

Empirical Study of Knowledge Management Influence on SMEs Dynamic Capabilities Promotion

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Abstract—Knowledge management is an important angle for understanding and revealing the formation and improvement mechanism of dynamic capabilities. Based on absorptive capability theory and organizational learning theory, this paper investigated 177 enterprises to empirically analyze the influence of knowledge management on SMEs dynamic capabilities improvement by synthesizing contents and process of knowledge with the attempt to reveal black-box of SMEs' dynamic capabilities formation in Chinese content and explore the applicability of understanding dynamic capabilities micro-mechanism in Chinese SMEs. The results show that knowledge management activities could improve dynamic capabilities effectively and 4 dimensions impacted in different degree. It also shows that knowledge internalization influence most on SMEs dynamic capabilities.

Keywords—SMEs; knowledge management; dynamic capabilities; influence

I. INTRODUCTION

Enterprises' dynamic capabilities make themselves adapt to complex environment [1-3], which is important for corporations in the drastically marketable competition. Relevant literatures have revealed that corporations could get profit from dynamic abilities development [4-5]. In the process of dynamic abilities construction, the conversion of knowledge plays a very important role [4]. However, based on the viewpoint of knowledge, the learning behavior of the lay of corporation is emphasized instead of the link between knowledge and ability.

SMEs are the basic power to promote development of national economy, construction of market economy principal and social stabilization. But, SMEs in China generally are faced with severe challenge of lacking of competitive competence and competitive advantages [6]. Because of the burgeoning market of current economy transition, developing at top speed of all walks of life, changing industrial policy and global industrial division, SMEs pressingly need to explore building path of dynamic capabilities fitting for themselves' features, which makes the studying of dynamic capabilities of SMEs become more urgent. According to above, what is

the available discussed problem is whether the knowledge management will affect SMEs promotion in the dynamic capabilities? How do the different dimensions affect dynamic abilities of SMEs? In brief, this paper tested the relationship between knowledge management and dynamic capabilities.

II. STUDY DESIGNATION

Based on relevant literatures, we divided SMEs' knowledge management into four links: knowledge assimilation, knowledge development, knowledge innovation and knowledge internalization. Therefore, this paper came up with hypothesis of relationship between knowledge management and dynamic capabilities as follow:

H : Knowledge management has the obviously positive effect on promotion of corporation dynamic capabilities.

Ha : Knowledge assimilation has the obviously positive effect on promotion of corporation dynamic capabilities.

Hb : Knowledge development has the obviously positive effect on promotion of corporation dynamic capabilities.

Hc : Knowledge innovation has the obviously positive effect on promotion of corporation dynamic capabilities.

Hd : Knowledge internalization has the obviously positive effect on promotion of corporation dynamic capabilities.

A. Measurement of SMEs Knowledge Management

According to the analysis of corporation dynamic capabilities ahead of essay, combining with SMEs features in china, this paper divided knowledge management into four dimensionalities: knowledge assimilation, knowledge development, knowledge innovation and knowledge internalization. Each of them can be showed in table 1. This paper used achievements of Chin-Yen Lin, Tsung-Hsien Kuo(2007) and so on, detailing the four dimensionalities into eighteen subjects [19].

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TABLE I. MEASURE DIMENSIONALITY OF SMEs' KNOWLEDGE MANAGEMENT

Variable	Dimension	Explain Dimension
Knowledge Management	Knowledge Accumulation	Corporations absorbed needing knowledge and information from outside.
	Knowledge Development	Members of organization be able to share and transfer knowledge between internal and external in some ways.
	Knowledge Innovation	Members of organization can create new knowledge and new skills on some level.
	Knowledge Internalization	The degree of organization able to absorb new knowledge internally, applications and forms of practice.

B. Measurement of SMEs Dynamic capabilities

With the development of dimensionality and measurable tools, He Xiaogang, Li Chun defined chinese corporation dynamic capabilities as: market potential, organization reform, organization study, organization flexibility and strategy isolation. From essential connotation of dynamic capabilities [20], Li Xingwang inclined to measure corporation dynamic capabilities by sensitive ability, resource integration and attribution ability as well as value chain integration and attribution ability [21]. Chen Yuhan and Chen Xinkang think we can divide dynamic capabilities into three dimensionality as: market orientation, social net ability and resource reconstitution, then which can identify importance between sale marketing effect and consumer asset and find the internal uniformity between marketing intelligence and client response [22].

This essay divides dynamic capabilities into five dimensionalities as: environment perception ability, resource assimilation ability, interior integration ability, innovation application ability and reconstructed ability. The connotation of every one is showed in table 2.

C. Questionnaire and Data Collection

TABLE II. MEASURE DIMENSIONALITY OF SMEs' DYNAMIC CAPABILITY

Variable	Dimension	Explain Dimension
Dynamic Capability	Environment Perception Ability	The enterprise's responding to the change of the macroeconomic environment, market demand and internal environment.
	Resource Assimilation Capability	Enterprise identify information from an external source, select and absorption of beneficial knowledge, and digest them in the organization.
	Interior Integration Capability	The capacity of reallocate various resources, reconstruct old and new knowledge and information within the enterprise.
	Innovation Application Ability	The ability to apply knowledge creatively or in a pioneering way, to explore new technologies or processes, and ultimately commercialize the innovative results.
	Reconstructed change ability	The ability to internalize new resources or processes as behavioral conventions, to re-construct the asset potential and to organize the structure of enterprise

The questionnaire about research synthesized giving out on the spot, the mean of e-mail and net investigation on line. Given out 220 questionnaires in Kunming, Beijing, Chengdu and Chongqing, we took back 200 ones. The recycle rate reaches to 90.91%, there are 177 effective questionnaires and also reaching to 88.5%.The reason about invalid questionnaires is samples can't meet the criterion of SMEs and the rate of filling ones is lower than 95%.

III. STATISTICS ANALYSIS AND RESULTS

A. Reliability Analysis

In the attitude quantification of Li Kete, we used e Cronbach's α to measure reliability. Usually, if α is greater than 0.7,we will know the reliability can be shown, what if α hovers between 0.5 to 0.7 also is ok. In this research, when α reach to 0.7, we can identify it is reliable. This essay use SPSS16.0 to investigate reliability of three facets as organization study, knowledge management and dynamic capabilities.

B. Validity Analysis

The essay adopted factor analysis to detect identification and use combination reliability and average variations to do so. From previous research, when average variation is more than 0.5 is ok, the CR must beyond 0.7.

Validity Detection of Knowledge Management. KMO is more than 0.920, above of 0.5, which can do the further element analysis. Bartlett's Test of Sphericity is less than 0.001. Therefore, we can do analysis of every dimension. At the same time, we can find every dimensionality is able to aggregate one category, and the load of every element is more than 0.7. Both CR and AVE also reach to the lowest acceptability, which is to explain there are high validity of this study form.

Validity Analysis of Dynamic capabilities. KMO is 0.918, which is above of general 0.6.As a result, this is fit for factor analysis. The data of Bartlett's Test of Sphericity is under 0.001 Therefore, every dimension is analyzed about main elements. At the same time, we can get that all kinds of dimensions of dynamic capabilities is going to aggregate, each other of which is more than 0.7.We can calculate CR and AVE reaching to the lowest level as 0.7 or 0.5 by factor load, which can explain the high validity.

C. Analysis of Correlation

This research elicits that the relationship among organization study, knowledge management and dynamic capabilities of corporation is very intimated by dependency analysis of every dimensions specific results as follow as table 3.

TABLE III. CORRELATION ANALYSIS OF ORGANIZATION STUDY, KNOWLEDGE MANAGEMENT AND DYNAMIC CAPABILITY

		Knowledge Management	Dynamic Capability
Knowledge Management	Pearson Correlation	1	0.891**
	Sig. (2-tailed)		0.000
	N	167	167
	<hr/>		
Dynamic Capability	Pearson Correlation	0.891**	1
	Sig. (2-tailed)	0.000	
	N	167	167
	<hr/>		

D. Some Common Mistakes Analysis of Regression

- Regression Analysis of Knowledge Management and Dynamic capabilities.

According to the analysis results, we can find knowledge management had the positive effect on corporation dynamic capabilities. After adjustment R is 0.693 and has high degree of matching. At the same time, we also find the regression coefficient of management to dynamic capabilities is 0.947. If the result is obvious, we will find hypothesis H in this essay is tenable.

TABLE IV. KNOWLEDGE MANAGEMENT MULTIPLE LINEAR REGRESSION ANALYSIS 1

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.872 ^a	.760	.749	.33910

a. Predictors: (Constant), Knowledge Internalization, Knowledge Accumulation, Knowledge Development, Knowledge Innovation.

According to result of table 4, the adjusting R equal to 0.749, which can explain 75% of all the variate. That is to say degree of regression is high.

TABLE V. KNOWLEDGE MANAGEMENT MULTIPLE LINEAR REGRESSION ANALYSIS 2

Model	Coefficients ^a		t	Sig.	
	Unstandardized Coefficients	Standardized Coefficients			
(Constant)	1.004	.233			
	B	Std. Error	Beta	t	Sig.
Knowledge Accumulation	0.177	0.075	0.184	2.363	0.020
Knowledge Development	0.159	0.068	0.182	2.344	0.021
Knowledge Innovation	.221	.085	.235	2.608	.011
Knowledge Internalization	.406	.082	.399	4.972	.000

a. Dependent Variable: Dynamic Capability

According to result of table 5: it is obvious that knowledge assimilation have the regression result to dynamic capabilities, non-standardized coefficient is 0.177, sig is 0.020 that is lower than 0.05, which can explain assumption Ha is founding. In the similar way, it is also obvious that knowledge management and other three second dimensions has the regression result to dynamic capabilities, explaining Hb, Hc, Hd are tenable. At the same time, through our survey, we have found that it was the least obvious that knowledge development had the effect on corporation dynamic capabilities and knowledge internalization affected corporation dynamic capabilities in the most degree.

- Analysis of Demonstration Result.

Demonstration explained that H is tenable, that is to say, knowledge management can effectively promote dynamic capabilities. At the same time, all kinds of dimensions of knowledge management have the positive effect on dynamic capabilities. Corporation has the stronger initial assimilation ability, the more links they will have and the higher degree of opening information. Therefore, the promotion of corporation's survey ability is good at taking the foundation to dynamic capabilities development (assumption Ha is founded). After that, corporations assimilate more and more information and have a high level of knowledge development, which make corporations to understand and adopt knowledge originally and integrate and arrange knowledge and other resource to meet their own needs (assumption Hb is founded). The more knowledge innovation in the corporation, the more production quantity of new knowledge and new technology. It can keep corporation has sustainable ability of innovation and production, making corporation to acquire unique competitive advantages in the mark (assumption Hc is founded); Finally, knowledge internalization can promote the change of internal process and organizational behavior and continue knowledge management activities, as a result, supporting a sustainable help to dynamic capabilities of corporation (assumption Hd is founded).

IV. CONCLUSION

The result of research has revealed that all kinds of knowledge management activities had a positive effect on SMEs dynamic capabilities, having an important practical function on nourishment and promotion of SMEs dynamic capabilities. SMEs need to open up many channels to introduce and propagate knowledge, such as laboratory in colleges and universities, research institute, government and other positive resources, all of which can be used to promote the level of knowledge assimilation. We should courage stuffs into developing and innovating knowledge. As a result, these can be transferred into out matching knowledge of our jobs, promote understanding degree of knowledge. By the means of knowledge internalization, we can promote corporation business ability, optimize organization conventions. In a word, four kinds of knowledge activities are able to effectively promote dynamic capabilities of corporation together.

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