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## ENTERPRISE KNOWLEDGE GENERATION DRIVEN BY INTERNET INTEGRATION CAPABILITY: A MEDIATED MODERATION MODEL

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### ABSTRACT

Aim/Purpose	Drawing on theories of organizational learning, this study analyzes the mechanism of Internet integration capability affecting knowledge generation by 399 Chinese enterprises. This paper will further explore whether there is a moderating role of learning orientation in the mechanism of Internet integration capability affecting enterprise knowledge generation.
Background	The Internet has gradually integrated into the enterprise innovation system and penetrated into all aspects of technological innovation, which has promoted the integration and optimization of resources inside and outside the organization. However, there is limited understanding of how the combination of the Internet and integration capability can drive enterprise knowledge generation.
Methodology	The study uses survey data from 399 organizations in China. Through structural equation modeling, this study assesses the relationship between Internet integration capability, organizational learning, knowledge generation, and uses PROCESS macro program to test the mediated moderation effect of learning orientation.

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Contribution	First, this study provides empirical evidence for managers to better build Internet integration capability and ambidextrous learning to promote enterprise knowledge generation. Second, this study highlights the important moderating role of learning orientation in the mediating role of ambidextrous learning.
Findings	First, the study confirms the mediating role of exploratory learning and exploitative learning in knowledge generation driven by Internet integration capability. Second, the results show that when organizations have a strong learning orientation, the indirect path of Internet integration capability influencing knowledge generation through exploratory learning will be enhanced.
Recommendations for Practitioners	Enterprises should pay full attention to the improvement of internet integration capability and ambidextrous learning to promote knowledge generation. In addition, enterprises should establish a good learning atmosphere within the organization to strengthen the bridge role of exploratory learning between Internet integration capability and knowledge generation.
Recommendations for Researchers	Researchers could collect data from countries with different levels of economic development to verify the universal applicability of the proposed theoretical model.
Impact on Society	This study provides references for enterprises using Internet integration capability to promote their knowledge generation capability under the internet background.
Future Research	Future research can compare the impact of Internet integration capability on knowledge generation in different industries.
Keywords	internet integration capability, organizational learning, knowledge generation, learning orientation

## INTRODUCTION

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The development of the Internet provides the energy of “connecting the economy”, accelerates the spread of knowledge and information, promotes the spread of new knowledge, new technology, and new organizational form, and changes the traditional organizational management mode and innovation mode (Roller & Waverman, 2001). In recent years, the rapid development of the Internet in China has brought opportunities and challenges to enterprises. For Chinese enterprises, on one hand, customer power increases in the market transaction, and the old business model and operation mode are challenged (Dholakia et al., 2010), forcing enterprises to adapt to the “time-based competition” and accelerate the pace of innovation (Eisenhardt & Martin, 2015). Enterprise innovation is the result of the generation and application of new knowledge. As an important part of the innovation process, knowledge generation is the key for enterprises to establish the first mover advantage and to realize enterprise growth (Cai, 2015). On the other hand, in the context of Internet, it brings a new ability for enterprises—internet integration capability (Glavas & Mathews, 2014; Wade & Hulland, 2004). Internet integration capability is helpful for enterprises to identify opportunities, integrate internal and external resources, coordinate and match various capabilities within the organization, and provide new ideas for enterprises to cope with the network environment. The existing research suggests that different Internet capabilities will make enterprises differ in business performance (S. Huang et al., 2006), competitive advantage (Pavlou & Sawy, 2006), new product development capability (C. J. Chen, 2007), and technological innovation (Su et al., 2018).

Previously, the academic community has paid attention to the possible role of Internet capabilities in enterprise knowledge management, discussed and confirmed the impact of Internet capabilities on enterprise knowledge sharing (Sotoacosta et al., 2014), knowledge management strategy (Giudice &

Peruta, 2016), knowledge creation performance (Zhuang et al., 2018), and organizational learning (Kane & Alavi, 2007). Few studies have explored the impact of Internet related capabilities on enterprise knowledge generation. Enterprise knowledge generation is the core of enterprise innovation. The research on the influence path of Internet integration capability on enterprise knowledge generation is related to the improvement of enterprise innovation performance and directly affects the value realization of an enterprise's Internet integration capability. Besides, it has been pointed out that the essence of organizational learning lies in the generation of new knowledge and the process of behavior change based on new knowledge, and the influence of Internet related capabilities on organizational learning has also been affirmed (Kane & Alavi, 2007). Therefore, this paper studies the mechanism of Internet integration capability influencing an enterprise's knowledge generation from the perspective of organizational learning. In addition, it has been pointed out that the cultivation and development of organizational IT capability – including learning from experience – needs time and effort. An organization's expectation of success requires complementing Internet related capabilities with the organization's learning process (Anand et al., 1998). Learning orientation is a tendency that can influence the creation and use of knowledge in enterprises. It is also an organizational value that can lead the process of organizational learning (Anand et al., 1998; Rhee et al., 2010). Therefore, this paper will further explore whether there is a moderating role of learning orientation in the mechanism of Internet integration capability affecting enterprise knowledge generation.

In summary, this study has two objectives: (1) studying the effective path of knowledge generation driven by Internet integration capability, and (2) introducing learning orientation as a moderator variable. The rest of this paper is organized as follows. First, it provides an overview of theoretical background for the study, develops hypotheses, and presents the research model. Then, it explains the research methodology and documents the survey of 399 organizations in China. Next, it presents the results of structural equation modelling and hierarchical regression analysis and summarizes the findings. Finally, the paper concludes with discussion of theoretical and managerial implications of the findings and limitations of the study.

## **THEORETICAL BACKGROUND AND HYPOTHESES**

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### ***INTERNET INTEGRATION CAPABILITY***

The popularization and application of the Internet has a subversive change in the mode of production and operation of enterprises, and the enterprises' demand for Internet functions is increasing. Feher and Towell (1997) point out that the Internet has been widely used in various areas of business, constantly changing the business model, and that many enterprises try to use the Internet to further expand their own development space. The existing organizational integration practice shows that the key for enterprises' investment in Internet and information technology is to realize the resources integration and relationship management (Xue et al., 2015). In recent years, scholars have recognized the importance of the Internet's integrated features, and scholars have defined Internet integration capabilities based on different perspectives. Wang and Zhang (2018) define Internet integration capability as the enterprise's ability to use Internet technology to combine internal and external resources to develop cooperation. X. F. Xue et al. (2015) believe that IT integration capability is an organization's ability to effectively plan, coordinate, and control resources inside and outside the organization through information technology to obtain comprehensive benefits that cannot be achieved by a single behavior. Rai and Tang (2010) argue that IT integration is organizations' ability to integrate data, communication technologies, transaction, and collaborative applications with partners (M. Chen et al., 2015). Combining the views of previous scholars, this study defines Internet integration capabilities as the ability for enterprises to effectively deploy and use Internet resources to identify opportunities, integrate internal and external resources, and coordinate and match various capabilities within and outside the organization to adapt to dynamic environments.

### ***AMBIDEXTROUS LEARNING***

In the context of Internet, enterprises are in a more turbulent and competitive environment, which drives enterprises to adapt to the environment changes through continuous learning. Argyris and Schön (1978) point out that organizational learning is a tool to overcome implementation problems. Scholars explored the role of information technology in organizational learning from the aspects of application of information technology, overcoming knowledge barrier tools and dynamic learning (Cui et al., 2013). Effective organizational learning is conducive not only to the external acquisition of knowledge, but also to the internal learning by doing and experiential learning. It can also promote the accumulation and improvement of organizational knowledge and guide the knowledge integration and creation activities of enterprises (X. M. Zhu et al., 2011). According to March (1991), organizational learning can be divided into exploratory learning and exploitative learning. Ambidextrous learning has been widely recognized by the academic community. Exploratory learning means that organizations leap over the current knowledge base, create and explore new knowledge fields, while exploitative learning pays attention to the utilization of the organizational existing knowledge. Ambidextrous learning emphasizes that organizations can simultaneously conduct high-level exploratory and exploitative learning in order to acquire the difference advantages brought by exploring new knowledge and the efficiency advantages brought by utilizing existing knowledge (J. X. Chen, 2011). Following the binary classification of organizational learning by scholars, this paper divides organizational learning into two dimensions: exploratory learning and exploitative learning.

### ***LEARNING ORIENTATION***

Learning orientation was first proposed by Sinkula et al. (1997). It is believed that learning orientation is a concept at the level of organizational culture and is closely related to organizational learning. According to their viewpoint, learning orientation can influence the tendency of enterprises to create and use knowledge, and it is the organizational value that can lead the organizational learning process (Kearns & Lederer, 2004; Rhee et al., 2010). Learning orientation is not only the basis of self-renewal within an organization, but also an important component of organizational strategy (Covin et al., 2006). Based on the research of Sinkula et al. (1997), learning orientation includes three parts: learning commitment, open mind, and common vision. Among them, learning commitment represents the organization's emphasis on learning, mainly reflected in the learning atmosphere of the organization. Open mind means that organizations dare to challenge and question existing thinking and action patterns. The common vision is the degree to which an organization establishes and maintains its universally recognized organizational goals. The three aspects of learning orientation complement each other and constitute the values that affect organizational learning culture.

### ***KNOWLEDGE GENERATION***

Enterprise innovation is the result of the generation and application of new knowledge. The essence of organizational learning lies in the generation of new knowledge and the process of behavior change based on new knowledge. Efficient application of internal and external knowledge is the key to enterprise knowledge generation (Wei, 2018). March (1991) points out that organizations can expand their knowledge base by exploring new knowledge or using existing knowledge. Chuang (2013) points out that the innovative knowledge of developed countries originated from the innovation and diffusion within the organization to reconstruct new knowledge. The synergistic evolution of the organization's absorption of external knowledge and accumulation of internal knowledge was the driving force of enterprise transformation. Zhao et al. (2011) put forward the knowledge generation transformation matrix from the mechanism of knowledge generation and transformation based on SECI model. The existing research on knowledge generation focuses more on the process perspective, considering that this study mainly regards knowledge generation as the result of organizational knowledge creation. Therefore, referring to previous studies, this study defines knowledge generation

as the degree of assimilation, integration, acceptance, and application of internal and external knowledge.

### ***INTERNET INTEGRATION CAPABILITY AND AMBIDEXTROUS LEARNING***

There are two research routes to link Internet related capabilities with organizational learning. One is to take organizational learning as a method to explain and solve the implementation and use of new information technology. The second is to develop Internet related capabilities to support organizational learning and knowledge management processes (Andreu & Ciborra, 1996). Previous studies have shown that companies looking forward to succeed must complement Internet related capabilities with learning processes at the organizational level (Anand et al., 1998) and need to promote a culture that encourages sharing and continuous learning.

Internet technology supports enterprises' search and acquisition of market knowledge and innovation knowledge (Sotoacosta et al., 2014), and promotes enterprises' exploratory learning. Internet integration capability supports organizations to constantly try and to accept errors, learn new knowledge and solve new problems, increase the number and types of knowledge reserves of organizations, and then improve their perception of opportunities and crises (Nieves & Haller, 2014). In addition, a flexible Internet application system can help organizations break the existing learning path and management, promote the restructuring of organizational resources, explore new knowledge and technology, and track the development trend of the industry (Ge et al., 2016; Kane & Alavi, 2007), to enhance the environment adaptability. Therefore, we propose that:

H1: There is a significant positive correlation between Internet integration capability and exploratory learning.

Organizations with strong Internet integration capability usually use the Internet to establish a smooth and convenient communication system (Kane & Alavi, 2007; Xie et al., 2014), encourage trust and cooperation within the organization and with external stakeholders, and enhance the willingness of knowledge exchange and absorption between internal members and external stakeholders. Communication and cooperation promote the reconstruction of knowledge and information and encourage the integration of multiple perspectives (Lopez-Nicolas & Soto-Acosta, 2010; Zhuang et al., 2018), which is conducive to exploitative learning and promote the organization to accumulate knowledge and experience. In addition, Internet integration capability helps to coordinate and integrate internal resources and knowledge (Zeng et al., 2017), promote knowledge exchange and application, repeatedly learn and improve existing knowledge, and promote exploitative learning. Therefore, we propose that:

H2: There is a significant positive correlation between Internet integration capability and exploitative learning.

### ***ORGANIZATIONAL AMBIDEXTROUS LEARNING AND KNOWLEDGE GENERATION***

Firstly, enterprises discover and acquire new knowledge through exploratory learning. On one hand, it supplements and enriches the existing knowledge resources of the organization. On the other hand, it can avoid the "path dependence" on the existing knowledge, experience, and technology (Shu et al., 2015; Zhan & Chen, 2013), and promote the absorption and utilization of new knowledge. Secondly, exploratory learning encourages the formation of an open and innovative atmosphere within the organization, which is conducive to the development of internal learning, and then promotes the enterprises' knowledge generation (Shu et al., 2015). Therefore, this paper proposes the following hypothesis:

H3: Organizational exploratory learning is positively correlated with knowledge generation.

Exploitative learning is based on the existing knowledge. The organization transforms and applies the acquired external knowledge and the knowledge created inside to help the organization improve the efficiency of knowledge generation and realize the effective combination of internal and external knowledge while broadening the existing knowledge base (Sarkees et al., 2014). Besides, the organization's rapid and successful application of external knowledge acquisition or internal knowledge creation enhances the enthusiasm of internal learning, and then continues to improve the efficiency of knowledge generation through exploitative learning (Lavie et al., 2010). Finally, exploitative learning requires full communication between internal and external partners in order to promote knowledge absorption, which helps to build the relationship between internal and external organizations, and a good learning atmosphere helps to enhance the degree of knowledge sharing, thereby improving knowledge generation (Shu et al., 2015; Tippins & Sohi, 2003). Therefore, we propose the following hypothesis:

H4: Enterprise exploitative learning is positively correlated with knowledge generation

### ***THE MEDIATING ROLE OF ORGANIZATIONAL AMBIDEXTROUS LEARNING***

Organizational learning theory holds that learning is an important driving force for innovation. Although ambidextrous learning is a higher level of organizational learning, its starting point is still the identification and acquisition of information. Internet related capabilities have great advantages in information processing, providing an important support for ambidextrous learning (Xie et al., 2014). Previous studies have shown that organizational learning plays an important role in Internet strategic value (Fernández-Mesa et al., 2014; Tippins & Sohi, 2003). In the networked environment, using the Internet to identify potential external opportunities and to effectively allocate resources and capabilities affect the resources acquisition, knowledge sharing, and utilization of enterprises (Zhuang et al., 2018). Using the Internet to identify potential external opportunities can improve the internal knowledge usage efficiency. In addition, the network is full of huge amounts of knowledge and resources. Enterprises can use Internet technology to acquire and screen knowledge that is beneficial to the development of the enterprise, and to transfer and share it within the organization (Jimenez-Castillo & Sanchez-Perez, 2013), which is conducive to exploitative Learning. At the same time, Internet technology provides a convenient way for enterprises to coordinate and allocate internal and external knowledge resources. It also provides an effective way for enterprises to establish a good trust relationship between internal and external subjects (Zhuang et al., 2018), reduces the risks caused by uncertainty, and then promotes exploitative Learning. Through exploitative learning, enterprises can reconstruct, express, absorb and utilize organizational knowledge, and promote knowledge generation (Ferraris et al., 2017; Zhuang et al., 2018).

Therefore, this paper proposes that:

H5: Exploitative learning plays a mediating role between Internet integration capability and knowledge generation.

Compared with exploitative learning, exploratory learning pays more attention to the exploration, discovery and innovation of knowledge and information (Lavie et al., 2010; March, 1991). Internet integration capability is conducive to the organization's exploration and mining of knowledge in unknown areas, and integrating it with organization's knowledge, promoting the organization's absorption and application of new knowledge (Zhuang et al., 2018). A good Internet application system enables organizations to effectively integrate and coordinate internal resources and knowledge (Saraf et al., 2013), and promote exploratory learning activities. Through exploratory learning, enterprises can broaden their knowledge horizons, improve their knowledge cognition, absorption, and utilization, and then promote knowledge generation (Wang & Zhang, 2018). Therefore, this paper proposes that:

H6: Exploratory learning plays a mediating role between Internet integration capability and knowledge generation.

### ***THE MODERATING EFFECT OF LEARNING ORIENTATION ON THE MEDIATING RELATIONSHIP***

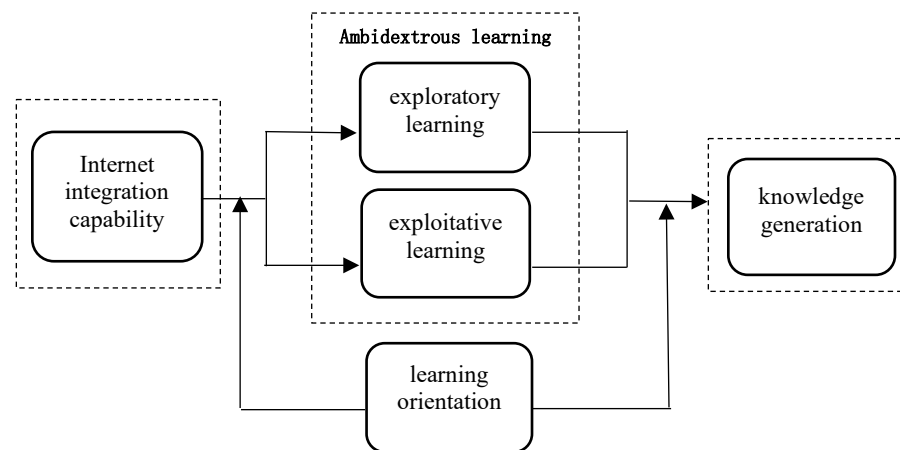
Organizational learning and its role are influenced by learning orientation. Learning orientation represents the tendency of organization to create and use knowledge (Rhee et al., 2010; Sinkula et al., 1997). It is not only the attitude of organization towards learning, but also the concrete expression of internal learning environment. It can influence the transformation process of learning behavior and learning effect of organization (Li et al., 2013).

It has been pointed out that, in the context of informatization, only the combination of the organization's learning-oriented strategy and Internet-related capabilities can create a competitive advantage for the organization (Cui et al., 2013). In the networked environment, enterprises use the Internet integration capability to identify potential external opportunities and coordinate internal resources and capabilities. Good learning capability can help enterprises acquire, share, integrate, and internalize key knowledge resources with low cost and low risk (Chuang, 2013), which is conducive to the improving of utilization speed of new knowledge. Under the influence of learning commitment, open thinking, and common vision, learning orientation helps organizations to challenge the traditional way of thinking and achieve breakthrough innovation (Rhee et al., 2010; Sinkula et al., 1997). Learning orientation affects the value creation and learning tendency of enterprises. It can help organizations integrate and internalize knowledge, enable enterprises to achieve sustainable innovation, and maintain long-term competitive advantage (Rhee et al., 2010; Xu & Zhang, 2011). At the same time, learning orientation affects the degree to which enterprises create and use various forms of knowledge (Mavondo et al., 2005; Nasution et al., 2011). It can promote the path that internet integration capability pushes knowledge generation through ambidextrous learning. This process presents a virtuous circle of organizational learning capability enhancement. Learning orientation further actively promotes learning capability to play a mediating role between Internet integration capability and knowledge generation (Yu et al., 2017).

The theoretical model of this study is shown in Figure 1. Based on the above analysis, this study proposes the following assumptions:

H7: Learning orientation positively moderates the mediating effect of exploratory learning on Internet integration capability and knowledge generation

H8: Learning orientation positively moderates the mediating effect of exploitative learning on Internet integration capability and knowledge generation



**Figure 1. Theoretical model.**

## METHODS

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### *DATA COLLECTION AND SAMPLE*

This study collects data by questionnaire. Firstly, two professors of information systems, two professors of technology innovation and knowledge management, and two managers of enterprises are invited to form an expert group to discuss the initial scale and revise the expression of measurement items and the rationality of questionnaire design. After the revision of the questionnaire, a formal questionnaire survey was conducted among enterprises from various industries in Fujian, Guangdong, Shanghai, Beijing, Jiangsu, and other cities. The research object is the middle and senior managers of enterprises. They have a clearer grasp of the characteristics of the Internet integration capability, organizational learning, knowledge generation, and learning orientation of enterprises. Their answers can better reflect the real situation of enterprises. In this study, 650 questionnaires were distributed through the e-mail and paper questionnaires. According to the purpose of this study, 399 valid questionnaires were screened, and the effective recovery rate was 61.38%. The enterprises surveyed are mainly concentrated in information technology, energy, materials, finance, and other industries, including state-owned enterprises, joint ventures, private enterprises, and other types. In order to test the non-return deviation, we compared the basic attributes of the early and late recycled samples in terms of enterprise size and age and found no significant difference. Therefore, we can conclude that the non-recycled samples will not have a serious impact on the conclusions of the study.

### *MEASUREMENTS*

The scale of measurement in this study draws from the mature scale at home and abroad. The items are all measured by the Likert five-point scale. 1 indicates strong disagreement and 5 expresses strong agreement.

The measurement of Internet integration capability mainly refers to the scale of Pang et al. (2015), Mao et al. (2015), and L. Xue et al. (2012). A total of four items are set up, which involves measuring the opportunity for the organization to use the Internet to identify opportunities and integrate internal and external resources. The measurement of exploratory learning and exploitative learning mainly refers to the scale of March (1991), Blaschke and Schoeneborn (2006), and Y. Huang et al. (2015). The learning orientation measurement draws on Sinkula et al. (1997) and Che et al. (2018). A total of five items are set up, mainly including the measurement of commitments, shared visions, and open mind. Referring to the research of Smith et al. (2005), and W. Zhu (2009), a total of four items were set to measure knowledge generation. In addition, based on previous research (Zhong, 2017; Zhuang et al., 2018), we choose firm age, firm size, IS age, and whether it is a high-tech enterprise as control variables. Among them, whether it is a high-tech enterprise adopts the dichotomy code: high-tech enterprises are recorded as 1, and non-high-tech enterprises are recorded as 0.

### *RELIABILITY AND VALIDITY ANALYSIS*

In this study, SPSS19.0 software was used to test the reliability and validity of the valid sample data obtained from the questionnaire. The test results are shown in Table 1. It can be seen from Table 1 that the Cronbach's  $\alpha$  coefficient of each scale is greater than the recommended value of 0.7, indicating that each scale satisfies the reliability requirements. The AVE of each scale is greater than 0.5 or close to 0.5, and CR is greater than the standard value of 0.7, indicating that each scale has good convergence validity. In Table 2, the AVE square root of each variable is greater than the value of its row and column, indicating that each variable meets the requirements for discriminant validity.



**Table 1. Reliability and validity test**

Variable	Item	Measurement	Measure index	Sources
<b>Internet integration capability</b>	IIC	Our company is good at utilizing relevant Internet technology to discover new opportunities brought by external changes.	Cronbach's $\alpha=0.739$ AVE =0.562 CR =0.837	Pang et al. (2015), Mao et al. (2015), L. Xue et al. (2012)
		Our company can easily access relevant data from customers, market, and competition changes by using Internet technology.		
		Our company can make seamless links with external partners by using Internet technology.		
		Our company can use Internet technology to integrate related organizational operations (design, R&D, procurement, marketing, etc.).		
<b>Exploratory learning</b>	EL	Our company is good at constantly seeking market/product information in new fields.	Cronbach's $\alpha=0.728$ AVE =0.486 CR =0.789	March (1991), Blaschke & Schoeneborn (2006), Y. Huang et al. (2015)
		Our company is good at learning and mastering new market/product knowledge.		
		Our company is good at exploring knowledge/information that can learn new skills.		
		Our company is good at searching for information that can learn new skills.		
<b>Exploitative learning</b>	UL	Our company is good at refining and excavating existing knowledge.	Cronbach's $\alpha=0.755$ AVE =0.526 CR =0.816	
		Our company is good at searching for market/product information in the current field.		
		Our company is good at accumulating ways to effectively solve current market/product problems.		
		Our company is good at constantly seeking market/product information in new areas.		
<b>Learning orientation</b>	LO	The management of the company believes that learning ability is the key to competitive advantage.	Cronbach's $\alpha=0.725$ AVE =0.478 CR =0.820	Sinkula et al. (1997) and Che et al. (2018).
		One of the company's fundamental values is that learning is the key to the company's progress.		
		Novel ideas are valued within the organization.		
		All employees of the company are committed to the realization of organizational goals.		
		The company has common goals.		
<b>Knowledge generation</b>	KG	The extent to which information and knowledge of our company are exchanged and shared.	Cronbach's $\alpha=0.710$ AVE =0.494 CR =0.795	Smith et al. (2005), W. Zhu (2009)
		The extent to which company use knowledge and absorb new technologies.		
		The speed at which company accept and apply new knowledge.		
		The extent to which external knowledge is transformed into valuable knowledge for the enterprise.		

## RESULTS

### *DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS*

The mean, standard deviation and correlation coefficients of each variable are shown in Table 2. There are significant correlations among the variables, and the variance inflation factor (VIF) of each variable is less than 3, which is lower than the threshold of 10. This indicates that there is no serious multi-collinearity problem among the variables. The correlation coefficients between Internet integration capability, exploratory learning, exploitative learning, and knowledge generation are all positive and significant, which preliminarily supports some of the research hypotheses proposed in this paper.

**Table 2. Result of correlation analysis**

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1 IIC	3.5943	0.70956	<b>0.749</b>								
2 EL	3.6617	0.60500	0.623**	<b>0.697</b>							
3 UL	3.7202	0.54092	0.381**	0.434**	<b>0.725</b>						
4 LO	3.7330	0.60338	0.673**	0.618**	0.334**	<b>0.691</b>					
5 KG	3.5844	0.62159	0.606**	0.562**	0.405**	0.627**	<b>0.703</b>				
6 firm size	3.09	0.839	0.005	-0.025	0.061	-0.062	0.097	--			
7 firm age	3.48	1.037	0.079	-0.007	0.066	0.009	0.122	0.554	--		
8 IT specialization	2.24	0.913	0.307**	0.151**	0.061	0.219*	0.077	-0.138**	-0.035	--	
9 IS age	2.94	0.631	0.157**	0.085	0.126*	0.115*	0.196	0.315**	0.390**	0.040	-

Note: The diagonal line is the square root of AVE, \*  $p < 0.05$ . \*\*  $p < 0.01$ .

### *RELATIONSHIP TEST OF GLOBAL MODEL*

In this paper, Amos 21.0 is used to construct structural equation, and the maximum likelihood estimation method is used to fit the theoretical model proposed in this paper. The fitting results are shown in the following tables. From Table 3, all the fitting indexes are in line with the requirements, which shows that the fitting effect of the observed data is ideal, and the hypothesis test of the model can be carried out. The normalized path coefficients of model fitting are shown in Figure 2.

From Table 3, we can see that the model  $\chi^2/df = 1.976$ , less than 5; GFI = 0.939, AGFI = 0.917, IFI = 0.930, CFI = 0.929, all greater than 0.9; RMSEA = 0.051, less than 0.08, all fitting indicators meet the requirements, indicating that the overall framework model between Internet integration capability and knowledge generation is highly matched with the data used to test hypotheses.

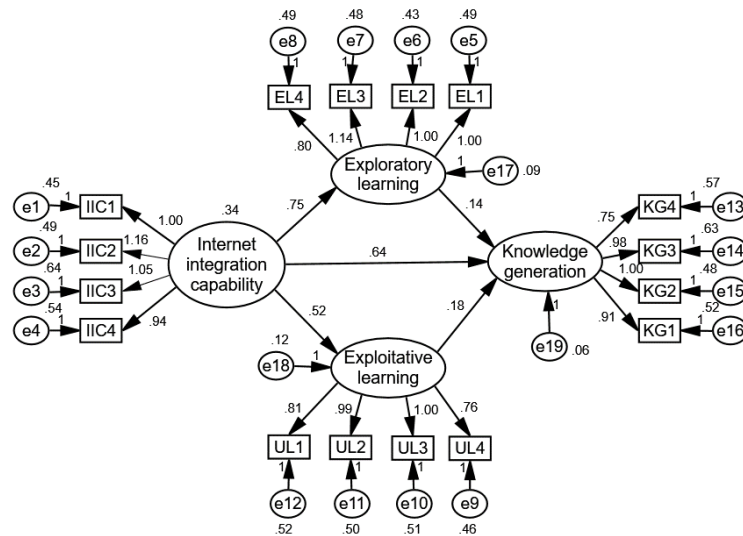
Table 4 shows that the non-standardized coefficient of Internet integration capability on exploratory learning is 0.747, and the standardized path coefficient is 0.823,  $p < 0.001$ . This shows that the Internet integration capability has a significant positive impact on exploratory learning. Hypothesis H1 is verified. The non-standardized path coefficient of Internet integration capability on exploitative learning is 0.519, the standardized path coefficient is 0.650,  $p < 0.001$ , which supports the positive relationship between Internet integration capability and exploitative learning. Hypothesis H2 is proved.

The non-standardized path coefficient of exploratory learning on knowledge generation is 0.143, and the standardized path coefficient is 0.138,  $p < 0.05$ , indicating that exploratory learning has a significant positive impact on knowledge generation. Hypothesis H3 is proved. The non-standardized path

coefficient of exploitation learning on knowledge generation is 0.176, and the standardized path coefficient is 0.149,  $p < 0.05$ , which verify the promoting effect of exploitative learning on knowledge generation and supports hypothesis H4. The non-standardized coefficient of Internet integration capability on knowledge generation is 0.638, and the standardized path coefficient is 0.674,  $p < 0.001$ , indicating that Internet integration capability can directly affect knowledge generation.

**Table 3. Model fitting results**

Fitting index	$\chi^2 / df$	RMSEA	AGFI	GFI	IFI	CFI	TLI
Fitting value	1.976	0.051	0.917	0.939	0.930	0.929	0.913
conclusion	satisfy	satisfy	satisfy	satisfy	satisfy	satisfy	satisfy



**Figure 2. Test results of theoretical model**

**Table 4. Research hypothetical path tests**

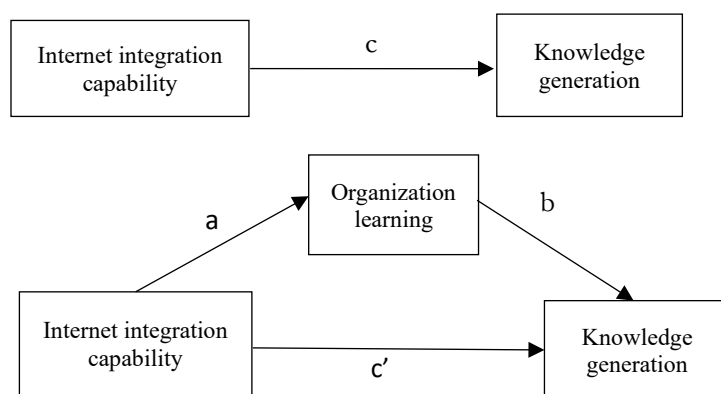
Path	Non-standardized path coefficient	Standardized path coefficient	S.E.	C.R.	P
Internet Integration capability → Exploratory Learning	0.747	0.823	0.086	8.705	***
Internet Integration capability → exploitative Learning	0.519	0.650	0.079	6.544	***
Exploratory Learning → Knowledge Generation	0.143	0.138	0.072	1.978	0.048*
Exploitative Learning → Knowledge Generation	0.176	0.149	0.081	2.161	0.031*
Internet Integration capability → Knowledge Generation	0.638	0.674	0.181	3.519	***

**MEDIATION EFFECT TEST**

The method of mediating test can be traced back to the study by Baron and Kenny (1986), who proposed to determine the existence of mediating effects by stepwise testing the significance of a and b

(see Figure 3). As a supplement, Sobel (1982) proposed a coefficient product test, which detects the significance of  $a*b$  to determine whether the mediation effect exists. But Sobel's test needs to assume that  $a*b$  obeys normal distribution, which is often difficult to achieve (Bollen & Stine, 1990).

MacKinnon et al. (2007) made improvements later. Therefore, this study uses MacKinnon et al.'s method to test the mediating effect of organizational learning. Through bootstrap sampling method, 1500 simulations were conducted, and 95% confidence intervals were selected. This method can not only effectively avoid estimation bias, but also make up for the problem of limited sample size (Fritz & MacKinnon, 2007). As shown in Table 5, the confidence intervals of exploratory learning and exploitative learning do not contain zero points, which indicates that the original hypothesis that mediation effect does not exist can be rejected, that is, exploratory learning and exploitative learning have mediation effect between Internet integration capability and knowledge generation, which further supports the hypothesis H5, H6 in this paper. This means that the impact of enterprise Internet integration capability on knowledge generation should be based on the construction of ambidextrous learning capability.



**Figure 3. Mediation effect schematic diagram**

**Table 5. Mediation effect test**

Dependent variable	Mediating variables to be tested	Path a		Path b		Correlation coefficient (c)	Confidence interval	
		Coefficient	Std. error	Coefficient	Std. error		Lower	Upper
Internet Integration capability	Exploratory Learning	0.747	0.086	0.143	0.072	0.837	0.00179	0.25305
	Exploitative learning	0.519	0.079	0.176	0.081	0.837	0.00749	0.21804

### ***MEDIATED MODERATION EFFECT TEST***

In order to test the mediated moderation effect of hypothesis H5, this study uses the PROCESS macro program developed by Professor Hayes (2013) that can be embedded in SPSS software. This program can be used to test various mediation models, moderation models, and combination models of both and has been increasingly favored in recent years. In this study, learning orientation may affect the mediating role of exploratory learning and exploitative learning, so it is taken as moderating variables. PROCESS automatically adds or decreases a standard deviation of the moderating variable based on the mean value and divides the moderating variable into high value and low value. The bootstrapping times were set to 1500 times in this study, and the existence of mediated moderation effect was judged by whether the confidence interval contained 0 at 95% significance level according to the different levels of moderation variables (strong/weak learning orientation). The test results are shown in Table 6.

When the mediating variable is exploratory learning, the indirect effects of strong and weak learning orientation are positive, and the confidence interval does not contain 0 at 95% level, which indicates that the mediated moderation effects exist. Learning orientation has a moderating effect on the mediating role of exploratory learning between Internet integration capability and knowledge generation. It further supports the mediated moderation effect of hypothesis H7. When the mediating variable is exploitative learning, the indirect effects of strong and weak learning orientation are positive. The confidence interval of strong and weak learning orientation at 95% level contains 0, which indicates that the moderating effect of learning orientation on exploitative learning does not exist, and hypothesis H8 has not been verified.

**Table 6. Testing process of mediated moderation effect**

Mediating Variables	Moderating Variables	Indirect Effects	SE	95%CI	
				Low	High
Exploratory Learning	Strong Learning Orientation	0.0653	0.0312	0.0129	0.1349
	Weak Learning Orientation	0.0651	0.0262	0.0162	0.1188
Exploitation learning	Strong Learning Orientation	0.0436	0.0258	-0.0016	0.1008
	Weak Learning Orientation	0.0370	0.0194	-0.0085	0.0856

## DISCUSSION

### *IMPLICATIONS FOR THEORY*

Firstly, this paper expands and promotes the research on the relationship between Internet related capabilities and enterprise knowledge generation. Previous studies have shown that Internet capabilities have a significant positive impact on knowledge management (Giudice & Peruta, 2016) and have also studied the relationship between Internet capabilities and knowledge creation (Zhuang et al., 2018), knowledge sharing (Sotoacosta et al., 2014), and organizational innovation (Su et al., 2018). However, few studies have focused on the internal mechanism of the impact of Internet integration capability on enterprise knowledge generation. The results show that Internet integration capability can directly affect knowledge generation or indirectly affect enterprise knowledge generation through exploratory learning and exploitative learning. It can be said that this study is not a simple repetition of existing research, but from the perspective of organizational learning to explore the internal mechanism of Internet integration capability affecting knowledge generation and to expand the connotation of relevant theoretical research.

Secondly, this research enriches the theoretical connotation of organizational learning supported by Internet related capabilities. The research shows that Internet integration capability can promote exploratory learning and exploitative learning, and the impact of Internet integration capability on exploratory learning is greater than exploitative learning. This conclusion deepens the existing research on the relationship between Internet capabilities and organizational learning (Fernández-Mesa et al., 2014; Kane & Alavi, 2007), reveals the impact of Internet capabilities on different learning methods, and shows that Internet integration capability can not only help develop new knowledge, but also promote the use of old organizational knowledge.

Thirdly, this study reveals that learning orientation plays a moderating role in the mediating effect of exploratory learning. In previous studies on internet capability and organizational performance, potential moderation factors such as industry type (Wade & Hulland, 2004), competition intensity (Ross et al., 1996), environmental uncertainty (Kearns & Lederer, 2004), and information intensity (Mao et al., 2015) have been taken into account, but little attention has been paid to the role of learning orientation. Based on theoretical analysis, this paper discusses the moderating effect of learning orientation on the mediating effect of ambidextrous learning ability. It is found that the stronger the organization's learning orientation is, the stronger the mediating effect of exploratory learning on the Internet integration capability and knowledge generation is, while the moderating effect of learning orientation on the mediating effect of exploitative learning is not significant. The reason may be that enterprises with strong learning orientation pay attention to learning, tolerance, and openness and establish an organizational atmosphere of vision, which makes organizations jump out of the current thinking mode (Lavie et al., 2010; Sarkees et al., 2014), explore new fields, and create new knowledge, and then enhance the intermediary effect of exploratory learning. In contrast, no matter how strong or weak the learning orientation is, it does not affect the role of exploitative learning as a bridge. This conclusion reflects that good learning orientation plays an important role in promoting exploratory learning.

### ***IMPLICATIONS FOR PRACTICE***

This study provides a reference for Chinese enterprises to promote organizational knowledge generation, achieve technological innovation and achievement transformation in the context of the Internet.

Firstly, enterprises' business managers should recognize the role of Internet integration capabilities in the resources sharing and exchange such as knowledge and information and the promotion of internal and external resources. Enterprises should pay full attention to the improvement of internet integration capabilities and use it to promote organizational ambidextrous learning. Specifically,

- (1) Enterprises should pay attention to the opportunity recognition function of the Internet and be good at dealing with the massive information on the Internet. This will help organizations expand their knowledge scope, and timely pay attention to the changes in the current market demand to adjust the existing knowledge of the organization, to promote the absorption and utilization efficiency of internal and external knowledge.
- (2) Enterprises should notice the function of the Internet in the resource's integration within the organization. A perfect Internet application system can promote the collision of knowledge viewpoints within the organization to generate new knowledge and new ideas and improve the application of existing knowledge.
- (3) Enterprises should attach importance to the coordination function of the Internet to the internal and external resources of organizations, actively guide employees to communicate and share knowledge through the Internet, promote the new knowledge acquisition, expand the scope of existing knowledge application, improve the efficiency of knowledge application, and enhance the mediating role of organizational exploratory learning and exploitative learning between the Internet integration capability and knowledge generation.

Secondly, organizations should establish a good learning atmosphere within the organization as soon as possible, cultivate an organizational culture that thinks highly of learning, is inclusive and open, and has a clear vision, reduce obstacles to exploratory learning, promote exploratory learning activities, and strengthen the bridge role of exploratory Learning between Internet integration capability and knowledge generation.

## CONCLUSION

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Based on 399 sample data from Chinese enterprises, this paper makes an empirical study on the relationship among Internet integration capability, exploratory learning, exploitative learning, and knowledge generation. The results show that Internet integration capability has a positive impact on the exploratory learning and exploitative learning. Both exploratory learning and exploitative learning have a mediating effect between Internet integration capability and knowledge generation. The organization's learning orientation plays a positive moderating role on the mediating effect of exploratory learning in the Internet integration capability and knowledge generation. This research enriches the theory of organizational learning and knowledge management supported by Internet capabilities. The results of this paper have certain theoretical and practical significance.

Our study has several limitations. First, this study is limited to the empirical study of Chinese enterprises. Future research could collect data from countries with different levels of economic development to verify the universal applicability of the proposed theoretical model. Second, this article uses cross-sectional data, but the effects of Internet integration capability and organizational learning may take some time, so the causal relationship between variables requires more rigorous research design and verification of longitudinal data. Third, the external environment of an enterprise is an important situation variable. This article does not consider its impact on the relationship between variables. Future research can analyze this.

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