ISSN 1726-5479

SENSORS & TRANSDUCERS

11 vol. 16 Special /12

Intelligent Data Acquisition and Information Process Technologies and Their Applications

International Frequency Sensor Association Publishing

IFSA

Sensors & Transducers

Volume 16, Special Issue
November 2012

www.sensorsportal.com

ISSN 1726-5479

Guest Editors: Gongfa Li, Tinggui Chen and Hegen Xiong

Sensors & Transducers Journal (ISSN 1726-5479) is a peer review international journal published monthly online by International Frequency Sensor Association (IFSA).
Available in electronic and on CD.

Sensors & Transducers Journal

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Volume 16
Special Issue
November 2012

www.sensorsportal.com

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Sensors & Transducers Journal, Vol. 16, Special Issue, November 2012, pp. 295-303

www.sensorsportal.com

Sensors & Transducers

ISSN 1726-5479

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Research on Organizational Culture and Resources Integration Model Based on MICK-4FI

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Received: 11 September 2012 /Accepted: 11 October 2012 /Published: 20 November 2012

Abstract: This study is to examine the relationship between organizational culture and resources integration model. Based on resource-based theory, this study argues that different organizational cultures have different impacts on resources integration model, which in turn contributes to strategic flexibility. Our study undertook a survey of 137 effective samples from manufacturing industries and developed a model of PLS (Partial Least Squares). The empirical results confirm the reliability and validity of measurement scales. The findings show that organizational cultures do contribute to strategic flexibility through resources integration. Manufacturing managers should advocate the adoption of cultures with authoritative control and risk aversion, which will play an important role in external resources integration model through borrowing, alliance, and collaboration.

Keywords: Resource-based theory, Resources integration model, Strategic flexibility, PLS (Partial Least Squares).

1. Introduction

In recent years, the world-wide vertical and horizontal mergers wave clearly shows that global networked manufacturing has become the development trend in the 21st century. Networked manufacturing will help enterprises by obtaining optimal distribution channels and opportunities on manufacturing resource globally, while exposing them to much more intense competition than ever before [1]. Resources integration research based on resource dependence theory and competitive advantage perspective suggests that a firm can achieve competitive advantage by creating strategic flexibility through the integration of the firm's own resources [2]. However, the scope of resources

integration is expanding beyond the region and even beyond national borders, the selection of resources integration model is influenced largely by the characteristics of organizational culture.

This research develops a conceptual framework based upon the culture literatures and evolutionary theory to explore how organizational cultures have impacts on the formation of resources integration models to enhance the strategic flexibility. We validated the proposed research model by surveying 137 effective samples from manufacturing industries. The empirical results confirm that, in general, corporate cultures do contribute to strategic flexibility through resources integration. The implications and limitations of findings are discussed toward the end of this paper.

2. Literature Review

2.1. Organizational Cultures

The most widely used cultural framework is that presented by Hofstede which identified four dimensions of national culture, i.e. uncertainty avoidance, power distance, masculinity–femininity and individualism–collectivism. Hofstede also included two additional dimensions of culture: long-term orientedness and indulgence versus restraint [3]. Cameron and Quinn developed an organizational culture framework, which is based on six organizational culture dimensions and four dominant culture types (i.e., clan, adhocracy, market, and hierarchy) [4]. Therefore, adopting the dynamic capability perspective, we apply the limitations of national cultural to the evolution of organizational culture dimensions and identify four different culture types, that is, team-long-developmental culture (TLD), team-authority-communicative culture (TAC), long-risk-developmental culture (LRD), and risk-control-authoritative culture(RCA).

2.2. Resources Integration Model

While the focus of resource allocation is often on assigning or integrating tangible resources to different tasks necessary to the accomplishment of production, this type of strategic planning also takes into consideration intangible assets that may be exist. Based on Resource-Based Theory (RBT) and MICK-4FI [1], we point out that resources integration is a dynamic management process, which combine and reengineer internal and external resources systematically, through taking internal resources integration ways (including combination, accumulation, and upgrade), or external resources integration ways (including borrowing, alliance, and collaboration) within and across its boundary to realize added value and get competitive advantage. And resources integration models, divided by property rights of resource, not firm boundary [5], as internal resources integration model (IRIM) and external resources integration model (ERIM), are presented as being specific in different cultural contexts.

2.3. Strategic Flexibility

Strategic flexibility is firm’s intent and capability to identify major changes in the external environments, to create option bundles of resources, and to ensure the sustainable competitive advantage of the firm [6]. Based on RBT and from a dynamic-based perspective, we contend that flexibility is an outcome of capability development manifesting through constant renewal, integration, and reconfiguration of internal and/or external resources to address environmental changes [7]. Thus, those three types of flexibility can be understood as resource flexibility (RF), coordination flexibility (CF), and integration flexibility (IF). Previous studies investigated the impact of resources integration,

internal and external, on strategic flexibility, but the impact of integration in the context of culture on strategic flexibility is yet to be investigated.

3. Research Model and Hypotheses

Organizational cultures often bear strong imprints of national culture, leading to ideas that different types of organizational culture do have different roles in organization management and resources operation. The model also asserts that in the context of traditional Chinese culture, organizational culture has a profound effect on the ways to integrate internal and external resources, which will contribute to strategic flexibility in acquiring competitive advantage in the final. The theoretical model postulated is shown in Fig. 1.

3.1. TLD Culture and RIM

Previous researches have found that corporate culture plays a very important 'informal' role in the daily activities of an organization by providing guided practices of company values and behavior. Some empirical researches find that companies adopted interdepartmental integration via interaction and collaboration in different ways and get different results [8, 9]. Schrage suggests that collaboration might have a stronger impact on performance factors than interaction because the mutual sharing of information and resources will be more cost-effective and promote greater goodwill across departments [10]. Related studies show that TLD culture characterized by good relationship between employees, harmonious group, long-term development under team involvement may have some effects on internal/external resources integration model. Therefore, we hypothesize the following:

H1a. TLD culture that a company holds is positively associated with IRIM.
H1b. TLD culture that a company holds is positively associated with ERIM.

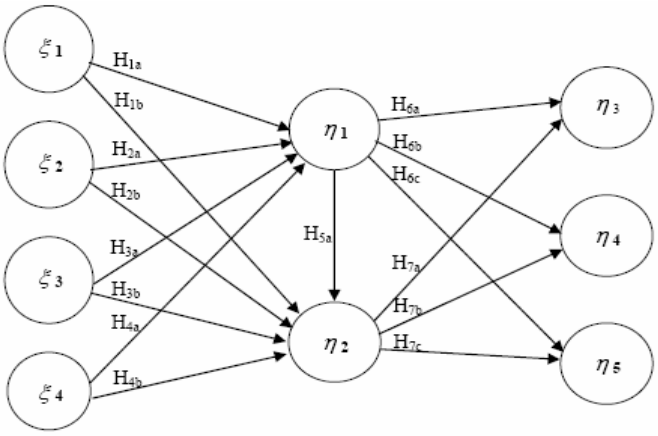

Fig. 1. Conceptual model of organizational cultures-resources integration model-strategic flexibility.
Note: ξ_1: TLD; ξ_2: TAC; ξ_3: LRD; ξ_4: RCA; η_1: IRIM; η_2: ERIM; η_3: RF; η_4: CF; η_5: IF.

3.2. TAC Culture and RIM

A rich stream of research has identified a number of factors that can hinder functional integration including lack of communication, credibility, and senior management support [10]. Related studies show that TAC culture characterized by internal focus with high power distance, pursuing collective

interests, and hierarchical communication may have some effects on IRIM and ERIM. Based on the above, we hypothesize the following:

H2a. TAC culture that a company holds is positively associated with IRIM.
H2b. TAC culture that a company holds is positively associated with ERIM.

3.3. LRD Culture and RIM

Many researches have confirmed that resource complementarities create the potential from acquisitions and alliances, leading to higher long-term firm performance as an end result [11]. Related studies show that LRD culture characterized by low-risk orientation of innovative development and obtaining resources in a roundabout way may have some effects on IRIM and ERIM. Based on the above, we hypothesize the following:

H3a. LRD culture that a company holds is positively associated with IRIM.
H3b. LRD culture that a company holds is positively associated with ERIM.

3.4. RCA Culture and RIM

Wann-Yih Wu points that there is a positive relationship between the level of information sharing, quality, and availability, and the levels of trust, and commitment in supply chain relationships [12]. Van Mieghem further suggests that when markets differ in profitability, risk aversion rebalances capacity toward the (redundant) flexible resource, but away from the (unique) shared resource [13]. Related studies show that RCA culture characterized by external focus, risk management under the control of different level of rights may have effects on IRIM and ERIM. Therefore, we hypothesize the following:

H4a. RCA culture that a company holds is positively associated with IRIM.
H4b. RCA culture that a company holds is positively associated with ERIM.

3.5. IRIM and ERIM

Frohlich found, in the context of web-based integration in supply chains, that reduction of internal barriers is a required first step before removal of supplier and customer barriers to achieve supply chain integration [14]. In a study of the automotive supply industry, Vickery found that there is a positive, causal relationship between integrative information technologies and supply chain integration, which comprised both horizontal integration (within a firm) and vertical integration (with suppliers and customers) [15]. However, they did not hypothesize a causal relationship, nor did they explore possible antecedents of integration practices. Based on the above, we hypothesize the following:

H5a. IRIM is positively associated with ERIM.

3.6. RIM and Strategic Flexibility

The successful implementation of strategic flexibility depends on the inherent flexibility of the resources available to the firm and the flexibility in applying these resources [16]. Griffith also point out that it will affect enterprise strategy implementation and the fitting of enterprise strategy to its environment if internal and external resources integration models are not flexible, sustainable, or

controlled [17]. In addition, several studies in the past have investigated external resources integration as major factors affecting a company's competitive advantage, by way of reduced costs and improved service levels [18].

Based on the above studies, we find enterprise resources integration has gone beyond the scope of management tools, but directly related to the choice of strategic flexibility when enterprises facing many challenges and threats from internal or external environment. According to literature research, this article examines three types of strategic flexibility from the perspective of response capacity to changes in the internal and external environment: resources flexibility(RF), focusing on resources range of effective utilization, time and cost for changing patterns of resources use; coordination flexibility(CF), focusing on rational allocation and effective use of shared resources, and resources restructuring; integration flexibility (IF), focusing on integrating resources systemically and adjusting resources integration ways dynamically. Therefore, we hypothesize the following:

H6a. IRIM is positively associated with RF. H7a. ERIM is positively associated with RF.
H6b. IRIM is positively associated with CF. H7b. ERIM is positively associated with CF.
H6c. IRIM is positively associated with IF. H7c. ERIM is positively associated with IF.

4. Research Method and Data Analysis

All research variables were measured using multi-item scales. The scales for four types of organizational cultures were adopted from Xing and Ye [19]. The items measuring internal and external resources integration were adopted from Zheng [20]. Strategic flexibility was measured mainly from Sanchez [16]. Newly created scales were based upon the literature review and associated theoretical foundation presented earlier, following the paradigm of Churchill [21]. A total of 246 questionnaires were sent out, and 165 were completed and returned. The overall response rate was 67.1 %. The final data set consisted of 137 observations. Table 1 presents the demographic information for the sample.

Table 1. Demographic statistics.

Variables	Categories	No	Pct.	Variables	Categories	No	Pct.
Gender	Male	79	57.7	Co. type	State-owned ent.	89	**65.0**
	Female	58	42.3		Private ent.	8	**5.8**
Age	Under 30	27	19.7		Foreign-funded ent.	4	**2.9**
	31–35	38	27.7		Joint venture	36	**26.3**
	36–45	46	33.6	Ac. deg.	Associate's	20	**14.6**
	46–55	20	14.6		Bachelor's	68	**49.6**
	Above 55	6	4.4		Master's	44	**32.1**
Indus. type	Industrial Mach. & Eqpt.	66	48.2		Doctoral	5	**3.6**
	Bio-pharmaceutical Indus.	38	27.7	Time in co.	1-5 years	37	**27.0**
	Chemical Products	21	15.3		6-10 years	58	**42.3**
	Communication eqpt.	9	6.6		11-15 years	23	**16.8**
	Others	3	2.2		16-20 years	16	**11.7**
Co. size	Less than 100 ps.	7	5.1		More than 20 years	3	**2.2**
	100-500 ps.	8	5.8	Title	Co. Manager	25	**18.2**
	500-1000 ps.	58	42.3		Dep. head	63	**46.0**
	1000-5000 ps.	62	45.3		General staff	46	**33.6**
	More than 5000 ps.	**2**	**1.5**		**Others**	**3**	**2.2**

Note: Pct.= Percentage; Indus.=Industry; Co.=Company; Mach.=Machinery; Eqpt.=Equipment; ps.=persons; ent.=enterprise; Ac.=Academic; deg.=degree; Dept.=Department.

Of the companies in the sample, 65 % were state-owned enterprises, and almost 90 % had more than 500 employees. In addition, 48.2 % of companies were from Industrial Machinery & Equipment and 27.7 from Bio-pharmaceutical Industry. Among the respondents, 57.7 % were male, 33.6 % of the respondents were company managers or department heads and about 73 % had over 6 years of working experience.

Data were subjected to a factor analysis to assess the psychometric properties of the measurements in this study. As shown in Table 2, *Cronbach's α* ranged from 0.743 to 0.945, indicating that the measurements were reliable. The remaining items were subject to an examination of construct validity using output from the partial least squares (PLS). As shown in Tables 2-3, composite reliability (CR) and the square root of AVE (average variance extracted) were all above the recommended guidelines, suggesting strong convergent validity. In addition, the square root of AVE in Table 3 proved greater than all of the inter-construct correlations. Common method bias was assessed by including all items in a principal components factor analysis.

5. Results of the Structural Model

VisualPLS was used to estimate the structural model. A bootstrapping approach was used to generate 500 random samples of observations from the original data set to evaluate the significance of the path coefficients. Table 4 presented the results of the study.

The results of path analysis show that while TLD has a positive impact on IRIM, validating H1a, its relationship with ERIM is negative and significant. Support is found for the influence of TAC on IRIM and ERIM, validating H2a and H2b. We found no empirical support for H3b: the interaction effect of LRD on ERIM is not statistically significant. Results also show that LRD and RCA are positively associated with IRIM and ERIM respectively, supporting H3a and H4b; however, for H4a, RCA does have a negative and significant relationship with IRIM. And for H5a, IRIM had a negative and significant relationship with ERIM. Consistent with H6a, H6b, H6c, and H7a, H7b, H7c, IRIM and ERIM have a positive and significant effect on RF, CF and IF. The research model explained 34 % of the variance in RF, 44.2 % of the variance in CF, and 41.9 % of the variance in IF.

6. Conclusions

This study has several academic contributions. Firstly, it applies the limitations of national cultural to the evolution of organizational culture dimensions and identifies four different culture types. Our firms should take full advantage of different characteristics of local cultures to achieve internal and external resources integration efficiently, thus form strategic flexibility keeping with their culture types, which will help Chinese companies gain sustainable development. Secondly, this study contributes to extant research by extending the domain pertaining to resources integration. The conceptual framework developed by the extant literature largely stresses on resources within an organization and overlooks those that exist outside it. Some characteristics of Chinese culture will contribute to the realization of external resources integration process, especially those cultures with authoritative control and risk aversion. Thirdly, results of this study shed interesting insights in that cultures with group and long-term orientation will play an important role in internal resources integration model through combination (resources interchangeability), accumulation (experience pool, integration concept), and upgrade(resources complementarities, channel construction). And cultures with authoritative control and risk aversion will play an important role in external resources integration through borrowing (cross-border learning, following procedures), alliance (absorbing resources, improving short-board resources), and collaboration (reducing the risk of resources, flexible acquisition of resources).

Like most studies in the past, this study surveyed high-level manufacturing professionals from individual firms, who are generally capable of internal and external resources integration involving different ways. While this is a potential limitation, it is also an opportunity for future research. Lastly, since data were collected from manufacturing industries in China, this indicates limitations to the generalization of the findings due to cultural influences and localized business practices.

Table 2. Construct reliability and convergent validity (n=137).

Scale	Construct reliability		Convergent validity	
	Cronbach's α min ≥ 0.70	CR, min ≥ 0.70	AVE, min ≥ 0.50	Factor loading
TLD	0.842	0.902	0.698	
TLD1				0.7385
TLD2				0.8873
TLD3				0.8782
TLD5				0.8298
TAC	0.836	0.893	0.677	
TAC1				0.8844
TAC2				0.8099
TAC3				0.7396
TAC4				0.8496
LRD	0.879	0.917	0.735	
LRD1				0.8498
LRD2				0.8988
LRD3				0.8474
LRD4				0.8324
RCA	0.820	0.882	0.652	
RCA1				0.8100
RCA2				0.7894
RCA3				0.7660
RCA4				0.8603
IRIM	0.945	0.958	0.821	
IRIM1				0.8685
IRIM2				0.9122
IRIM3				0.9227
IRIM4				0.9132
IRIM5				0.9115
ERIM	0.871	0.920	0.697	
ERIM1				0.8193
ERIM2				0.8470
ERIM3				0.8309
ERIM4				0.8333
ERIM5				0.8428
RF	0.743	0.856	0.664	
RF1				0.7818
RF2				0.8650
RF3				0.7960
CF	0.793	0.878	0.707	
CF1				0.8446
CF2				0.8821
CF3				0.7934
IF	0.827	0.921	0.853	
IF1				0.9270
IF2				0.9199

Table 3. The correlations between the latent variables (square root of AVE on diagonal in boldface).

Latent constructs	TLD	TAC	LRD	RCA	IRIM	ERIM	RF	CF	IF
TLD	**0.835**								
TAC	0.602	**0.823**							
LRD	0.175	0.243	**0.857**						
RCA	0.073	0.198	0.572	**0.807**					
IRIM	0.791	0.692	0.256	0.075	**0.906**				
ERIM	0.104	0.625	0.303	0.426	0.130	**0.835**			
RF	0.136	0.431	0.228	0.193	0.182	0.573	**0.815**		
CF	0.082	0.476	0.251	0.328	0.205	0.654	0.720	**0.841**	
IF	0.214	0.553	0.286	0.265	0.31	0.603	0.684	0.784	**0.924**

Table 4. Results for the PLS evaluation criteria/structure model (n=137).

Dependent variable	**Predictor**	**H**	**PC**	**T**	**Results**
IRIM(R^2 =0.712)	TLD	H_{1a}	0.573	7.136***	Support
	TAC	H_{2a}	0.336	3.942***	Support
	LRD	H_{3a}	0.139	2.525**	Support
	RCA	H_{4a}	-0.112	-2.390**	No support
ERIM(R^2 =0.652)	TLD	H_{1b}	-0.140	-1.749*	No support
	TAC	H_{2b}	0.965	11.426***	Support
	LRD	H_{3b}	0.077	1.562	No support
	RCA	H_{4b}	0.236	4.401***	Support
ERIM	IRIM	H_5	-0.465	-5.045***	No support
RF(R^2 =0.340)	IRIM	H_{6a}	0.109	2.073*	Support
	ERIM	H_{7a}	0.559	10.827***	Support
CF(R^2 =0.442)	IRIM	H_{6b}	0.122	2.140*	Support
	ERIM	H_{7b}	0.638	10.964***	Support
IF(R^2 =0.419)	IRIM	H_{6c}	0.236	5.252***	Support
	ERIM	H_{7c}	0.573	10.469***	Support

Note: R^2: coefficient of determination (threshold value: ≥ 0.30); PC: path coefficient;
Significant keys: *<0.05;**<0.01;***<0.001

Acknowledgements

This work was supported by the National Science Foundation of China (No. 71201144) and the Scientific Research Fund of Zhejiang Provincial Education Department (No. Y200803886).

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Sensors & Transducers Journal

Guide for Contributors

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- Smart sensors and systems;
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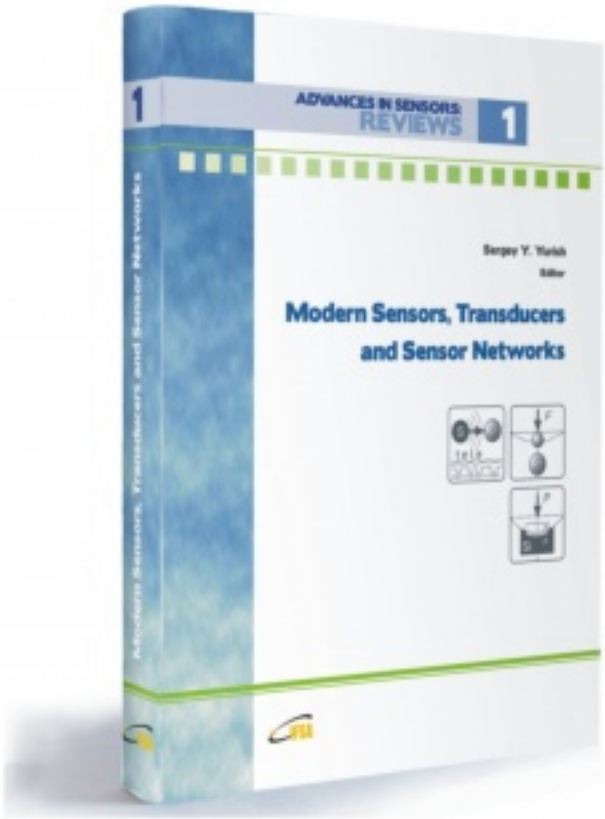

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