

RESEARCH ON THE INFLUENCE OF TOP MANAGEMENT TEAMS OF TRANSACTIVE MEMORY SYSTEM ON ORGANIZATIONAL IMPROVISATION

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Abstract:

Based on the realistic background of cross-industry competition, this paper commences with the cognitive structure of enterprises, takes organizational memory that influences corporate decisions as the intermediary bridge, regards complementary assets as the innovation resources provided by enterprises, and discusses the influential mechanism of the top management team of the transactive memory system on organizational improvisation through the method of combining theoretical and empirical research. This paper has important practical significance for theoretical workers to enhance their in-depth understanding of the role and value of the top management team of the transactive memory system, and the effective use of improvisation in industry competition to improve core competitiveness has important practical significance.

Keywords: Improvisation, Transactive Memory System, Organizational Memory, Dynamic Capabilities, Complementary Assets

Introduction

In the era of VUCA, the business environment of Chinese enterprises is full of variability, uncertainty, complexity and ambiguity (Chen Chunhua, 2020). Mounting number of enterprises around the commanding heights of science and technology innovation competition are unprecedented fierce, can not help but with the brand image, the cost structure, sales channels and industry models are completely different from the non-peers to become competitors, that is, cross-industry competition. Enterprises need novel thought of strategic logic to guide them through the "vacuum zone" in strategic planning (Guo Yongfeng, 2013).

Improvisation is an effective behavior in which an enterprise perceives sudden changes in the environment and has to make a response and immediate action plan in a ephemeral period of time (Zheng Jianguo, Zhang Ya, 2019). Since the occurrence of improvisation emphasizes the synchronization of planning and execution, the time requirement is very urgent, and the existing capacity and resources at hand is the cardinal factors affecting the decision and must be taken into account first. What are the capabilities and resources of the enterprise that promote the effective use of improvisation? When, where and how? Can we clarify the relationship between the influencing factors? Enterprises urgently need a theoretical framework to identify and summarize the rules in their improvisation practices, and carry out improvisation actions to figure out unexpected opportunities or crises under the guidance of these rules.

Since the top management team of transactive memory system, this paper attempts to use organizational memory as an intermediate bridge, explore the interaction between complementary assets and it to integrate resources, clarify the context of influencing the improvisation of enterprises, and test the mediating role of organizational memory and the moderating effect of complementary assets through empirical analysis.

Research purpose

This theme systematically combs and summarizes the concepts, influencing factors and measurement dimensions of the three variables of the transactive memory system, organizational memory and complementary assets. In the context of cross-industry competition, the top management team of transactive memory system is taken as the independent variable, organizational memory is taken as the intermediary variable, and complementary assets are taken as the moderating variable, and their influence paths and mechanisms on organizational improvisation are analyzed, and the research hypothesis and theoretical model proposed in this paper are constructed. In this paper, we designed questionnaires to accumulate data from various enterprise top management teams. We conducted descriptive statistical analysis on the valid data and tested the reliability and validity. Empirical quizzes were conducted through reliability, validity, correlation and regression analysis. Main tests were (1) Major effect: the positive influence of the transactive memory system on organizational improvisation. (2) Direct effect: the positive effect of top management team of transactive memory on organizational memory and organizational memory on organizational improvisation. (3) Moderating effect: the reverse moderating effect of complementary assets on organizational memory and organizational

improvisation, and the positive moderating effect of cross-industry competition situation on the transactive memory system and organizational memory. (4) Difference analysis: Whether the cross-industry competition situation is conducive to the occurrence of improvisation and whether the results are significantly different is an Important research objective of this paper.

Literature review

Concept definition

1. Organizational improvisation

This paper refers to the description of organizational improvisation by Cunha(2003) and Leybourne(2006), which is defined as the act process of an enterprise's immediate reaction, immediate collaboration, intention creation, and resource integration when faced with a specific situation.

2. Top management team of transactive memory system

Top management team of transactive memory system (hereinafter referred to as "transactive system"), is an important cognitive factor contributing to the occurrence of improvisation (Zheng&Mai, 2013). The perception of volatile and changeable environment and strong competitive pressure of non-peers encourages enterprises to respond quickly to environmental changes in cross-industry competition situations, and becomes the guarantee for the top management team to make timely and accurate responses in the strategic decision-making process.

3. Organizational Memory

Organizational memory evolved from a series of concepts and studies proposed by sociology and psychology. Durkhetm (1895) In the field of sociology, the formation of organizational memory generally follows the following path: starting from social facts, forming collective consciousness, then collective memory, and finally becoming organizational memory. Organizational memory is the historical information of the enterprise, which occurred in the past but has an impact on the future, and the storage and transfer of organizational memory depends on personal memory and organizational environment. Organizational memory falls into two broad categories procedural memory and declarative memory.

4.Complementary assets

Complementary assets are the by-products produced in the development process of enterprises, and are also the additional assets required by enterprises to carry out innovative activities. In

1986, Teece proposed the concept of complementary assets for the first time in the PFI theoretical model. Complementary assets are usually affected by factors such as the enterprise scale, scholarship assets, industry experience, and research and development capabilities (Rothaermel&Thursby, 2005).

5. Cross-industry competition situation

Cross-industry competition, as the name implies, is that enterprises that are not engaged in this industry cross industry boundaries to join this field to compete. Definition of improvisation in terms of context: The conscious integration of the design of new solutions and implementation activities by decision makers/top management teams through timely identification of opportunities and challenges arising from the introduction of new technologies into the industry or high capital injection outside the industry.

Research method

Based on cross-industry competition, this paper studies the conditions and factors that induce the improvisation of enterprises. On the basis of theoretical analysis, the theoretical framework is constructed, the research hypothesis is proposed, and the data is analyzed through the literature analysis, the questionnaire survey, the empirical analysis, etc. Statistical software (such as SPSS26.0, AMOS24.0, Mplus8.0) is used in the process of data analysis to verify whether the hypothesis is valid.

Research hypothesis

1. Transactive systems positively influence organizational improvisation

In the top management team, the transactive memory system is usually needed to help team members quickly acquire and effectively integrate scholarship (Brandon& Hollingsh-EAD,2004). In the face of emergencies or non-peer competition, the top management team lacks readily available execution plans and needs to make immediate decisions according to specific situations , which is conducive to the trust, professionalism, and coordination of the top management team to quickly obtain these resources and integrate them to make immediate actions resolve or seize opportunities(Yoo & anawattanachai, 2001). Therefore, transactive systems enhance team members' creativity and spontaneity, search for technical scholarship in a wide range(Nevow &Wand,2005), experiment with fresh ideas or ways of working, and promote explorative improvisation(McKnight&Bontis, 2002). At the same time, it is also conducive to introducing existing products and services squeezed by non-peers into the local market to

improve supply efficiency of existing products and services and create feasible conditions for exploitative improvisation.

Based on this, the following theoretical hypotheses are proposed:

H1: The more mature the top management team of transactive memory system is, the more likely the enterprise is to engage in improvisation

H1a: The more mature the transactive system is, the more likely the enterprise is to engage in explorative improvisation

H1b: The more mature the transactive system, the more likely the enterprise is to carry out exploitative improvisation

2. Mediating effects of organizational memory

Various activities of enterprises involve a large amount of information, and the process of obtaining and reextracting this information depends on the bridge of declarative organizational memory, which is the memory related to facts, the personal memory and common interpretation of the members of the enterprise top management team, and the execution of decisions results are stored, forming precise and standardized methods for the enterprise. The transactive memory system can not only strengthen scholarship acquisition ability of the team, but also effectively enhance the declarative organizational memory, which improves the novelty and effectiveness of organizational improvisation, but reduces the speed (Lewis&Herndon,2011). Taking advantage of the new challenges brought by cross-industry competition helps to enhance creativity and carry out explorative improvisation to cope with market shocks and challenges.

Therefore, this paper proposes the following hypotheses:

H2: Organizational memory has a significant mediating effect between the top management team of transactive memory system and the enterprise's improvisation

H2a: Procedural organizational memory plays a mediating role in the top management team of transactive memory system affecting the process of exploitative improvisation

H2b: Declarative organizational memory plays a mediating role in the process that the top management team of transactive memory system influences explorative improvisation

3.The moderating effect of complementary assets

From the perspective of resources, improvisation cannot be separated from the support of resources. Explorative improvisation means searching for new resources, while exploitative improvisation means improving existing resources. For enterprises with sufficient complementary

assets, in the face of emergencies or opportunities, enterprises can effectively abbreviate the time for decision makers to refine organizational memory, and win a fuller time gap between planning and execution. It is clear that complementary assets and organizational memory complement each other in influencing improvisation. In addition, the clearer and more familiar an enterprise is with its past achievements or habits, the more ambiguous its cognition of the present will be. In addition, there are sufficient complementary assets that can be used to leverage, which may contribute to organizational rigidity and make the enterprise stay in the psychological comfort valve for a long time (Hopkins&Nightingale,2006). Organizational memory may cause to consider set and single-cycle learning, and will not take actions blindly. Enterprises will follow the principle of minimum cost and loss, and the influence of organizational memory on improvisation by virtue of complementary assets will be significantly weakened. Vice versa, it means that in order to cope with emergencies, complementary assets and organizational memory must meet one of the two conditions, suggesting that complementary assets have an impact on organizational memory and the occurrence of improvisation has a substitute role in specific situations. At this time, organizational memory, as a resource alternative for complementary assets, plays a more obvious role in improvisation.

Therefore, the following hypothesis is proposed in this paper:

H3: Complementary assets play a negative moderating role between organizational memory and improvisation. The more complementary assets a firm can leverage, the lower positive role of organizational memory in promoting firm improvisation, and vice versa

H3a: Complementary assets negatively between procedural organizational memory and exploitative improvisation

H3b: Complementary assets negatively between declarative organizational memory and explorative improvisation

4. The moderating effect of cross-industry competition situation

In the context of cross-industry competition, quite a few enterprises will take countermeasures to solve problems such as external threats, struggles with rivals, and insufficient internal resources and development space. These measures include improving their own strength and resources, adjusting the organizational structure and management mode of the enterprise and alter the mode of operation, or reducing costs.

The improvement of organizational memory not only depends on the top management team of transactive memory system to guide team members and members to trust each other and cooperate to encode, store, share and transfer scholarship in different fields, but also depends on the uncertain environment and situation, competitive pressure constraints and resource constraints faced by the enterprise. In the context of cross-industry competition, factors such as environmental uncertainty, outdated traditional technology, weak growth of enterprises and cognitive limitations make the survival and development of enterprises in the original industry face more urgent time pressure to cope with cross-industry competition (Li Tuo chen, 2018). Such time pressure comes from short-lived competition. In the face of the intrusion of non-peers, the professional of the transactive memory system provides a guarantee and solid platform for organizational memory, strengthens and deepens the atmosphere of mutual assistance and information interconnection among team members, enhances the stability and continuity of cooperation, facilitates scholarship, output sharing and integration, and continuously analyzes, duplicating and reproducing according to potential market demands. Provide the necessary context for the continuous strengthening of organizational memory (Malucellial.,2019); in addition, under the pressure of competition and time, the coordination degree of top management team of transactive memory system of the enterprise immediately integrates the scholarship, information and information of the hand side to respond immediately to the dynamic environment and external unexpected events, promote the task allocation and coordination, and promote

Team scholarship management stimulates and strengthens organizational memory, forming organizational practices, experiences and well-off materials (Moorman & Miner,1998).

Based on this, we propose the following reasonable hypothesis:

H4: Cross-industry competition situation plays a positive regulatory effect between the transactive memory system and organizational memory, that is, in the face of cross-industry competition situation, transactive memory system is more conducive to strengthening organizational memory

H4a: Cross-industry competition situation plays a positive regulatory effect between the transactive memory system and procedural organizational memory, that is, in the face of cross-industry competition situation, transactive memory system is more conducive to strengthening procedural organizational memory

H4b: Cross-industry competition situation plays a positive regulatory effect between the transactive memory system and declarative organizational memory, that is, in the face of cross-

industry competition situation, transactive memory system is more conducive to strengthening declarative organizational memory

5. The different analysis of improvisation in the context of cross-industry competition

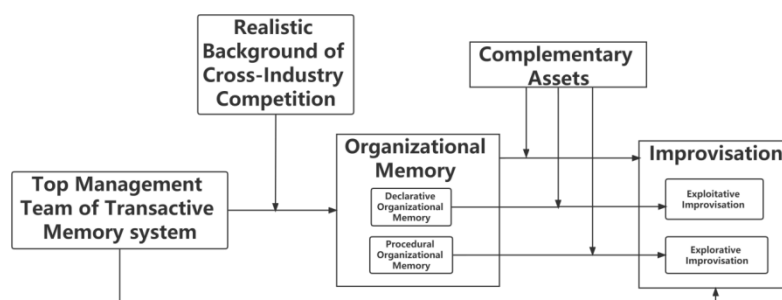
In China, some emerging industries due to the tilt of national policies, so that some enterprises can achieve great success and tremendous profits in a certain industry, so that other enterprises have a sense of crisis, and subsequently a threat to them. The emergence of these competitors has shifted the dwelling environment of traditional enterprises with price as the main means of competition and quality as the main means of competition, resulting in changes in the market structure and market relations between enterprises. Now that cross-industry competition enters, it intends that there are great differences between competitors, and enterprises require doing adjustments to existing products or services in a very transitory time. In the face of enterprises outside the industry suddenly enter the industry to compete with enterprises, enterprises must react and attack immediately. Numerous studies have represent that improvisation can help you respond effectively and quickly to sudden, dramatic changes in the environment and time constraints.

Based on this, we propose the following reasonable hypothesis:

H5: In the face of other enterprises entering the industry competition through cross-industry competition, compared with enterprises without cross-industry competition, improvisation is more subject to occur.

Therefore, the research model of this paper is shown in the figure below:

Figure 1 Research model



Research design

1. Measuring tool

All variable studies in this paper adopted Likert 7-degree scale to measure the maturity scale. Based on the quantitative and qualitative scale development method, the organizational

improvisation was measured from two dimensions of explorative improvisation and exploitative improvisation with 5 items each. The measurement of the top management team of transactive memory system refers to the scale developed by Lewis(2003), which measures the competitiveness of the transactive memory system of the team from three aspects: professionalism, credibility and coordination. To measure organizational memory, Miner&Moorman(1998) measured three items from each aspect of procedural organizational memory and declarative organizational memory, and examined the work flow, technical level, and scholarship of members within an enterprise. Measurement of complementary assets According to Christman(2000) and Sarkar et al. (2001), three items were used to measure specific complementary assets and two items were used to measure general complementary assets. Taking cross-industry competition as a nominal variable, this paper uses analysis of sample differences and statistical test to test whether enterprises face the significance of cross-industry competition difference (universal existence rather than accidental), and analyzes the moderating effect of cross-industry competition situation on improvisation.

2. Research sample

The research objects of this paper are registered enterprises in China. According to the "Seventh Five-Year Plan" of the fourth session of the sixth session of the National People's Congress in 1986, 760 enterprises in 13 provinces (involving Beijing, Shanghai, Hebei, Henan, Shandong and Sichuan provinces) with representatives were selected. The selected enterprises were required to fill in merely one questionnaire. When it comes to the industries to which the enterprises belong, this were likely to a variety of industries to ensure the validity of the research, and the attribution of the nature of the industry is divided according to the main line of business before the original cross-industry or change of industry. In terms of enterprise scale, this study covers various scales of grand, medium and micro to ensure the universality of the study. The questionnaire was officially issued from early February to early July 2023, which lasted 5 months. A total of 760 questionnaires were issued, a total of 619 questionnaires were recovered, and 543 valid questionnaires were obtained after deleting invalid questionnaires, with an effective recovery of 71.45%. The valid sample data met the requirements of empirical analysis.

Research result

Empirical analysis

1. Reliability and validity analysis

SPSS software was used to conduct explorative factor analysis on the scale, and the Cronbach's α coefficients of variable improvisation, transactive system, organizational memory, and complementary assets were 0.923, 0.893, 0.808, and 0.83, respectively, all reaching 0.8. Cronbach's α coefficients of each dimension of the variables were also above 0.7. At the same time, deletion of any item could not significantly improve Cronbach's α , indicating that the measurement results of each variable and dimension had high stability and consistency. The Cronbach's α coefficient of the total volume table is 0.956, which indicates that the total volume table has good reliability. The Bart's sphericity test results showed a high level of significance (Sig.=0.000). The KMO values of improvisation, transactive system, organizational memory, and complementary assets in each variable are all greater than 0.7; the KMO values of explorative improvisation and exploitative improvisation in related dimensions are also greater than 0.7; the KMO values of procedural organizational memory and declarative organizational memory are slightly lower, but close to 0.7. The Bart's sphericity test results of each variable and dimension were significant (Sig.=0.000). The common factors extracted in this paper have explanatory rate more than 50% for the variance of the original scale items, which is a high explanation energy, and preliminarily proves that this study has a good validity. Therefore, the scale designed in this paper has better reliability and validity, which can be further studied.

2. Correlation analysis

Table 1 Correlation coefficient matrix

	Improvisation	Explorative Improvisation	Exploitative Improvisation	transactive system	Organizationa l Memory	Procedural Organization al Memory	Declarative Organizational Memory	Compleme ntary Assets
Improvisation	1							
Explorative Improvisation	0.949**	1						
Exploitative Improvisation	0.956**	0.716**	1					
transactive system	0.757**	0.739**	0.705**	1				
Organizational Memory	0.618**	0.611**	0.568**	0.675**	1			
Procedural Organizational Memory	0.559**	0.546**	0.520**	0.602**	0.910**	1		

Declarative							
Organizational	0.564**	0.565**	0.512**	0.625**	0.907**	0.650**	1
Memory							
Complementary	0.726**	0.703**	0.682**	0.761**	0.622**	0.595**	0.534**
Assets							1

Note: n=543, ** in the 0.01 level (double-tailed), the correlation is significant.

The correlation analysis of each variable is carried out in Table 1, and the results of the correlation coefficient among each variable are summarized. It can be seen from the table that independent variables at each level are significantly correlated with improvisation at the 0.01 level, which is based in line with the above hypothesis. The preliminary judgment shows that there is some internal relationship between each variable, which is also in line with the above theoretical hypothesis. Further regression analysis can be performed for further verification.

Hypothesis testing

It can be seen from the correlation analysis that the correlation coefficient among some variables is high, so we conduct the multicollinearity test. With the improvisation as the dependent variable, the multicollinearity quiz was carried out for each independent variable. The variance expansion coefficient VIF of each variable is less than 3. In general, the criterion for adjudging this value is less than 5. This shows that there is no multicollinearity in the model. We use AMOS to add method factors to test common method bias. It can be seen from Table 2 that compared with the original M1, the standard residual root mean square (SRMR) of M2 model added with method factors decreased by 0.005, the Chi-square degree of freedom ratio (χ^2/DF) M1 of M2 decreased by 0.209, and the approximate root mean square error (RMSEA) also decreased slightly by 0.006. However, the fitting index (CFI) and non-normal fitting index (TLI) increased slightly, to 0.016 and 0.011 respectively, but they were both lower than the standard of 0.1 (Wen Zhonglin, Ye Baojuan, 2014) and did not exceed the threshold in sense, indicating that there was no serious common method in the questionnaire.

Table 2 Comparison of AMOS model before and after adding common method factor

Model	χ^2/DF	RMSEA	SRMR	CFI	TLI
M1	1.814	0.039	0.032	0.960	0.958
M2	1.605	0.033	0.027	0.976	0.969
Index change	-0.209	-0.006	-0.005	0.016	0.011

1. The role of transactive system in organizational improvisation

The regression analysis is carried out with organizational improvisation as the dependent variable and transactive system as the independent variable. For the purpose of research, gender, age, education level, years of work, the executive category, establishing time of company, scale of company, the industry category, and team size were added to the model as control variables. In Table 3, models M3, M5 and M7 represent the regression of control variables to improvisation, explorative improvisation and exploitative improvisation. transactive system variables are added to them, and models M4, M6 and M8 are obtained successively, showing that regression data can be found. The interaction system has a significant positive effect on improvisation ($\beta=0.820$), explorative improvisation ($\beta= 0.809$) and exploitive improvisation ($\beta= 0.831$). Control variables and explanatory variables can explain 57.2%, 54.5% and 49.7% variance of improvisation, explorative improvisation and exploitive improvisation, respectively. Assume that H1, H1a, and H1b are confirmed.

Table 3 Results of regression analysis between transactive memory system and improvisation

Variable	Improvisation		Explorative Improvisation		Exploitative Improvisation	
	M3	M4	M5	M6	M7	M8
Sex	0.074 (0.66)	-0.037 (-0.506)	0.125 (1.099)	0.015 (0.191)	0.023 (0.192)	-0.09 (-1.027)
Age	0.063 (0.697)	-0.023 (-0.375)	0.084 (0.913)	-0.001 (-0.012)	0.043 (0.433)	-0.044 (-0.625)
Educational Level	-0.021 (-0.542)	0.001 (0.045)	-0.015 (-0.389)	0.007 (0.247)	-0.027 (-0.633)	-0.004 (-0.142)
Working Years	-0.067 (-1.266)	-0.021 (-0.587)	-0.094 (-1.748)	-0.048 (-1.31)	-0.041 (-0.701)	0.007 (0.164)
Executive categories	0.023 (1.047)	0.015 (1.054)	0.025 (1.144)	0.017 (1.177)	0.02 (0.862)	0.013 (0.747)
Company Establishment Time	0.084* (2.697)	0.031 (1.517)	0.072 (2.271)	0.02 (0.908)	0.097 (2.847)	0.043 (1.771)
Enterprise Scale	0.02 (0.623)	0.026 (1.217)	0.014 (0.421)	0.02 (0.876)	0.027 (0.753)	0.033 (1.289)
Industry Category	-0.047 (-1.681)	-0.025 (-1.331)	-0.059 (-2.088)	-0.037 (-1.917)	-0.035 (-1.15)	-0.012 (-0.562)
Team Size	0.029 (0.716)	0.007 (0.246)	0.011 (0.268)	-0.011 (-0.399)	0.047 (1.066)	0.024 (0.77)
Transactive System		0.820***		0.809***		0.831***

		(26.37)		(24.934)		(22.678)
R ²	0.03	0.58	0.031	0.553	0.028	0.012
Adjusted R ²	0.014	0.572	0.014	0.545	0.506	0.497
Value of F	1.858	73.386	1.883	65.839	1.732	54.491

Note: "()" is the T value: ***, **, * represents a significant correlation at the level of 0.1%, 1%, 5%, respectively.

2. Mediating effects of organizational memory

Table 4 Test of mediation effects of organizational memory and different types of organizational memory

Intermediate Variable	Direct Effect	Effect	se	t	p值	LLCI	ULCI
Organizational Memory	Transactive System → Improvisation	0.6819	0.0406	16.7882	0.000	0.6021	0.7616
Procedural Organizational Memory	Transactive System → Exploitative Improvisation	0.7303	0.0447	16.3239	0.000	0.6425	0.8182
Declarative Organizational Memory	Transactive System → Explorative	0.6996	0.0403	17.3795	0.000	0.6205	0.7787
	Indirect Effect	Effect	BootSE	BootLLCI	BootULCI		
Organizational Memory	Transactive System → Improvisation	0.1453	0.0324	0.0837	0.2101		
Procedural Organizational Memory	Transactive System → Exploitative	0.1075	0.0329	0.0445	0.1738		
Declarative Organizational Memory	Transactive system → Explorative	0.1169	0.0287	0.0608	0.1726		

Note: The Bootstrap sample size is 5000 and the confidence interval is lay to 95%.

This paper mainly considers the influence of organizational memory and complementary assets on resource factors. Organizational memory and two dimensions are used as intermediary variables to analyze the influence relationship between transactive memory system, improvisation and binary improvisation, and the control variables are included in the regression model for regression.

The overall direct effect coefficient of organizational memory between transactive memory system and improvisation was $ab=0.0406$, $p<0.001$, and the 95%Bootstrap confidence interval for

deviation correction and improvement was $[0.6021, 0.7616]$, excluding zero, indicating that the overall direct effect was significant. The indirect effect coefficient $\text{BootSE}=0.0324$, and the 95% Bootstrap confidence interval for deviation correction and improvement was $[0.0837, 0.2101]$, excluding zero, indicating that the indirect effect was also significant. Thus, hypothesis H2 is verified. Similarly, the deviation correction and improvement of 95% Bootstrap confidence interval between procedural organizational memory and transactive memory system and explorative improvisation between declarative organizational memory and transactive memory system did not include zero. Hypothesis H2a and H2b were also verified.

3. The regulatory effect of complementary assets

In the process of measuring moderating variables, this paper takes improvisation as the dependent variable, introduces control variables, independent variables organizational memory and complementary assets for centralization, and adds the interaction term of organizational memory and complementary asset variables for the regression analysis, as shown in model M9-M14 in Table 5. The results showed that the interaction terms of organizational memory and complementary assets ($\beta=-0.053$, $p=0.048<0.05$) had a negative influence effect on explorative improvisation, that is, complementary assets had a negative effect on organizational memory ($\beta=0.198$, $p<0.001$) and improvisation ($\beta=0.558$, $p<0.001$) was significant at the 5% level, but reversed. Therefore, hypothesis H3 of this study is valid. Furthermore, complementary assets ($\beta=0.562$, $p<0.001$) had a significant, but reverse, moderating effect on procedural organizational memory ($\beta=0.197$, $p<0.001$) and exploitative improvisation at 5% level. The effect of complementary assets on procedural organizational memory and exploitative improvisation would weaken with the abundance of complementary assets. It shows that procedural organizational memory and complementary assets are mutually substituted to a certain extent. Therefore, hypothesis H3a of this study is valid. Finally, the interaction terms of declarative organizational memory and complementary assets ($\beta=-0.034$, $p=0.229>0.05$) had no significant effect on explorative improvisation. In other words, complementary assets had no significant moderating effect on declarative organizational memory ($\beta=0.199$, $p<0.001$) and explorative improvisation ($\beta=0.554$, $p<0.001$). Therefore, the hypothesis H3b in this paper is not valid, that is, the relationship between complementary assets, declarative organizational memory and explorative improvisation can complement and promote each other without obvious inhibition.

Introducing complementary assets in cross-industry competitive situations can lead to new investment opportunities and experiences that drive and enrich the content of declarative organizational memory. At the same time, through explorative improvisation, the top management team can flexibly and creatively apply existing scholarship and experience, as well as exploring new methods and strategies to further expand and optimize the response to emergencies. Therefore, the inverse moderating effect of complementary assets on declarative organizational memory and explorative improvisation is not necessarily significant, and the specific effect may depend on the cognitive and behavioral characteristics of the top management team, as well as the specific business environment and context. In practice, companies can achieve better improvisation through the flexible use of complementary assets and the active interaction and adjustment of declarative organizational memory and explorative improvisation.

Table 5 Test of the moderating effect of organizational memory and its dimensions

Variable	Improvisation		Explorative Improvisation		Exploitative Improvisation	
	M9	M10	M11	M12	M13	M174
Complementary assets	0.567*** (16.162)	0.558*** (15.815)	0.560*** (15.352)	0.554*** (15.074)	0.574*** (14.019)	0.562*** (13.658)
Organizational Memory	0.210*** (5.736)	0.198*** (5.366)				
Procedural Organizational Memory					0.213*** (4.982)	0.197*** (4.571)
Declarative Organizational Memory			0.207*** (5.442)	0.199*** (5.185)		
Interaction Terms for Organizational Memory		-0.053* (-1.982)				
Interaction Terms for Declarative Organizational Memory				-0.034 (-1.205)		
Interaction Terms for Procedural Organizational Memory						-0.072* (-2.323)
R ²	0.548	0.551	0.523	0.524	0.478	0.483
Adjusted R ²	0.539	0.542	0.514	0.514	0.468	0.473
Value of F	64.432	59.255	58.255	53.136	48.741	45.167

Note: "()" is the T value: ***, **, * represents a significant correlation at the level of 0.1%, 1%, 5%, respectively.

4. The moderating effect of cross-industry competition situation

The results in Table 6 show that the interaction terms between the transactive system and the cross-industry competition situation ($\beta=0.163$, $p=0.005<0.01$) have a significant effect on organizational memory at the 1% level. The interaction terms ($\beta=0.167$, $p=0.020<0.05$) between transactive system and cross-industry competition situation had significant effects on organizational memory at 5% level. The interaction terms ($\beta=0.160$, $p=0.015<0.05$) between transactive system and cross-industry competition situation had significant effects on organizational memory at 5% level. In other words, cross-industry competition situations positively regulate the impact of the transactive system on organizational memory, declarative organizational memory, and procedural organizational memory. Therefore, the hypotheses H4, H4a and H4b in this paper are valid.

Table 6 Test of the regulatory effect of cross-industry competition

Variable	Organizational Memory		Procedural		Declarative	
	M15	M16	Organizational Memory M17	M18	Organizational Memory M19	M20
Transactive Memory System	0.597*** (16.251)	0.484*** (8.896)	0.605*** (13.28)	0.488*** (7.225)	0.592*** (14.222)	0.481*** (7.79)
Cross-Industry Competitive Situations	-0.04 (-0.695)	-0.16* (-2.23)	-0.065 (-0.897)	-0.187* (-2.107)	-0.024 (-0.369)	-0.141* (-1.738)
Interaction Terms for Transactive Memory System*Cross-Industry		0.163** (2.827)		0.167* (2.341)		0.160* (2.442)
R ²	0.375	0.385	0.285	0.292	0.303	0.309
Adjusted R ²	0.363	0.371	0.27	0.276	0.289	0.294
Value of F	29.293	27.868	19.391	18.381	21.953	20.687

Note: "()" is the T value: ***, **, * represents a significant correlation at the level of 0.1%, 1%, 5%, respectively.

5. The difference analysis of cross-industry competition situation

In terms of research variables, whether improvisation is carried out under cross-industry competition and whether there are differences between different types of improvisation, we use ANOVA to test. At the significance level of 0.01, the P-values of one-way ANOVA is all less than 0.01, that is, there are significant differences between improvisation, explorative improvisation and exploitative improvisation in cross-industry competition situations. Because the difference is due to the mean.

Discuss

In this paper, 543 registered enterprises in China are investigated, and the following conclusions are obtained through empirical research:

1. The top management team of transactive memory system plays an important role in promoting improvisation, explorative improvisation and exploitative improvisation.
2. Organizational memory has a partial mediating effect between the top management team of transactive memory system and improvisation;
3. Complementary assets negatively regulate the influence between organizational memory and improvisation;
4. Cross-industry competition situation positively moderates the influence of top management team of transactive memory system and organizational memory;
5. In the context of cross-industry competition, enterprises are more likely to respond to emergencies by improvisation.

Summary and Suggestion

1. The top management team of transactive memory system can effectively promote improvisation. Top managers should be fully aware of the importance of constructing the top management team of transactive memory system. In order to carry out organizational improvisation effectively, it is necessary to strengthen the construction of top management team of transactive memory system. A good top management team should have a reasonable scholarship structure and pay attention to those with differentiated and complementary expertise when selecting members. At the same time, in the process of team operation, it is necessary to fully promote the communication among the members of the top management team, establish mutual trust and cooperative relations, and strengthen the coordination and cooperation ability of the team as a whole. This study verifies the important role of the transactive memory system, fully affirms the practical value of the complete transactive memory system, provides an important theoretical reference for enterprises that are or will be facing crises or opportunities at any time, provides new ideas for enterprises to realize survival and development, and points out the direction for enterprises to maintain core competitiveness under the new business model.

2. This paper clarifies the important role of organizational memory and provides effective theoretical support for the improvisation of enterprises. In the process of dealing with emergencies, enterprises must recognize the important role of organizational memory.

Organizational memory is separated into procedural organizational memory and declarative organizational memory. Procedural organizational memory affects the occurrence of improvisation, while declarative organizational memory affects the degree of improvisation. The mediating role of organizational memory in the transactive memory system suggests that while improving the transactive memory system, organizational memory will be strengthened to help enterprises reduce the influence of changing environment. Encourage companies to react quickly to the environment and improvise. Those who pay attention to the "internal and external repair" of the resilient enterprises will be more actively concerned about the overall situation and evolution of the industry and the market, in addition to early warning of possible problems, you can also try to "leverage the force", through the use of external professional forces, quickly open up technical and resource barriers, to make up for their own resources and capabilities of the vacancy. Therefore, this study provides effective theoretical support for enterprises in the new era of business environment.

This paper analyzes the influence of complementary assets on improvisation. Thus, it can be seen that complementary assets, organizational memory and procedural organizational memory play an alternative role for a certain extent, which helps enterprises accumulate and allocate different resources in a changing environment, carry out different types of improvisation, and reduce erroneous decisions or excessive improvisation. In addition, considering the cross-industry competition situation and comparing enterprises with or without cross-industry competition situation, the difference analysis is made, and it is found that enterprises' improvisation is indeed more likely to occur in cross-industry competition situation, which has directive significance for enterprises facing cross-industry competition situation to carry out improvisation. At the same time, cross-industry competition has a positive moderating effect on both transactive memory system and organizational improvisation. Therefore, this study is helpful for the managers of enterprises under the background of cross-industry competition or enterprises preparing to enter other industries to carry out improvisation.

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