The Research on the Impact of Big Data Capabilities on Innovation Performance of Platform Enterprises

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Abstracts

The objectives of this research were: (1)To analyze the process and mechanism of the impact of big data capabilities on the innovation performance of platform enterprises.(2)To analyze the mediating effect of knowledge governance between big data capabilities and platform enterprise innovation performance.(3)To analyze the moderating effect of environmental volatility on the relationship between big data capabilities and platform enterprise innovation performance. This study takes platform enterprises as the research object and uses a questionnaire survey method to collect data. This study analyzed the data by using statistical software such as SPSS and applying methods such as reliability testing, validity testing, and multilevel regression analysis.

The results found that: (1)Big data capabilities have a significant positive impact on the innovation performance of platform enterprises.(2)Knowledge governance plays a partial intermediary role between big data capabilities and platform enterprise innovation performance.(3)Environmental volatility negatively regulates the relationship between big data capabilities and platform enterprise innovation performance.

Keywords: The research on the impact; Big data capabilities; Innovation performance; Platform enterprises

Introduction

Platform enterprises are the fastest-growing and most dynamic organizational form in the network information age, creating huge economic and social value(Dimitrova et al, 2020). Throughout the growth process of platform enterprises, innovation is an important driving force for their rapid growth and rapid market share. The openness, interactivity, network effects and other characteristics embodied by the platform promote the gathering of market knowledge resources and drive its innovation. However, knowledge is time-sensitive. In the face of an uncertain market environment, only by efficiently creating new knowledge and matching it with environmental changes can innovation be truly promoted(Enkel et al, 2017). Big data capabilities are new capabilities for enterprises in the context of the digital economy. They can enhance platform enterprises' insights and understanding of their own knowledge base, expand the breadth and depth of cross-border searches, and reduce the risks and costs of absorbing, digesting, and integrating external knowledge. Big data capabilities are an important factor affecting the innovation of platform enterprises.

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The existing literature has conducted a certain degree of research on the relationship between big data capabilities and enterprise innovation performance. However, most of the literature focuses on the research of traditional enterprises. From the perspective of knowledge management, there is a lack of research focusing on platform enterprises. In addition, previous research has provided evidence that big data capabilities have a positive impact on corporate innovation, but few scholars have paid attention to its inherent impact mechanism and process(Akter et al, 2016). Unclear understanding of the impact of big data capabilities on the innovation performance of platform enterprises will seriously hinder the growth of platform enterprises and the development of related theories. In order to make up for the shortcomings of previous research, this study takes platform enterprises as the research object, based on enterprise capability theory, knowledge governance theory and innovation theory, to reveal the impact mechanism and boundary conditions of big data capabilities on the innovation performance of platform enterprises, aiming to improve the innovation of platform enterprises. Performance provides new methods and new ideas.

Research Objectives

1.To analyze the process and mechanism of the impact of big data capabilities on the innovation performance of platform enterprises.

2.To analyze the mediating effect of knowledge governance between big data capabilities and platform enterprise innovation performance.

3.To analyze the moderating effect of environmental volatility on the relationship between big data capabilities and platform enterprise innovation performance.

Literature review

1.Big data capabilities and innovation performance of platform enterprises

The development and application of digital technology has not only changed the traditional operating model, but is also subverting the innovation performance of enterprises in the product market. More and more enterprises have begun to invest in big data capacity building to adapt to the current technological changes and the increasingly turbulent business environment. So as to gain a strategic competitive advantage over competitors (Chen et al, 2014). Based on the theory of enterprise capabilities, big data capabilities refer to platform enterprises applying big data technology to integrate internal and external data information resources on the platform, analyzing and mining the hidden information behind the data, so that platform enterprises can understand market demand more accurately and realize the management of operational activities within the platform. Real-time monitoring and insight into the external environment, and the ability to carry out enterprise innovation through rational allocation of resources, that is, big data capabilities are a dynamic ability for platform enterprises to adapt to changes in the external environment (Alharthi et al, 2017). Davenport (2014) pointed out that in the face of the ever-changing business environment, enterprises should have insight into the resources and capabilities of enterprise innovation. In the context of digitalization, data has become a key driving factor for the survival and development of enterprises (Erevelles et al, 2016). Driven by Internet technology, platform enterprises have accumulated massive amounts of data, but the data itself cannot bring a competitive advantage to the company, but needs to be combined with other resources of the company. The big data capability formed on this basis is the foundation of corporate innovation (Gunasekaran et al,

2016). This study believes that big data capabilities are the key factors for the survival and development of platform enterprises in the context of digitalization, and they are also the basis for improving the innovation performance of platform enterprises. In summary, the following hypotheses are put forward:

H1: Big data capabilities have a significant positive impact on the innovation performance of platform enterprises.

2.The mediating effect of knowledge governance

(1).Big data capabilities and knowledge governance

In the era of knowledge economy, the science of knowledge governance has been greatly developed, and the academic circle has also formed a relatively unified understanding of knowledge: knowledge comes from information, and information comes from data (Alavi et al, 2001). Analyze, extract, organize, condense and solidify valuable information. Based on this view, the rapid development of numbers has attracted the attention of scholars in the field of knowledge governance, and they have focused their attention on the impact of data on the development and application of knowledge governance theories. In the digital environment, knowledge governance realizes the transformation from data to knowledge, and from knowledge to wisdom, so that knowledge governance can operate accurately and efficiently, thereby promoting the improvement of corporate innovation capabilities and value creation capabilities (Chatzoudes et al, 2015). Based on this, Arias-Pérez et al (2021) explored the connotation, purpose and significance of knowledge governance in the digital environment, proposed a knowledge governance framework model in the digital environment, and clarified the transformation of "data-information-knowledge-wisdom" chain. Combined with the research background of the digital economy, Chichkanov (2021) constructed a theoretical model of data-enabled enterprise knowledge governance innovation: "innovation environment-innovation subject-creative development", and summarized the evolution path of enterprise knowledge governance innovation from external data empowerment There are three stages: knowledge accumulation, endogenous data empowering knowledge exchange, and internal and external source data jointly empowering knowledge innovation. Cerne et al (2014) built knowledge governance under the digital background, arguing that digital technology expands the scope of knowledge search, optimizes the process of knowledge formation, and then promotes the improvement of knowledge transfer efficiency and knowledge integration effect. Through the previous discussion, big data capabilities are a closed loop of internal data. Through big data capabilities, enterprises form a data resource library, which provides the basis for knowledge creation, knowledge sharing, and knowledge application for knowledge governance. In summary, the following hypotheses are put forward:

H2: Big data capabilities have a significant positive impact on knowledge governance.

(2).Knowledge governance and platform enterprise innovation performance

Under the conditions of modern market economy, innovation is the key for enterprises to maintain sustained competitiveness and is the main means for enterprises to gain advantages in market competition. At the same time, because improving innovation performance is regarded as a knowledge-intensive activity, it has attracted widespread attention from industry and academia on the relationship between knowledge governance and innovation performance. Carlucci et al (2006) pointed out that new market expansion, new product development and organizational knowledge application are closely related, and organizational knowledge governance capabilities are divided into knowledge integration capabilities, knowledge reorganization capabilities and knowledge creation capabilities. Coras

et al (2013) further verified the relationship between knowledge acquisition, knowledge transformation and knowledge application and organizational innovation performance in his research. Holten et al (2016) also affirmed the relationship between the two in their research. From the perspective of the innovation value chain, they analyzed the core role of knowledge spiral in innovation performance and pointed out that knowledge governance is a key link in determining the success or failure of enterprise innovation. Generally speaking, although scholars have different classifications of the dimensions of knowledge governance activities, there is a consensus in the academic community that knowledge governance occupies a core position in innovation performance. Agostini et al (2020) believes that knowledge acquisition capabilities and knowledge governance capabilities transform unique resources in digital analysis into external and internal knowledge resources that serve specific products and market needs, while knowledge integration integrates internal and external knowledge into what is needed for product breakthrough innovation. specific knowledge. In summary, the following hypotheses are put forward:

H3: Knowledge governance has a significant positive impact on Innovation performance of platform enterprises.

(3).The mediating role of knowledge governance

In the context of the digital age, enterprises can obtain massive amounts of data and information based on big data capabilities, providing a rich resource library for the formation of original knowledge. Coupled with the blessing of digital analysis technology, the efficiency of enterprise knowledge governance has been greatly improved, and knowledge Governance becomes the link connecting big data capabilities and innovation performance of platform enterprises (Gupta et al, 2016). Big data capabilities can keep platform enterprises sensitive to market data information, provide new ideas for innovative products and services for companies, and help platform enterprises master sufficient information on network participants, enabling companies to avoid unnecessary transaction costs and improve their own efficiency (Lin et al, 2019). Big data capabilities can have an important impact on the innovation performance of platform enterprises through knowledge governance. Platform enterprises use digital technology to conduct in-depth learning and repeated learning, fully tap the rationality and potential between external data information and existing data information of the enterprise, extract and obtain useful information from data decomposition, and build new knowledge through knowledge creation and knowledge sharing structure, and then complete new knowledge propositions (Wang et al, 2018). Knowledge governance is a bridge for platform enterprises to use big data capabilities to improve innovation performance. Big data capability is the ability to extract data information from massive data, which can help enterprises better interpret internal and external data information, and continuously expand and enrich the existing database of enterprises (Horng et al, 2022). Therefore, this study believes that knowledge governance is the internal mechanism of big data capabilities and innovation performance of platform enterprises. In summary, the following hypotheses are put forward:

H4: Dynamic capabilities have a mediating effect between organizational learning and new venture performance.

3. The moderating effect of environmental volatility

The environment is a very important contingency factor that any enterprise must face, and it has a certain impact on enterprise innovation and value creation (Bodlaj et al, 2019). The most important feature of the environment is volatility. The internal structure of platform enterprises changes dynamically with the external environment, and their innovation performance is affected by environmental volatility. Although big data capabilities can promote the acquisition of external data information, affected by environmental volatility, internal The adjustment of data information structure has a lag, which directly affects the relationship between big data capabilities and innovation performance of platform enterprises (Nisar et al, 2021). Therefore, when the degree of environmental volatility is high, the impact of big data capabilities on innovation performance of platform enterprises is weak. When the degree of environmental volatility is low, big data capabilities have a stronger impact on the innovation performance of platform enterprises. Based on this, in order to better explain the boundary conditions of big data capabilities on the innovation performance of platform enterprises, this study introduces environmental volatility as an adjustment variable. In summary, the hypothesis is put forward:

H5: Environmental volatility negatively moderates the relationship between big data capabilities and innovation performance of platform enterprises.

Research Methodology

1.Research design

This study first conducted a literature review of relevant literature and proposed research hypotheses based on relevant theories. Secondly, a questionnaire was designed according to the research objectives, and variables such as big data capabilities, knowledge governance, platform enterprise innovation performance and social network were refined to form a formal questionnaire. Third, distribute questionnaires to platform enterprises and collect and organize survey data. Finally, statistical software such as SPSS was used to analyze the survey data, test the theoretical hypotheses, and discuss and analyze the research conclusions.

2.Source of data

This study takes platform enterprises as the research object. The scope of the research is employees of new ventures. The scope of the study is eight Chinese cities including Shenzhen, Guangzhou, Beijing, Nanjing, Suzhou, Shanghai, Hangzhou and Suqian where platform enterprises are relatively concentrated and developed.

3.Data Collecting

This study uses a questionnaire survey method to collect data. From January 2023 to July 2023, This study officially distributed 550 questionnaires, and 539 were collected, with a recovery rate of 98%. After excluding blank questionnaires and invalid questionnaires that filled in the same answer from beginning to end, there were 514 valid questionnaires, and the effective questionnaire rate was 95.36%.

4.Population and sampling

This study investigated 514 employees of platform ventures, of which 266 were male, accounting for 51.75%, and 248 were female, accounting for 48.25%. In the age distribution of variables, there are 72 people aged 22-30, accounting for 14.01%, 160 people aged 31-40, accounting for 31.13%, and 215 people aged 41-50, accounting for 31.13%. The proportion

was 41.83%, and the number of people aged 51 and above was 67, accounting for 13.04%.

5.Analysis of data

This study analyzed the data by using statistical software such as SPSS and applying methods such as reliability testing, validity testing, and multilevel regression analysis.

Research Conceptual Framework

This study is supported by the existing literature on big data capabilities, knowledge governance, environmental volatility and platform enterprise innovation performance, combined with enterprise capability theory, knowledge governance theory and innovation theory, to further reveal and clarify the logical relationship between each variable, and construct The conceptual framework of big data capabilities, knowledge governance, and environmental volatility affecting platform enterprise innovation performance is shown in Figure 1.

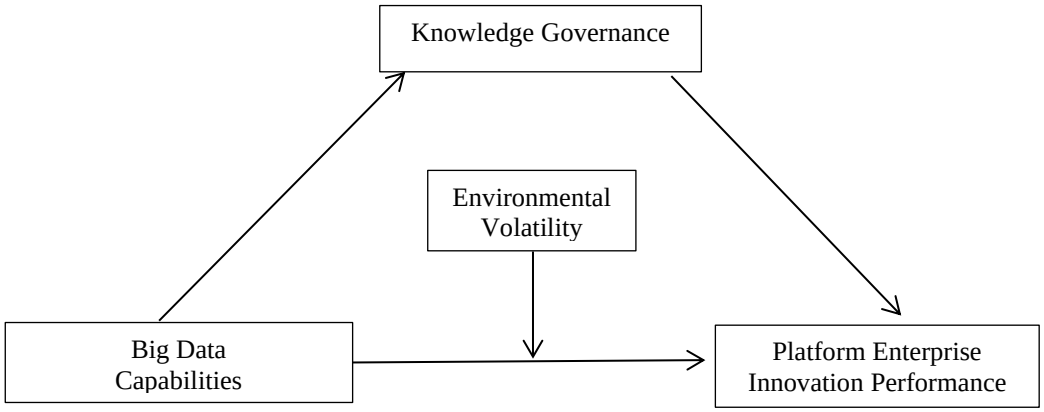

Figure1 Conceptual Framework

Research Findings

The Cronbach's alpha coefficients of each variable dimension of this research scale are all greater than 0.7, indicating that the internal consistency is high and has good reliability, and the reliability value levels of the variable dimensions are within a reasonable range. The standardized factor loading coefficients between different variable dimensions of the scale in this study are all above 0.5, the AVE of the variables are all above 0.5, and the CR of the variables are all above 0.7, indicating that the scale in this study has good convergent validity. In addition, comparing the standard correlation coefficients between each dimension with the corresponding square root of AVE, the correlation coefficients are all lower than the square root of the AVE value. Therefore, each variable dimension has good discriminant validity. According to the objectives of this study, the following research results were obtained through questionnaire survey.

1.Test of the relationship between big data capabilities and platform enterprise innovation performance

In the influence of big data capabilities on the innovation performance of platform enterprises, the age of the company, the size of the company, the total assets of the company, and the type of platform to which the company belongs are taken as control variables, and the big data search ability, big data analysis ability, big data insight ability, The big data capability is used as an independent variable, and the platform enterprise innovation performance is used as a dependent variable for regression analysis. As shown in Table 1, after adding big data capabilities to model 1 in model 3, the change in F value is significant ($p<0.05$), which means that the addition of big data capabilities has explanatory significance to the model. In addition, the R-square value increased from 0.006 to 0.451, which means that big data capabilities can explain 44.5% of the innovation performance of Pinghe enterprises. Specifically, the regression coefficient value of big data capability is 0.739, and it is significant ($t=20.291$, $p=0.000<0.01$), which means that big data capability will have a significant positive impact on the innovation performance of Pinghe enterprises. Therefore, it is assumed that H1 is established.

Table 1 Hierarchical regression analysis of big data capability on innovation performance of platform enterprises

	Model1			Model2			Model3		
	B	T	p	B	T	p	B	T	p
Enterprise age	0.001	0.027	0.979	-0.006	-0.184	0.854	-0.004	-0.118	0.906
Enterprise size	-0.022	-0.272	0.785	-0.022	-0.381	0.703	-0.012	-0.193	0.847
The total assets of the enterprise	0.039	0.887	0.375	0.029	0.912	0.362	0.021	0.639	0.523
Platform enterprise type	-0.045	-1.168	0.244	-0.009	-0.340	0.734	-0.014	-0.490	0.625
Big data search capabilities				0.146***	5.197	0.000			
Big data analysis capabilities				0.356***	13.321	0.000	-	-	-
Big data insight capabilities				0.236***	8.642	0.000	-	-	-
Big data capability							0.739***	20.291	0.000
R^2		0.006			0.476			0.451	
Adjusted R^2		-0.002			0.469			0.446	
F		0.765			151.215***			83.452***	

* $p<0.05$ ** $p<0.01$***$p<0.001$

2. Test of the mediating effect of knowledge governance

In the impact of big data capabilities on knowledge governance, the age of the enterprise, the size of the enterprise, the total assets of the enterprise, and the type of platform to which the enterprise belongs are used as control variables, and the ability of big data is used as the independent variable. Knowledge governance, knowledge creation, and knowledge sharing are respectively, knowledge application as the dependent variable for regression analysis. It can be seen from Table 2 that the age of the enterprise, the size of the enterprise, the total assets of the enterprise, the type of platform to which the enterprise belongs, and the big data capabilities can explain 35.7% of the changes in knowledge governance. When the F test was performed on the model, it was found that the model passed

the F test (F=56.410, p=0.000<0.05), which means that the age of the enterprise, the size of the enterprise, the total assets of the enterprise, the type of platform to which the enterprise belongs, and the ability of big data will affect knowledge governance. There is an impact relationship, and the regression coefficient value of big data capability is 0.565 (t=16.669, p=0.000<0.01), which means that big data capability will have a significant positive impact on knowledge governance, so hypothesis H2 is established.

Table 2 Regression analysis of Big data capability on Knowledge governance

	Model1 Knowledge governance		
	B	T	p
Enterprise age	-0.019	-0.632	0.528
Enterprise size	0.023	0.420	0.675
The total assets of the enterprise	0.004	0.135	0.893
Platform enterprise type	-0.022	-0.835	0.404
Big data capability	0.565***	16.669	0.000
R^2		0.357	
Adjusted R^2		0.351	
F		56.410***	

* p<0.05 ** p<0.01***p<0.001

In the regression analysis of knowledge governance on the innovation performance of platform enterprises, the age of the enterprise, the size of the enterprise, the total assets of the enterprise, and the type of platform to which the enterprise belongs are used as control variables, and knowledge creation, knowledge sharing, knowledge application, and knowledge governance are used as independent variables. Hierarchical regression analysis was conducted using the innovation performance of platform enterprises as the dependent variable. As shown in Table 3, after adding knowledge governance to Model 1, the change in F value is significant (p<0.05), which means that the addition of knowledge governance has explanatory significance for the model. In addition, the R-square value increased from 0.006 to 0.503, which means that knowledge governance can explain 49.7% of the innovation performance of Pinghe enterprises. Specifically, the regression coefficient value of knowledge governance is 0.822 and shows significance (t=22.537, p=0.000<0.01), which means that knowledge governance will have a significant positive impact on the innovation performance of Pinghe enterprises. Therefore, hypothesis H3 is established.

Table 3 Regression analysis of Knowledge governance on Innovation performance of platform enterprises

	Model1			Model2			Model3		
	B	T	p	B	T	p	B	T	p
Enterprise age	0.001	0.027	0.979	0.014	0.437	0.662	0.014	0.444	0.658
Enterprise size	-0.022	-0.272	0.785	-0.034	-0.607	0.544	-0.035	-0.608	0.543
The total assets of the enterprise	0.039	0.887	0.375	0.025	0.800	0.424	0.024	0.780	0.436
Platform enterprise type	-0.045	-1.168	0.244	-0.009	-0.316	0.752	-0.007	-0.264	0.792
Knowledge creation				0.329**	11.280	0.000	-	-	-
Knowledge Sharing				0.270**	8.293	0.000	-	-	-
Knowledge application				0.223**	7.673	0.000	-	-	-
Knowledge governance							0.822**	22.537	0.000
R^2		0.006			0.508			0.503	
Adjusted R^2		-0.002			0.501			0.498	
F		0.765***			74.655***			102.802***	

* p<0.05 ** p<0.01***p<0.001

As can be seen from Table 4, in the analysis of the mediating effect of the knowledge governance dimension, the total effect value of big data capabilities on the innovation performance of platform enterprises is 0.524, the mediating effect value is 0.228, the direct effect value is 0.296, and the effect proportion of the variable is 43.455%.

Table 4 Summary of mediation effect size results

Item	Test results	c Total effect	a*b Mediating effect	c' Direct effect	Effect proportion calculation formula	Effect proportion
Big data capability=>Knowledge governance=> Innovation performance of platform enterprises	Partial intermediary	0.524	0.228	0.296	a * b / c	43.455%

As can be seen from Table 5, the confidence interval of the variable's mediation effect is [0.160 ~ 0.257], the confidence interval does not include 0, and the direct effect is significant. Therefore, knowledge governance has a partial mediating effect between big data capabilities and platform enterprise innovation performance, and hypothesis H4 is established.

Table 5 95% confidence interval table of effect value

Item	c Total effect	a	b	a*b Mediating effect	c' Direct effect
Big data capability=>Knowledge governance=> Innovation performance of platform enterprises	0.454 ~ 0.594	0.417 ~ 0.563	0.391 ~ 0.538	0.160 ~ 0.257	0.225 ~ 0.367

Remark：a*b is 95% bootstrap ci

3.Test of the moderating effect of environmental volatility

As can be seen from Table 6, when studying the moderating effect of environmental volatility on big data capabilities and platform enterprise innovation performance, the age of the enterprise, the size of the enterprise, the total assets of the enterprise, and the type of platform to which the enterprise belongs are used as control variables. The analysis results of the moderating effect show that the significance level of the interaction term of big data capability * environmental volatility is less than 0.05, and the coefficient of the interaction term between the two is -0.159. Therefore, the interaction term between the two has a significant impact. Therefore, hypothesis H5 is established.

Table 6 Analysis of the moderating effect of environmental volatility on Big data capability and Innovation performance of platform enterprises

	Model1	Model2	Model3
Constant	3.543*** （47.400）	3.539*** （51.331）	3.553*** （51.189）
Enterprise age	-0.004 （-0.118）	-0.008 （-0.258）	-0.005 （-0.176）
Enterprise size	-0.012 （-0.193）	-0.006 （-0.104）	-0.008 （-0.145）
The total assets of the enterprise	0.021 （0.639）	0.028 （0.925）	0.026 （0.868）
Platform enterprise type	-0.014 （-0.490）	-0.021 （-0.806）	-0.018 （-0.684）
Big data capability	0.739** （20.291）	0.575*** （15.253）	0.565*** （14.779）
Environmental volatility		0.266*** （9.486）	0.265*** （9.472）
Big data capability*Environmental volatility			-0.159* （-2.563）
Sample size	514	514	514
R^2	0.451	0.534	0.536
Adjusted R^2	0.446	0.528	0.530
F	F （5,508） =83.452,p=0.000	F （6,507） =96.722,p=0.000	F （7,506） =83.489,p=0.000

Dependent variable：Innovation performance of platform enterprises

* p<0.05 ** p<0.01 Inside the parentheses is the t

Discussion

1.Big data capabilities have a significant positive impact on the innovation performance of platform enterprises

The research results show that big data capabilities have a positive impact on the innovation performance of platform enterprises. Therefore, hypothesis H1 is verified. In other words, platform enterprises need to pay attention to and improve their big data capabilities, and adopt a series of strategies and measures to better utilize big data to support their business and decision-making. By improving their big data capabilities, platform enterprises can better understand and utilize big data to improve their business, thereby improving innovation performance. Improving big data capabilities for platform enterprises is a comprehensive process that requires strategic planning, technology investment, and cultural transformation (Mikalef et al,2020). By rationally utilizing big data, platform enterprises can better understand market trends, optimize operations, and improve customer service. satisfaction and achieve innovative performance.

2. Knowledge governance plays a partial intermediary role between big data capabilities and platform enterprise innovation performance

In the process of testing the mediating effect of knowledge governance, this study used the hierarchical regression method to test. The results show that knowledge governance plays a partial mediating effect between big data capabilities and platform enterprise innovation performance. First, big data capabilities have a significant positive impact on knowledge governance. Therefore, the hypothesis H2 in this study is established. The regression analysis results are shown. The big data capabilities possessed by platform enterprises are an important channel for them to obtain information. Platform enterprises can search, analyze and gain insight into big data information, and realize the creation, sharing and utilization of knowledge (Di Vaio et al,2021). Secondly, knowledge governance has a significant positive impact on the innovation performance of platform enterprises. Therefore, hypothesis H3 in this study is established. The regression analysis results show that knowledge governance has a significant impact on the innovation performance of platform enterprises. Finally, this study verified the partial mediating role of knowledge governance, and therefore, hypothesis H4 was partially established. The research conclusion enriches the theory of knowledge governance and further elaborates on the process by which big data capabilities affect the innovation performance of platform enterprises, that is, through knowledge governance. In the process of leveraging big data capabilities, platform enterprises can improve their innovation performance by improving knowledge governance and effectively creating, sharing and applying knowledge. The research results show that knowledge governance plays an important media and bridge role in the impact of big data capabilities on the innovation performance of platform enterprises. Knowledge governance can ensure the effective management and application of big data information, release big data capabilities, and effectively Help improve the innovation performance of platform enterprises. Knowledge governance is an important guarantee for organizations to achieve innovation and is crucial to the development of platform enterprises.

3.Environmental volatility negatively regulates the relationship between big data capabilities and platform enterprise innovation performance

The research results show that environmental volatility negatively regulates the relationship between big data capabilities and platform enterprise innovation performance, and hypothesis H5 is established. This means that when platform enterprises face an environment with high volatility, the positive impact of big data capabilities on innovation performance may be weakened. In situations of high environmental volatility, data sources may be unstable or requirements may change frequently, which can cause big data capabilities to face greater difficulties in collecting and analyzing data, thereby reducing their potential contribution to innovation (Capelli et al,2021). Data in high-volatility environments may be more susceptible to interference and errors, leading to issues such as low data quality and lack of consistency, which can make big data analysis more difficult and thus weaken the basis for innovation. Markets in high-volatility environments may be more uncertain, and

demand for products or services may change rapidly, which may make it more difficult for platform enterprises to predict market trends and customer needs, thereby reducing the effectiveness of innovation. Platform enterprises need to pay attention to environmental fluctuations. When environmental volatility is high, platform enterprises need to adopt strategies to better adapt to high-volatility environments, such as real-time data analysis and more flexible resource allocation, to compensate for these adverse effects. In short, environmental volatility may weaken the positive relationship between big data capabilities and platform enterprises' innovation performance, but platform enterprises can respond to this challenge through appropriate strategies and resource allocation to maintain innovation momentum.

Recommendations

1.This study is based on cross-sectional data to study the innovation performance of platform enterprises and examines the impact of big data capabilities on the innovation performance of platform enterprises at a certain time point. However, the innovation performance of platform enterprises is not static, but dynamic. The dynamic mechanism that affects the innovation performance of platform enterprises requires further research and exploration. In future research, based on life cycle theory, tracking methods or experimental methods can be used to conduct research, obtain longitudinal time series data of platform enterprises, and strengthen dynamic research on the model. In addition, the improvement of innovation performance of platform enterprises is a long-term process, which requires long-term tracking of typical platform enterprises. In future research, case study methods should be combined to further explore the relationship between variables to revise the conceptual framework.

2.This study explains the impact mechanism of big data capabilities on platform enterprise innovation performance and introduces knowledge governance as an intermediary variable. However, it only measures knowledge governance from a comprehensive perspective and does not deeply analyze the impact of big data capabilities on various dimensions of knowledge governance. promotion effect. In future research, it is necessary to further explore the impact of big data capabilities on dimensions such as knowledge creation, knowledge sharing, and knowledge application, and to improve the understanding of the impact mechanism of platform enterprises' big data capabilities on knowledge creation governance.

3.This study considers the role of external environmental factors and introduces environmental volatility as a moderating variable in the relationship between big data capabilities and platform enterprise innovation performance. However, the big data capabilities and innovation performance of platform enterprises are not only affected by the external environment, but also by the internal environment of platform enterprises. In future research, more consideration can be given to the impact of changes in the internal environment of platform enterprises on big data capabilities and platform enterprise innovation. The moderating effect of the relationship between performance presents the process of improving the innovation performance of platform enterprises as completely as possible.

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