The Impact of Building a Learning Organization on Firm Performance: An Empirical Analysis Based on Software Company in Shanghai Pudong Software Park in China

YAO Huili[a],*; WANG Shanshan[b]; MA Yanping[b]

[a] Professor, Ph.D., School of Economics and management, Jiangsu University of Science and technology, Zhenjiang Jiangsu 212003, China. Research direction is the learning organization.
[b] School of Economics and management, Jiangsu University of Science and technology, Zhenjiang Jiangsu 212003, China.
* Corresponding Author.

Abstract

Collecting three hundred and twenty-six valid questionnaires data, the article selected twenty-five software enterprises in Shanghai Pudong Software Park as the subjects of the survey questionnaire, demonstrated the linkage mechanism of building a learning organization and business performance, and constructed a correlation model between them. The study not only extends the theoretical research the building of learning organization on firm performance, but also provides practical guidance through the construction of a learning organization improving business performance for China's software enterprises, especially that learning and innovation have significant impact on performance, and culture and leadership have relative influence on non-financial indexes.

Key words: Learning organization; Learning; Culture; Innovation; Leadership; Financial indicators; Non-financial indicators

INTRODUCTION

As Degeus said the only sustainable competitive advantage perhaps is the ability of learning faster than competitors. As a corporate strategic decision, learning enhances the overall strength and is able to bring the enterprise sustainable competitive advantage from the perspective of the learning organization. It is maybe an effective way that the enterprises, especially software enterprises, can build a learning organization to improve business performance, facing with such a competitive market environment.

Professor Jay Forrester in MIT presented the initial concept of the learning organization and pointed out that the most successful companies will be learning enterprise in the future. Peter M Senge proposed the fifth discipline model, Garvin (1993) put forward five process model, Watkins and Marsick (1993) indicated the model of seven conduct, Redding pointed the fourth model, Paul Woolner proposed the five-stage model towards the learning organization and Michael J. Marquardt put forward five subsystems of the learning organization. Michael J. Marquardt proposed the five system model from learning, organizational, personnel, knowledge and technology which constituted the dimensions of a learning organization. Robert Kaplan and David Norton put forward organizational performance measure that includes financial and non-financial evaluation, which exceeds traditional financial metrics-based evaluation model. Based on the analysis in the literature of Marquardt and Marsick, and combining with the characteristics of software enterprises that technology is update so quickly and knowledge-intensive, the article divides the learning organization into four dimensions including learning, culture, innovation and leadership and conduct performance evaluation from the financial aspect and non-financial indicators aspect. Finally, using structural equation modeling, the article analyses the correlation between those factors.

1. THEORY AND HYPOTHESE

The study of Baiyin Yang, Karen E Watkins and Victoria J. Marsick is worth learning that they established a link between the learning organization activities and business performance using empirical methods for the first time. Learning from five models of Marquardt and Marsick's empirical study of the learning organization and enterprise performance, the article proposed the model of learning organizations that dimensions of learning, culture, innovation and leadership, and the impact on firm performance, dimensions of financial performance and non-financial performance.

1.1 Learning Dimension and Financial Indicators

Raduan Che Rose and Naresh Kumar demonstrated the organization's learning on organizational commitment, job satisfaction and job performance, and noted that learning play an important role in improving the financial performance of enterprises. Based on this, this paper put forward the following hypothesis.

H1: Learning dimension of the enterprise has a positive impact on financial indicators.

1.2 Cultural Dimension and Financial Indicators

Miha and Mojca (2006) pointed out that the organization's learning culture play a positive influence in improving the financial performance in a non-direct way. Therefore, this article proposes the following hypothesis.

H2: A Culture dimension of the enterprise has a positive impact on financial indicators.

1.3 Innovation Dimension and Financial Indicators

Orhan and Hakan (2006) noted that organization's ability to learn has a positive impact on the innovative capability, while the learning ability of the enterprise has a positive impact on financial performance. This article assumes that innovation capability of enterprises have correlation with financial performance relationship.

H3: Innovation dimension of the enterprise has a positive impact on financial indicators.

1.4 Leadership Dimension and Financial Indicators

Through empirical analysis of 100 companies, Nont Sahaya noted that a positive correlation exists between financial performance and leader style. Based on the above theory, the article put forward the following hypothesis.

H4: Leadership dimension of the enterprise has a positive impact on financial indicators.

1.5 Learning Dimension and Non-Financial Indicators

Raduan Che Rose and Naresh Kuma (2011) demonstrated the organization's learning on organizational commitment, job satisfaction and job performance and noted that learning play an important influence in the enterprise employee satisfaction. The following assumption is proposed.

H5: Learning dimension of the enterprise has a positive impact on non-financial indicators.

1.6 Culture Dimension and Non-Financial Indicators

Hsu Hsiu-Yen demonstrated organizational learning culture's influence on job satisfaction, organizational commitment, and turnover intention among R&D professionals in Taiwan during an economic downturn. The following assumption is proposed.

H6: Culture dimension of the enterprise has a positive impact on non-financial indicators

1.7 Innovation Dimension and Non-Financial Indicators

Daniel and Raquel (2011) demonstrated the relationships about innovation, organizational learning and learning and growing of corporate employees, and pointed out the interaction between them. As the Important criterion of corporate non-financial indicators, we have reason to believe that the innovation ability have a positive impact on the learning and growth of employees. Therefore, the following hypothesis is proposed.

H7: Innovation dimension of the enterprise has a positive impact on non-financial indicators.

1.8 Leadership Dimension and Non-Financial Indicators

WANG and Tsui (2011) carried out empirical studies among CEO's leadership, organizational performance and employee behavior and attitudes. Mehtap and Cemal Zehir pointed out that the learning organization is the mediation of leader style and organizational performance. This article proposes the following hypothesis.

H8: Leadership dimension of the enterprise has a positive impact on non-financial indicators.

Basis of the above assumptions, the article put forward conceptual model shown below.
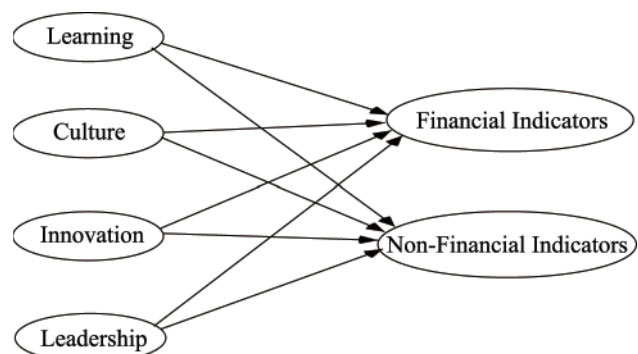
Figure1
Theoretical Models and Hypotheses

2. RESEARCH DESIGN

The study used SPSS19.0 and Amos17.0 making statistical analysis and according to the results draw relevant conclusions. As the world-class software industry innovation park, Shanghai Pudong Software Park is typical of Chinese software. Settled in the Shanghai Pudong Software Park are typical representative of Chinese software companies.

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2.1 Questionnaire Design and Pre-survey

Questionnaire design draws preliminary field interviews and literature, combining the characteristics of software enterprises, and the researchers consulted the views of the teachers' opinions. The first part of the questionnaire is respondents' basic information; the second part is the subjective questions about activities to build a learning organization and performance, which are used Likert 5 scale scoring.

2.2 Sample Selection and Variable Measurement

Companies settled in Shanghai Pudong Software Park before 2008, are selected which the registered capital of 2 million yuan or more, and the number of employees in the 50 to 150. The study distributed three hundred and fifty questionnaires of which 326 are valid questionnaires, and the response rate was 93%. Main variables are from mature scale in the literature. The Scale is modified according to the characteristics of the study and the software companies.

2.3 Reliability Analysis and Validity Analysis

In this study, Cronbach α is used to test reliability. As we can see from Table 1, the Cronbach α of those factors are in 0.75 to 0.9, which are in acceptable level. Therefore, Scale used in this study has good reliability.

The study adopt confirmatory factor analysis method to judge, which means calculate the average variance extracted volume (Average Variance Extracted, AVE) and composite reliability (CR). If the value of AVE was greater than or equal 0.5, and the CR value greater than 0.7, the polymerization of the measurement results were better (Podsakoff *et al.*, 1997; Eid, 2000; Borsboom *et al.*, 2004). While, we can see from Table 2, the fitting of various indicators is better. At the same time CR values were greater than 0.7, AVE is greater than 0.5, indicating that scale has good convergent validity.

3. RESULT ANALYSIS

3.1 Correlation Analysis

Table 1
Results of Factor Analysis

Observed variables	Learning	Culture	Innovation	Leadership	Financial indicators	Non-financial indicators	CR[a]	AVE[b]
s1	0.860							
s2	0.921						0.931	0.770
s3	0.836							
s4	0.891							
c1		0.824						
c2		0.856					0.907	0.710
c3		0.871						
c4		0.818						
i1			0.782					
i2			0.826				0.871	0.627
i3			0.812					
i4			0.746					
l1				0.787				
l2				0.814			0.883	0.654
l3				0.782				
l4				0.851				
f1					0.849			
f2					0.686		0.768	0.529
f3					0.629			
o1						0.798		
o2						0.841	0.818	0.602
o3						0.680		

[a] Represent composite reliability; [b] Represent the average variance extracted amount.

From the results of factor analysis, we can see that learning, culture, innovation, leadership and financial indicators and non-financial indicators demonstrate correlation in different degrees and is significant positive correlation.

3.2 Hypothesis Testing

Table 2 shows the estimation results of path parameter in SEM, reflecting the direct impact on the relationship of structural variables. Except the path coefficients of culture on financial indicators and non-financial indicators and the path coefficients of innovation on financial indicators, other path coefficients are significant. The possible explanations are as follows. The impact of culture on organizational performance is indirect and long-term, but the collected data was involving one-year, so from the vertical perspective, the time span is not long enough. Software companies in China generally face the lack of innovation capacity, which is the main reason that the impact is not significant.

Table 2
The Estimation Results of Path Parameter in SEM

Path	Standardized Coefficientcoefficient coefficient	Unstandardized Coefficient	t
Learning→financial indicators	0.61	0.61	4.28***
Culture→financial indicators	- 0.11	- 0.15	-0.55
Innovation→financial indicators	- 0.22	- 0.27	-1.14
Leadership→financial indicators	0.45	0.52	2.47*
Learning→non-financial indicators	0.35	0.34	2.98**
Culture→non-financial indicators	- 0.20	- 0.17	-1.17
Innovation→non-financial indicators	0.42	0.49	2.40*
Leadership→non-financial indicators	0.34	0.38	2.17*

Note: * $P<0.05$; ** $P<0.01$; *** $P<0.001$.

In addition, the researchers also used the overall model fit (overall model fit) for verifying the theoretical model proposed in the text. The fitting indexes are as shown in Table 3.

Table 3
Goodness Fit of Structural Model

Statistics	x^2/df	GFI	NFI	TLI	CFI	RMSEA
Adaptation criteria (critical value)	(1,3)	>0.90	>0.90	>0.90	>0.90	<0.08
The calculated data	1.44	0.81	0.85	0.94	0.95	0.06

GFI is Goodness Fit Index, NFI is Normal Fit Index, CFI is Comparative Fit Index. These index values are larger, the Model fits of the data are better. RMSEA is Root Mean Error of Approximation. The index value is smaller, the model fit is better. The results show that the indicators have reached an acceptable level, illustrating that the overall model fit is better.

CONCLUSION

On the basis of these theories, the text proposed to build a learning organization with dimensions of learning, culture, innovation and leadership which can explain learning organizations at all levels of the system. The article draws the following conclusions. In particular, learning is an important driver affecting corporate financial performance and non-financial performance. According to the present situation of lack of innovation capacity in China's software enterprises, we put the innovation dimension into learning organization building model and validated the impact on the non-financial performance from an empirical perspective.

From the empirical study in this text, learning dimension has the most significant impact on firm performance, so in the gradual development process of a learning organization, enhancing the concept of study and work and work-based learning can promote commencement of the activity. An positive, innovative, willing to face the difficulties and of solidarity culture can lay solid foundation for the development of enterprises, firms do not disregard because it cannot bring recent financial performance and long-term corporate performance. Innovation has been the soft underbelly of China's software enterprises, so in the process of carrying out the building a learning organization, software enterprises pay particular attention to it. "A well-developed business needs an excellent helm is the height summary of the leadership in the enterprise development process as the leading and exemplary role.

The inadequacies of this article are as follows. Firstly, the sample size is so relatively small that is applicable within a smaller area. Random sampling with more diverse organizations is needed to validate the effectiveness. Secondly, the criterion variables (that is, non-financial

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performance) used to establish nomological validity in this study was assessed based on the respondents' perceptions.

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