International Congress on Interdisciplinary Business and Social Science 2012

(ICIBSoS 2012)

Typology of Resources and Capabilities for Firms' Performance

Noorliza Karia[a]*, Chee Yew Wong[b], Muhammad Hasmi Abu Hassan Asaari[c]

[a]School of Management, Universiti Sains Malaysia, 11800 Penang, Malaysia
[b]Leeds University Business School, Universiy of Leeds, Leeds, United Kingdom
[c]School of Distance Education (Management), Universiti Sains Malaysia, 11800 Penang, Malaysia

Abstract

Firms' resources and capabilities (RCs) are essential for firms' sustainable competitive advantage. Though literature has demonstrated the important of RCs for achieving firms' competitiveness, there is a lack of understanding of the exact levels of which different types of resources are optimal or superior. This paper proposes and tests a typology of resource and capability (RC) profiles for third-party logistics service providers (LSPs). Based on cluster analyses of survey responses from Malaysian LSPs, the paper reveals three clusters of resource profiles (uniformly low, medium, and high levels) in terms of basic technology and equipment, advance technology and equipment, knowledge, organizational and relational resources. Further analysis of variance (ANOVA) reveals that these three resource profiles varied significantly in LSPs' performance. The results suggest that LSPs with uniformly moderate and high resource profiles were most likely to perform better in terms of both customer service innovation and cost leadership.

Selection and peer-review under responsibility of JIBES University, Jakarta

Keywords: Resource-based view; Competitive advantage; Third-party logistics providers (LSPs)

* Corresponding author. Tel.: +604-653 2528; fax: +604-657 7448.
E-mail address: noorliza@usm.my

1. Introduction

Previous studies ascertained that the firms' performance can be explained by its resources (Penrose, 1959; Barney, 1991; Karia and Wong, 2012). The resource-based view (RBV) literature asserts that firms need specific RCs to gain competitive advantage (Penrose, 1959; Barney, 1991). In competitive industry, firms ought to access to the right bundle of RCs. One effective approach to understand how a firm could outperform the other competitors is to classify firms into different typologies and then identify the types of firms which consistently perform better than the competitors. The acceptable typology for firms has seen little acknowledgement. Currently it is hard to understand the important of all types of RCs for achieving firms' competitiveness (Delfmann et al., 2002). Hence this paper explore if firms acquire different profiles of resources, and if firms with certain resource profiles do perform better in terms of customer service innovation and cost leadership.

2. Literature and Hypotheses

Recently scholars suggest that performance can be explained by firm's physical resources, technology resources and managerial competences (Gunasekaran and Ngai, 2003; Brah and Lim, 2006) and other identified technology and information, organizational and knowledge resources as key success factors (Wong and Karia, 2010). Although previous literature highlighted the growing evidence suggesting that such resources and capabilities (RCs) have a positive impact on firms' performance, there is still limited work which examines the RCs profiles for a firm's performance. This paper argues that RCs as an important dimension for firms' competitive advantage. Based on Karia and Wong (2012), this paper conceptualizes the RCs as the ability of firms to acquire and gain access to two tangible resources: basic and advanced technology and equipment; and three intangible resources and capabilities: knowledge, organizational and relational. The following is the brief definition for each resources and capabilities:

- Basic technology and equipment resources comprise the basic infrastructure and IT equipments commonly available for firms to perform.
- Advanced technology and equipment resources include web-based systems, advanced software and information system, automatic equipment and automatic machinery
- Knowledge resources are defined as the recruitment and development of skilled people and integrated teams with technical ability, knowledge, and experience.
- Relational resources are defined as strong relationships with customers and suppliers characterised by a high level of trust and long-term relationships which allow firms to coordinate networks and share information and interact and communicate with customers and suppliers more effectively.
- Organizational resources are defined as competence in managing organisational routines, practices and strategy processes which interface with customers to meet customer demand requirements

While maximizing the use of firm RCs, firms need to balance the required level of customer service and the cost of providing the service. Firms also need to innovate in their service portfolio and strive for lowest operations and distribution costs. Thus the customer service innovation (CSI) and cost leadership (CL) are used for the competitive performance metric for firms.

The logistics literature has acknowledged that there is lack of acceptable typology for LSPs (Delfmann *et al.*, 2002). Some scholars cluster LSPs based on service capabilities (Lai, 2004) and strategic positioning (Yeung *et al.*, 2006). The asset-based and non asset-based LSPs are perhaps the most popular approach in dividing LSPs in terms of resources (Larson and Gammelgaard, 2001). However this study theorizes that LSPs can be divided into different groups with regards to their levels of basic and advanced technology and equipment, knowledge, organizational, and relational resources. In order to develop a valid typology, the authors conducted initial interviews with seven managers from Malaysian LSPs. The interview findings reveal that not all firms have acquired high level of resources, some have medium to high and others have low to medium levels of resource. Those firms with higher levels of

revenue growth appeared to anticipate at high levels of all the five resources; those with medium levels of revenue growth anticipate at least medium levels of resources; and those with lower levels of revenue growth anticipate low to medium levels of resources. It is novel because it provides the empirical evidence of those with high tangible resources and low intangible resources (asset-based), as well as those with low tangible resources and high intangibles resources (non asset-based). This study found that firms have uniform level of the five resources relatively.

This study theorizes that firms acquire RCs with regards to their level of basic technology and equipment, advance technology and equipment, knowledge, organizational and relational resources. With these initial findings, the study theorizes that there are three groups of firms: firms with uniformly low levels, firms with uniformly medium levels and firms with uniformly high levels of the five resources. Hence, Hypothesis 1: There are three groups of firms (a) firms with uniformly low levels of the five resources, (b) firms with uniformly medium levels of the five resources, and (c) firms with uniformly high levels of the five resources

The above hypothesis is further supported by the needs for balanced levels of resource so that one resource can supplement the other resources. That means firms with a low level of tangible resources tend to have also a low level of intangible resources, reflecting the size of the firms, as well as the need of intangible resources to acquire, operate and make use of the tangible resources. Similarly, firms which need a high level of tangible resources require a high level of intangible resources in order to acquire, process and operate such tangible resources.

2.1. Resources portfolio and performance

The performance of any firm depends on the RCs acquired by firms. Penrose (1959) recognized that RCs are answer for a firm's expansion. For instance firms deploy advance technology as for short term competitive advantage and further deploy and enhance people with skills which are difficult and expensive to duplicate for long term competitive advantage. Hence the study theorizes that high-performing firms may anticipate high resources to maximize the use of productive resources effectively over the long term competitive advantage. This suggests that firms' existence RCs acknowledge firms to anticipate about the path of firm's development. Most significant, the individual resources and the relationship among resources and capabilities are basic to competitive advantage. Further, the study highlighted inimitability as the significant RCs for competitive advantage and superior performance.

The empirical evidence from interviews suggests that firms with higher levels of revenue growth appeared to anticipate high levels of the five resources. According to RBV theory and profit maximizing theory (Chatterjee and Wernerfelt, 1991), firms embark on high level of RCs with the anticipation of high performance level. Hence this study theorizes that high-performing firms do anticipate higher level of the five resources to embark into high performance in term of customer service innovation and cost leadership as compared to non-performing firms. These relationships are presented by two hypotheses, H2 (a) for CL, and H2 (b) for CSI. Hence, Hypothesis 2: Firms with uniformly high level of the five resources will outperform those with uniformly lower levels of the five resources in terms of (a) cost leadership, and (b) customer service innovation.

3. Methodology

The interview with seven managers is considered for understanding LSPs' RCs profiles from practitioners' viewpoint. This research conducted survey based on the measurement instruments used by Karia and Wong (2012). The respondents were asked to indicate their company agreement on resource and performance variables using a five-point Likert scale, ranging from "1 - strongly disagree" to "5 - strongly agree". The survey instruments were called for 354 firms randomly drawn from the Malaysia Logistics Directory (www.msialogistics.com). Out of 354 firms, 123 participated and completed the

questionnaires, which represents a 35 percent response rate. Overall, half (51 percent) of the firms are fully Malaysian-owned and the other half is non Malaysian-owned (49 percent). There are almost equal representations in firm size. Slightly more than half (53 percent) have been in the industry for more than 15 years, with an average of 20 years and a standard deviation of 15 years, reflecting the growth of the logistics industry in Malaysia.

4. Results and Empirical Analysis
4.1. Cluster and One-Way ANOVA Analyses for Testing Hypothesis 1

Cluster analysis is carried out to group the sample into firms with three distinctive resource profiles confirmed by Ward's method (not show). The one-way ANOVA was conducted to present the mean values of resources for the three clusters (Table 1). Every cluster has similar level of the five uniformly, thereby we name these firms with the uniformly low (cluster 1), medium (cluster 3) and high (cluster 2) levels of resources profiles. The results of one-way ANOVA analysis show that all F-values are significant, indicating the differences among the clusters is significant and the five resources are reliable variables to be distinguished. The results indicate that each cluster reveals somewhat distinctive resources acquisition as theorized. The Tukey's post hoc test confirmed that uniformly low, medium and high levels of resources are significantly differentiated between their cluster means.

Table 1
Cluster Centroid

Resource/Cluster	1. Low	2. High	3. Medium	F
Advance technology and equipment	$3.50(2,3)^{****}$	$4.62(1,3)^{****}$	$4.03(1,2)^{****}$	92.55^{****}
Basic technology and equipment	$3.73(2,3)^{****}$	$4.74(1,3)^{****}$	$4.28(1,2)^{****}$	79.84^{****}
Knowledge	$3.32(2,3)^{****}$	$4.53(1,3)^{****}$	$3.85(1,2)^{****}$	139.74^{****}
Organizational	$3.83(2,3)^{****}$	$4.64(1,3)^{****}$	$4.24(1,2)^{****}$	47.47^{****}
Relational	$3.53(2,3)^{****}$	$4.50(1,3)^{****}$	$4.09(1,2)^{****}$	58.32^{****}
Cluster sample sizes	50	38	34	

$^{****}P < 0.0001$

Next, canonical discriminant analysis is used to identify the underlying dimensions which define the clusters. The results indicate that all five resources are important in forming function 1 which has an Eigenvalue larger than 1, and explains 99.7% of the variance. Figure 1 illustrates how function 1 divides the samples into three clusters. In summary, this analysis confirms that the samples can be divided into the clusters with uniformly low, medium and high levels resources, supporting H1 (a, b and c).
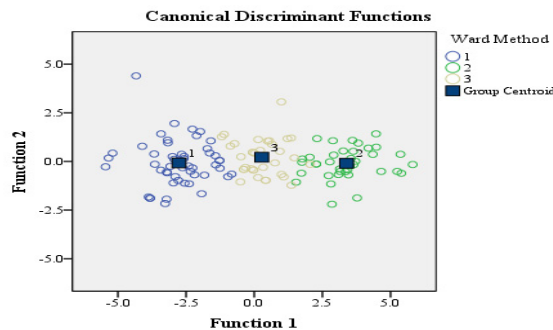

Figure 1
Cluster centroids

4.2. Analysis of Variance(ANOVA) for Testing Hypothesis 2

Analysis of variance (ANOVA) is used to test the relationship between each resource profile (cluster) and performance in term of customer service innovation and cost leadership. Table 2 indicates that there are significant differences in customer service innovation and cost leadership performance between the low-uniform cluster and the other two clusters. This finding supports hypothesis H2 (a, and b) in terms of the comparison between low-uniform cluster and other clusters with higher levels of resources.

Table 2
Analysis of variance (ANOVA)

Logistics performance	1. Low resources	2. High resources	3. Moderate resources	F-value
Customer service innovation	3.65 (2,3)[****]	4.33 (1)[****]	4.00 (1)[****]	21.33[****]
Cost leadership	3.27 (2[****],3[*])	3.92 (1)[****]	3.66 (1)[*]	9.19[****]

[****]$P < 0.0001$, [*]$p < 0.05$

5. Discussion

The above results provide theory-driven empirical evidence to explain the comprehensive typology of resource profiles for firms and strengthen the importance of anticipating at a high level of RCs in enhancing firms' performance. This paper concludes that Malaysian LSPs are clustered uniformly into three resource profiles: low-medium-and-high levels of the five resources: basic technology and equipment, advance technology and equipment, knowledge, organizational and relational resources. The findings indicate that Malaysian LSPs with uniformly medium and high resource profiles were most likely to perform better in terms of both customer service innovation and cost leadership.

These significant results reveal that Malaysia LSPs are theorized on the RCs perspective to result in competitive advantage rather than asset-based and non-asset-based (Razzaque and Sheng, 1998; Sheffi, 1990; Larson and Gammelgaard, 2001). These are crucial findings since much of the existence literature not relate RCs with theories and examine typology of resource profiles for firms and LSPs in particular. Our findings extend emerging knowledge and resolve those deficient and develop theory about the relationship between resources and capabilities and performance. Overall, the results support the resource-based (Penrose, 1959) and profit-maximizing theories (Chatterjee and Wernerfelt, 1991) and confirm the argument of typology for LSPs (Delfmann et al., 2002).

The above results confirm that firms' existence RCs acknowledge firms to anticipate about the means of firm growth (Penrose, 1959). Therefore high performing firms need to acquire high level of RCs to maximize the use of resources and further develop and bundle RCs in order to have sufficient conditions for the competitive advantage. In the absence of given process and knowledge, competitors are difficult to imitate. They might understand some of resources of a high performing but still they are unclear about which resources lead to competitive advantage and why or when causal ambiguity is present. These relationships take some time to develop because they involve some complicated path-dependent and socially complex process. Given this inimitability of firms RCs most likely result in the competitive advantage and superior performance.

6. Conclusion

This paper reveals that LSPs are theorized on the resource and capability which are clustered into three clusters uniformly low, medium, and high levels in terms of basic technology and equipment, advance technology and equipment, knowledge, organizational and relational resources. This implies that to enhance customer service innovation and cost leadership, LSPs should acquire appropriate level of technology and equipment, knowledge, organizational and relational resources. The acquisition in such five resources will not lead to enhanced customer service innovation and cost leadership, when the level

of resources is inconsistent. However, when LSPs acquire medium to high level of the five resources, the impact of such resources on customer service innovation and cost leadership will be greater. The findings suggest that the firms' performance can be explained based on firms' typology of resource profiles. Again, such detail understanding of typology of resources and capabilities for firms' performance, as far as the authors are aware has never been studied before. The results are thus a novel contribution.

References

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management,* 17, 99-120.

Brah, S. A., and Lim, H. Y. (2006). The effect of technology and TQM on the performance of logistics companies. *International Journal of Physical Distribution & Logistics Management,* 36, 3, 192-209.

Chatterjee, S., & Wernerfelt, B. (1991). The link between resorces and type of diversification: Theory and evidence. *Strategic Management Journa,*12, 1, 33-48.

Delfmann, W., Albers, S., and Gehring, M. (2002). The impact of electronic commerce on logistics service providers. *International Journal of Physical Distribution and Logistics Management,* 32, 3, 203-222.

Gunasekaran, A., & Ngai, E. W. (2003). The successful management of a small logistics company, *International Journal of Physical Distribution & Logistics Management,* 33, 9, 825-842.

Karia, N., & Wong, C. Y. (2012). The impact of logistics resources on the performance of Malaysia logistics service providers. *Production Planning & Control: The Management of Operations*, DOI:10.1080/09537287.2012.659871.

Larson, P. D., & Gammelgaard, B. (2001). Logistics in Denmark: A survey of the industry. *International Journal of Logisitcs Research and Applications: A Leading of Supply Chain Management,* 4, 2, 191-206.

Lai, K. (2004), "Service capability and performance of logistics service providers," *Transportation Research Part E ,* Vol. 40, pp. 385-399.

Penrose, E. T. (1959). *The Theory of the Growth of the Firm.* New York: John Wiley.

Wong, C. Y., & Karia, N. (2010). Explaining the competitve advantage of logistics providers: A resource-based view approach. *International Journal of Production Economics,* 128, 51-67.

Yeung, J. H., Selen, W., Sum, C., & Huo, B. (2006), "Linking financial performance to strategic orientation and operational priorities: an empirical study of third-party logistics," *International Journal of Physical Distribution and Logistics Management ,* Vol. 36, No. 3, pp. 210-230.