results of the confirmatory factor analysis, as shown in Table 2. Model1 to Model4 represent four-factor model to single-factor model, respectively. The model1 exhibited satisfactory fit indices ( $\chi^2 = 478.04$ ;  $df = 344$ ;  $\chi^2/df = 1.39$ ; Comparative Fit Index (CFI) = 0.96; Tucker-Lewis Index (TLI) = 0.96; Root-Mean-Square Error of Approximation (RMSEA) = 0.04; Standardized Root Mean Square Residual (SRMR) = 0.04; Akaike Information Criterion (AIC) = 13,050.90; Bayesian Information Criterion (BIC) = 13,255.40). These results demonstrate that all the indicators fell within an acceptable range, and the model1 outperformed other competing models. Thus, the model was verified to possess an excellent fit and further confirmed the discriminant validity among the constructs.

**Table 2:** CFA Results.

Model	$\chi^2$	df	$\chi^2/df$	P	CFI	TLI	RMSEA	SRMR	AIC	BIC
Model1	478.04	344	1.39	< .001	.96	.96	.04	.04	13,050.90	13,255.40
Model2	664.80	347	1.92	< .001	.92	.91	.07	.05	13,231.66	13,426.26
Model3	1,552.75	349	4.45	< .001	.69	.66	.13	.16	14,115.61	14,303.61
Model4	2,013.64	350	5.75	< .001	.57	.53	.15	.16	14,574.50	14,759.20

<sup>a</sup>As proposed by Schreiber (2017).

**Note(S):** Model1: SL, OIC, IC, IP; Model2: SL, OIC, IC + IP; Model3: SL + OIC, IC+IP; Model4: SL + OIC + IC + IP; SL = Servant Leadership; OIC = Organizational Innovation Climate; IC = Innovation Capability; IP = Innovation Performance.

## 4.2 Structural Model Analysis

Descriptive analysis

Table 3 presents the results of the descriptive analysis and the square root of the average variance extracted (AVE). Specifically. The findings indicate a strong and positive correlation between servant leadership and innovation performance ( $r = 0.604$ ,  $p < 0.05$ ). Additionally, a positive correlation is observed between organizational innovation climate and innovation performance ( $r = 0.402$ ,  $p < 0.05$ ). Furthermore, there is a substantial positive correlation between innovation capability and innovation performance ( $r = 0.690$ ,  $p < 0.05$ ). The maximum variance inflation factor (VIF) in the regression model was 1.17, which was below the empirical threshold of 10.0, indicating that multicollinearity was not a severe issue. These results preliminarily validate the rationality of the research's hypothesized variables and provide initial evidence for hypothesis testing.

**Table 3:** Results of Correlation Analysis.

Variable	Mean	SD	SL	OIC	IC	IP
SL	35.515	8.243	<b>0.810</b>			
OIC	53.770	8.026	0.345	<b>0.718</b>		
IC	19.240	3.964	0.609	0.342	<b>0.821</b>	
IP	26.005	4.800	0.604	0.402	0.690	<b>0.849</b>

**Note(S):** SD: Standard Deviation. Square Root Of AVE In Bold On Diagonals, And Off Diagonals Are Pearson Correlation Of Constructs. SL = Servant Leadership; OIC = Organizational Innovation Climate; IC = Innovation Capability; IP = Innovation Performance.

Hypothesis testing

Table 4 shows the results for hypotheses H1, H2, and H3. The findings suggest that servant leadership has a statistically significant and positive impact on innovation performance (Beta

= 0.172,  $z = 3.036$ ,  $p < 0.05$ ). Additionally, the results indicate that organizational innovation atmosphere also has a significant and positive influence on innovation performance (Beta = 0.168,  $z = 2.382$ ,  $p < 0.05$ ). Furthermore, there is a significant positive correlation between innovation capability and innovation performance (Beta = 0.500,  $z = 6.240$ ,  $p < 0.05$ ). Consequently, these results provide empirical support for hypotheses H1, H2, and H3, validating the proposed relationships between servant leadership, organizational innovation climate, innovation capability, and innovation performance.

**Table 4:** Results of Hypothesis of H1, H2, and H3.

Details	Beta	SE	z	p-value	Lower	Upper	Results
SL -> IP	0.172	0.057	3.036	0.002	0.061	0.284	H1-Supported
OIC -> IP	0.168	0.070	2.382	0.017	0.030	0.306	H2-Supported
IC -> IP	0.500	0.080	6.240	0.000	0.343	0.658	H3-Supported

**Note(S):** SE: Standard Error; SL = Servant Leadership; OIC = Organizational Innovation Climate; IC = Innovation Capability; IP = Innovation Performance.

The study employed the technique proposed by (Preacher & Hayes, 2004, 2008) and conducted 5000 bootstrap analyses at a 95% confidence level to test hypotheses H4 and H5.

Table 5 presents the path coefficients used to test H4. The specific results are as follows: Path a (SL→IC) supports that servant leadership predicts innovation capability (Beta = 0.488,  $p < 0.05$ ). Path b (IC→IP) supports the direct effect of innovation capability on innovation performance (Beta = 0.500,  $p < 0.05$ ), controlling for servant leadership. Path c (SL→IP) demonstrates the total effect of servant leadership on innovation performance (Beta = 0.416,  $p < 0.05$ ). Path c' (SL→IP) shows the direct effect of servant leadership on innovation performance after controlling innovation capability (Beta = 0.172,  $p < 0.05$ ). This direct effect is reduced and significant, suggesting that innovation capability partially mediates the relationship between servant leadership and innovation performance. Path ab (SL→IC→IP) results show that innovation capability plays a significant indirect role in the mediation model (Beta = 0.244, Lower = 0.152, Upper = 0.336). Based on the aforementioned data, H4 is proven to show the link between servant leadership and innovation performance is mediated through innovation capability.

**Table 5:** Results of H4 (Path a, b, c and c').

Path Details	Beta	SE	z	p-value	Lower	Upper
Path a (SL -> IC)	0.488	0.063	7.758	0.000	0.364	0.611
Path b (IC -> IP)	0.500	0.080	6.240	0.000	0.343	0.658
Path c (SL -> IP)	0.416	0.057	7.323	0.000	0.305	0.528
Path c' (SL -> IP)	0.172	0.057	3.036	0.002	0.061	0.284
Path ab (SL -> IC-> IP)	0.244	0.047	5.215	0.000	0.152	0.336

**Note(s):** SE: Standard Error; SL = Servant Leadership; IC = Innovation Capability; IP = Innovation Performance.

Similarly, Table 6 presents the path coefficients used to test hypothesis H5. The results are as follows: Path a (OIC→IC) supports that organizational innovation climate predicts innovation capability (Beta = 0.184,  $p < 0.05$ ). Path b (IC→IP) supports the direct effect of innovation capability on innovation performance (Beta = 0.500,  $p < 0.05$ ). Path c (OIC→IP) shows the overall effect of organizational innovation climate on innovation performance (Beta = 0.260,  $p < 0.05$ ). Path c' (OIC→IP) shows that the inclusion of the mediating variable innovation

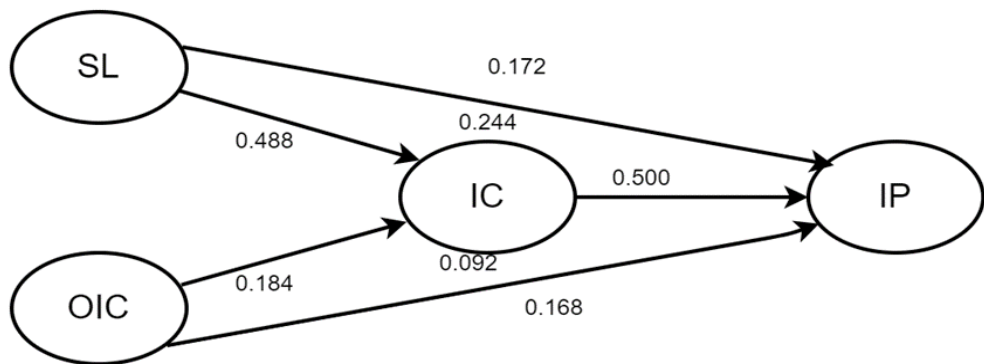
capability reduces the effect of organizational innovation climate on innovation performance, confirming the partial mediating effect (Beta = 0.168,  $P < 0.05$ ). Path ab (OIC→IC→IP) supports the mediating role of innovation capability between organizational innovation climate and innovation performance (Beta = 0.092, Lower = 0.003, Upper = 0.181). Therefore, hypothesis H5 is accepted.

**Table 6:** Results of H5 (Path a, b, c and c').

Path Details	Beta	SE	z	p-value	Lower	Upper
Path a (OIC -> IC)	0.184	0.087	2.124	0.034	0.014	0.355
Path b (IC -> IP)	0.500	0.080	6.240	0.000	0.343	0.658
Path c (OIC -> IP)	0.260	0.080	3.233	0.001	0.102	0.417
Path c' (OIC -> IP)	0.168	0.070	2.382	0.017	0.030	0.306
Path ab (OIC -> IC-> IP)	0.092	0.045	2.035	0.042	0.003	0.181

**Note(s):** SE: Standard Error; OIC = organizational innovation climate; IC = innovation capability; IP = innovation performance.

All path coefficients and the results of the hypotheses are also presented in Figure 2.



**Figure 2:** Results of H1, H2, H3,H4 and H5.

## 5. Discussion and Conclusion

The primary objective of this study is to investigate the relationships among servant leadership, organizational innovation atmosphere, innovation capability, and innovation performance, as well as the mediating role of innovation capability. This study confirms a significant and positive association between innovation capability and innovation performance. This result further confirms earlier research conclusions, which suggest that innovation capability exerts a significant impact on innovation performance (Al-Sharif et al., 2023; Hurtado-Palomino et al., 2022; Irwanti et al., 2020; Yeşil et al., 2013). Moreover, this study supports a positive relationship between servant leadership and organizational innovation performance. While existing literature has not directly examined the impact of servant leadership on organizational innovation performance, prior studies have provided support for the positive association between servant leadership and organizational performance (Hernandez-Perlines & Araya-Castillo, 2020), as well as employee innovation performance (Y. Sun, 2016). Therefore, the results of this study partially support this hypothesis. Similarly, the study reveals a positive impact of the organizational innovation atmosphere on innovation performance. Employees'

perception of a favorable organizational innovation atmosphere contributes to the improvement of organizational innovation performance. This conclusion aligns with the findings of previous studies conducted by (Shuang & Chen, 2022; Yihua et al., 2021).

In addition to the aforementioned hypotheses, this study further examines the mediating role of innovation capability between servant leadership and innovation performance, as well as between organizational innovation atmosphere and innovation performance. The results indicate that innovation capability serves as a significant mediator between servant leadership and innovation performance. While prior studies have not specifically explored the mediating effect of innovation capability between servant leadership and organizational innovation performance, some research has supported the notion that innovation capability can act as a mediating variable between servant leadership and organizational performance (Hernandez-Perlines & Araya-Castillo, 2020). Furthermore, the results also verify the mediating role of innovation capability in the relationship between organizational innovation atmosphere and innovation performance. Previous research findings support the positive impact of organizational innovation atmosphere on innovation performance through the mediating variable (Shuang & Chen, 2022; Xin et al., 2021; Yong, 2019). This study establishes a comprehensive model contributing to the achievement of organizational innovation performance, which holds significant implications for advancing both theoretical understanding and practical implementation of organizational innovation capability and performance. The subsequent parts will delve into the implications.

### 5.1 Theoretical Implications

This study has several important theoretical contributions.

First, this study has confirmed the positive impact of innovative capability on organizational innovation performance, further theoretically validating previous work on the direct positive relationship between innovation capability and organizational innovation performance (Prajogo & Ahmed, 2006; Yeşil et al., 2013). While (Rajapathirana & Hui, 2018; YuSheng & Ibrahim, 2020) have put forth arguments suggesting that innovation capability has an impact on innovation performance by influencing the type of innovation and thus innovation performance, this study focuses on highlighting the direct effect of innovation capability on innovation performance, which plays a key role in firms' innovation performance, especially in competitive environments (Yusr, 2016), and helps organizations to provide superior products, services, and innovative business models (Rajapathirana & Hui, 2018), thereby providing solid theoretical support for the cultivation and enhancement of innovation capability.

Second, this study extends the findings on the relationship between leadership and innovation performance by exploring the mechanisms through which servant leadership affects innovation performance. Existing literature has argued for a positive relationship between different leadership styles and innovation performance (Novitasari, Supiana, Supriatna, Agung Ali Fikri, & Asbari, 2021), such as transformational and transactional leadership (Cui et al., 2022), knowledge-targeted leadership (Le & Do, 2023), and ethical leadership (Ullah et al., 2021), among others. However, the mechanisms by which servant leadership affects organizational innovation performance have not been directly investigated. The main contribution of this study is that it fills this theoretical research gap, enriches the research on the impact of leadership styles on organizational innovation performance, and makes an important contribution to the literature on leadership by adding an important perspective to drive firms to obtain innovation performance.

Third, this study highlights the mediating role of innovation competence in the impact of servant leadership and organizational innovation climate on innovation performance. On the one hand, affirming the importance of innovation competence in the process of servant leadership's impact on organizational innovation performance deepens the understanding of the relationship between leadership style and innovation performance and is an important addition to the existing research literature on the relationship between leadership and innovation performance. In addition, this study validates the mediating role of innovation competence in the relationship between organizational innovation climate and innovation performance. In past studies on the relationship between organizational innovation climate and innovation performance, organizational innovation climate is usually used as a moderating variable to study the impact on innovation performance (Zheng, 2009), or the impact of organizational innovation climate on innovation performance is studied with the help of mediating variables, but these mediating variables do not involve innovation capability. This study confirms that organizational innovation climate can indirectly affect organizational innovation performance through organizational innovation capability. Therefore, this study contributes novel insights into investigating the underlying mechanisms of the association between the organizational innovation climate and innovation performance.

## **5.2 Practical Implications**

The study has substantial practical implications for those occupying managerial positions in the corporate sector.

First, given the direct positive impact of innovation capability on innovation performance, it is suggested that business managers pay attention to the cultivation of organizational innovation capability. As an important dynamic capability, innovation capability enables enterprises to cope with the ever-changing market environment. Managers can take a variety of measures to cultivate innovation capability, such as fostering an innovation culture, providing resource support, and promoting teamwork to promote innovation performance. This finding provides an important basis for managers to formulate innovation strategies and policies in practice.

Second, given the role of servant leadership in promoting innovative performance, it is advisable for managers to prioritize the enhancement of servant leadership. In order to effectively implement service, managers should prioritize the needs of their employees. This can be achieved by offering training and development opportunities to stimulate their innovative potential. Additionally, managers should empower their employees by granting them more autonomy through delegation and providing the necessary support to ensure the successful implementation of innovative ideas. Furthermore, managers should establish trust and emotional healing, as this is crucial for attracting and retaining innovative talent and ultimately achieving long-term corporate performance.

Third, given the positive impact of an organization's innovation climate on innovation performance, it is recommended that managers proactively create and foster an innovation environment. Managers should clarify their innovation vision and goals and foster an innovation culture by encouraging employees to come up with new ideas, praising and rewarding innovative behaviors, and advocating trial-and-error thinking and rapid iteration. Additionally, managers should actively encourage knowledge sharing and facilitate the formation of cross-functional innovation teams, thereby fostering innovative thinking and its practical implementation and ultimately leading to a heightened level of organizational innovation performance.

In addition, considering that innovation capability plays a mediating role between servant leadership, organizational innovation climate, and innovation performance, it is suggested that managers pay more attention to the cultivation of corporate innovation capability and focus on the factors that influence innovation capability. By encouraging and supporting innovation through servant leadership and creating a positive innovation climate, employees are motivated to come up with more innovative ideas, actively participate in innovative activities, and improve their innovation capability through continuous experimentation, thereby making valuable contributions to the enhancement of overall innovation performance.

### 5.3 Limitations and Directions for Future Research

In addition to the above contributions, this study has some limitations, which can be used as directions for future research. First, the current sample size remains insufficient, despite its inclusion of the primary provinces within the country. In order to enhance the generalizability of the findings, it is recommended that future research endeavors consider enlarging the sample size and diversifying the sources of the sample. This will allow for a more comprehensive examination of the association between innovation capability and innovation performance. Second, this study did not differentiate between firms of different natures and sizes, and subsequent research endeavors could be undertaken to explore the influence of these differences on the innovation performance of state-owned, private, and mixed-ownership firms, as well as the disparities between large enterprises and small and medium-sized enterprises. Once more, the present study was carried out inside the specific Chinese context, therefore limiting its examination to the influence of cultural elements just within this particular setting without taking into account potential variations in other nations. Subsequent investigations may incorporate cross-national analyses in order to examine the influence of diverse cultural elements on the mechanism of innovation performance. Finally, this study did not consider the differences in the types of innovation performance, and future research can delve deeper into examining the disparities in the influence of innovation capability on distinct types of innovation performance, such as product innovation performance and process innovation performance, among others.

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