

# An Empirical Study on the Impact of Cultural Types on Resources Integration Model

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Received October 10<sup>th</sup>, 2012; revised November 12<sup>th</sup>, 2012; accepted November 22<sup>nd</sup>, 2012

## ABSTRACT

From the perspective of Resource-based Theory (RBT), organizational culture can be a source of sustained competitive advantage. And resources integration models, divided by property rights of resource, not firm boundary, as internal and external resources integration models, are presented as being specific in different cultural contexts. However, the literature review shows the absences of an integrated framework, which can help to highlight the different role that context-specific facets of culture play. This paper develops a conceptual framework based upon the culture literatures and evolutionary theory to define the relationship between four different cultural types, namely team-long-developmental culture (TLD), team-authority-communicative culture (TAC), long-risk-developmental culture (LRD) and risk-control-authoritative culture (RCA), and two different resource integration models. Our study undertook a survey of 168 effective samples from manufacturing industries and developed a model of Partial Least Squares (PLS). The empirical results confirm the reliability and validity of measurement scales. The theoretical hypotheses of cultural evolution mechanism for resource integration are also supported by the empirical evidence.

**Keywords:** Resource-Based Theory; Resources Integration Model; 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 168 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 Culture

Culture is defined as “the complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habit acquired by man as a member of society” [3]. It has been no doubt that the culture of an organization plays a strategic role in enhancing competitiveness of the organization in current global competitive arena. A common hypothesis is that if an organization possesses a “strong” culture by exhibiting a well-integrated and effective set of specific values, beliefs, and behaviors, it will perform at a higher level of productivity and will therefore gain larger competitive edges.

The most widely used cultural framework is presented by Hofstede [4] which identified four dimensions of national culture, *i.e.* uncertainty avoidance, power distance, masculinity-femininity and individualism-collectivism. He further included two additional dimensions. One is long-term orientation and the other is indulgence versus re-

straint [4]. 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) [5]. Competing values produce polarities like flexibility, stability, internal focus, and external focus [5] will be limited by long- versus short-term orientation, power distance, individualism vs. collectivism, and uncertainty avoidance [4], while those dimensions of Chinese national culture are shown as long-term orientation, long power distance, collective, and risk avoidance, respectively. Therefore, adopting the dynamic capability perspective, we apply the limitations of national culture to the evolution of organizational culture dimensions and identify four different culture types as follows:

- Team-long-developmental culture (TLD);
- Team-authority-communicative culture (TAC);
- Long-risk-developmental culture (LRD);
- Risk-control-authoritative culture (RCA).

## 2.2. Resources Integration

In Supply Chain Management perspective, there are numerous terms and phrases that have been used analogously, such as integration, allocation, cooperation, coordination, collaboration, and interaction. Basically resource integration refers to assign the available resources in an economic way. 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 exist. Based on Resource-Based Theory (RBT) and MICK-4FI [1], we point out that leverage mechanism of resources operation on networked manufacturing integration, emphasizing on integration of internal and external resources, especially using its self owned-resources to leveraging external resources for obtaining non-substitutable competitive advantage. As the results of organizational structure from the whole supply chain, 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 [6], 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

As emphasized in strategy literature, capabilities are ex-

ternally focused, while competencies are internally focused, and, capabilities are derived from competencies. In this light, strategic flexibility may be viewed as an externally focused capability, while resources integration is an internally focused competency that is its antecedent. Here 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 [7].

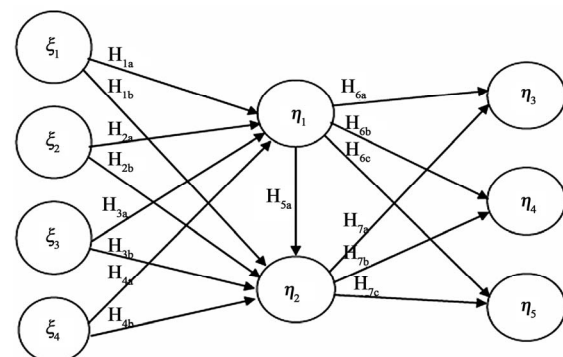
Based on RBT and from a dynamic-based perspective, we contend that flexibility is an outcome of capability development manifesting through constant renewal, integration, and reconfiguration of internal and/or external resources to address environmental changes [8]. From this view, flexibility is made possible through heterogeneous resources integration. 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 **Figure 1**.

### 3.1. TLD Culture and RIM

Previous researches have found that corporate culture



Note:  $\xi_1$ : TLD;  $\xi_2$ : TAC;  $\xi_3$ : LRD;  $\xi_4$ : RCA;  $\eta_1$ : IRIM;  $\eta_2$ : ERIM;  $\eta_3$ : RF;  $\eta_4$ : CF;  $\eta_5$ : IF.

**Figure 1. Conceptual model of organizational cultures-resources integration model-strategic flexibility.**

plays a very important “informal” role in the daily activities of an organization by providing guided practices of company values and behavior. Quite a few studies suggest that internal integration and coordination development may become concerned with creation of corporate culture focused on collective interests and long-term development [9]. Some empirical researches find that companies adopted interdepartmental integration via interaction and collaboration in different ways and get different results [10,11]. Schrage also 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 [11]. Related studies show that TLD culture characterized by good relationship between employees, harmonious group culture, long-term development under team involvement may have some effects on internal and external resources integration model. Based on the above, 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.

### 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, existence of reward systems that do not encourage and may even discourage cooperation [12]. Other factors found to be related to integration include trust, inter-group conflict caused by competition between functional areas for scarce organizational resources [13]. Many researches examine that paternalistic leadership in the Chinese business context is positively associated with job satisfaction and employee loyalty [12]. 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 [14]. Lei finds strategic alliances from reciprocal strengths and complementary resources have

become an attractive alternative to mergers and acquisitions as a means to acquire resources [15]. Enterprises focus on improving internal operations, taking sustaining innovation and improvement with risk aversion and long-term interests. Different types of strategic alliances (e.g., joint venture and global strategic alliances) enable firms to control the resources allocation and the division of benefits among partners [16]. 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

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. Therefore, it is imperative to cultivate positive company culture from respectful values which encourage employees’ loyalty to maximize internal resources utilization [17]. 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 [18]. 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 [19]. 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 [20]. 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) [21]. 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 [22]. Studies have shown that coordination activities between enterprises and dynamic allocation of material, financial, information, and knowledge resources, help to enhance the level of strategic flexibility. Griffith 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 [23].

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 [24]. However, they did not hypothesize a causal relationship, nor did they explore possible antecedents of external integration practices. Thus, this research considers a firm's strategic flexibility, and higher-level manufacturing professionals in the local firm were requested to consider and provide responses, especially for the construct of external resources integration, as they relate to key customers and key suppliers.

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.

H6b. IRIM is positively associated with CF.

H6c. IRIM is positively associated with IF.

H7a. ERIM is positively associated with RF.

H7b. ERIM is positively associated with CF.

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 [25]. The items measuring internal and external resources integration were adopted from Zheng [26]. Strategic flexibility was measured mainly from Sanchez [17]. Newly created scales were based upon the literature review and associated theoretical foundation presented earlier, following the paradigm of Churchill [27]. A total of 302 questionnaires were sent out, and 205 were completed and returned. The overall response rate was 67.9%. The final data set consisted of 168 observations. **Table 1** presents the demographic information for the sample.

**Table 1. Demographic statistics.**

Variables	Categories	No	Pct.
Gender	Male	103	61.3
	Female	65	38.7
Age	Under 30	30	17.9
	31 - 35	46	27.4
	36 - 45	56	33.3
	Above 45	36	21.4
Indus. type	Industrial Mach. & Eqpt.	78	46.4
	Bio-pharmaceutical Indus.	38	22.6
	Transportation Eqpt.	24	14.3
	Measurement & Instm.	16	9.5
Co. size	Others	12	7.2
	Less than 100 ps.	11	6.5
	100 - 500 ps.	9	5.4
	500 - 1000 ps.	66	39.3
Co. type	1000 - 5000 ps.	78	46.4
	More than 5000 ps.	4	2.4
	State-owned ent.	107	63.7
	Private ent.	11	6.5
Ac. deg.	Foreign-funded ent.	7	4.2
	Joint venture	43	25.6
	Associate's	20	11.9
Time in co.	Bachelor's	82	48.8
	Master's	56	33.3
	Doctoral	10	6.0
Title	1 - 10 years	114	67.8
	11 - 20 years	50	29.8
	More than 20 years	4	2.4
Title	Co. Manager	30	17.9
	Dep. head	78	46.4
	General staff	56	33.3
	Others	4	2.4

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, 27.7 from Bio-pharmaceutical Industry, and 15.3 from Chemical Products. Among the respondents, 57.7% were male and over 89% had Bachelor's degree or above. Also, 33.6% of the respondents were company managers or department heads and about 73% had over 6 years of working experience. We acknowledge that these respondents may be well aware of internal and external resources integration. 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  $\alpha$*  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** and **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. With the first principal component accounting for 23% of the variance in the data, the exploratory factor analysis suggests that common method bias is not a major concern in this study.

## 5. Results of the Structural Model

Visual PLS was used to estimate the structural model. **Figure 2** presents the results of the study.

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.

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

**Table 2. Construct reliability and convergent validity (n = 168).**

Scale	Construct reliability		Convergent validity
	<i>Cronbach's <math>\alpha</math></i> , min $\geq 0.70$	CR, min $\geq 0.70$	AVE, min $\geq 0.70$
TLD	0.848	0.903	0.698
TAC	0.834	0.895	0.675
LRD	0.875	0.911	0.732
RCA	0.818	0.879	0.664
IRIM	0.942	0.956	0.832
ERIM	0.868	0.917	0.694
RF	0.756	0.865	0.658
CF	0.768	0.879	0.720
IF	0.837	0.930	0.849

**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	<b>0.832</b>								
TAC	0.712	<b>0.821</b>							
LRD	0.255	0.236	<b>0.858</b>						
RCA	0.081	0.205	0.579	<b>0.809</b>					
IRIM	0.823	0.732	0.259	0.114	<b>0.903</b>				
ERIM	0.238	0.627	0.312	0.429	0.137	<b>0.834</b>			
RF	0.139	0.432	0.232	0.197	0.187	0.578	<b>0.809</b>		
CF	0.252	0.479	0.263	0.331	0.215	0.656	0.752	<b>0.815</b>	
IF	0.217	0.552	0.290	0.274	0.317	0.612	0.693	0.874	<b>0.915</b>

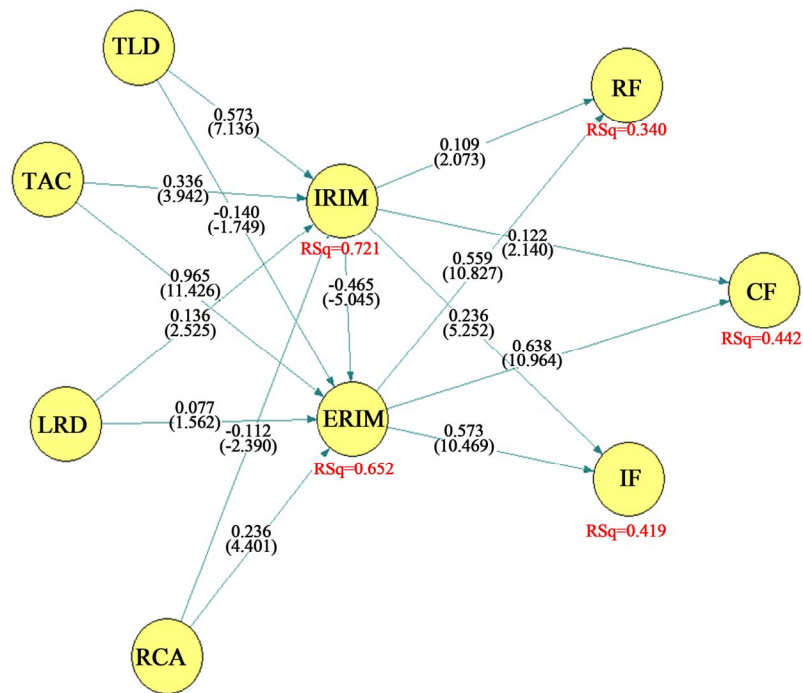


Figure 2. Potheses tests.

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. First, it applies the limitations of national cultural to the evolution of organizational culture dimensions and identifies four different culture types. Fierce competition with foreign companies, 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. Under networked manufacturing environments, sustainable competitive advantage is the pursuit of flexible strategy that cannot be easily duplicated by competitors. This implies that to augment resources integration: internal resources integration model and external resources integration model, companies should continually integrate, reconfigure, or even renew the component resources and competencies by property rights of resource from the whole supply chain. Some characteristics of Chinese culture will contribute to the realization of external resources integration process, especially those cultures with authori-

tative control and risk aversion.

Thirdly, extant research has identified different ways of internal resources integration and argues that effects resulting from these different ways may contribute to the performance of strategic flexibility. Nevertheless, these effects are indiscriminate. 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 mode through combination (resources interchangeability), accumulation (experience pool, integration concept), and upgrade (resources complementarities, channel construction).

Fourthly, this study advances our understanding of relationships between resources integration and organizational performance. Resources integration researchers posit that resources integration, whether internal or external, leads to superior performance. However, they did not specify how this transpires. Set in increasingly volatile manufacturing contexts, this study provides a case in which resources gained in external resources integration enhance the level of strategic flexibility, because they enable the company to gain long-term development. In other words, 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).

The limitations due to perceptual nature of the data

used to assess the various constructs, reliance on key informants, and the possibility of mono-respondent bias and common methods variance that are common to many empirical research studies of the past do apply to this study as well. 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.

## 7. Acknowledgements

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

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