Resources, Organizational Capabilities And Performance: Some Empirical Evidence From Vietnam's Supporting Industries.

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This paper focuses on applying the resource-based view (RBV) of firms to explain the performance of supporting industries in Vietnam. Specifically, we based our research on the comprehensive framework of RBV and reviewed previous empirical researches before deciding on adopting a dynamic capabilities approach for testing relationships among resources, organizational capabilities and performance. A multivariate analysis of survey responses of 102 firms belonging to supporting industries in Vietnam indicates that a different group of resources is related to each organizational capability, and that the cost reduction and quality capabilities are related to performance. These findings have considerable implications for academics as well as practitioners.

Field of research: Strategic Management.

1. Introduction

In recent years, the idea of developing supporting industries that provide parts, components and other inputs to assemblers has started to be considered an effective and suitable business strategy for foreign manufacturing enterprises, especially assemblers, in Vietnam.

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Nonetheless, supporting industries in Vietnam are at their early stages of development. Therefore, it is costly and time-consuming for the assemblers to find good local suppliers (Ohno, 2007). In this context, conducting studies of supporting industries in Vietnam is becoming essential. Although some researches exist at the macro level, there is still a lack of empirical research about specific matters at the firm level, especially researches about the organizational capabilities affecting their performance through applying strategic management perspectives, which seem to be the appropriate way to understand why some firms outperform others.

Specifically, the resource-based view (RBV) of strategic management theory is used here in the supporting industry setting, and conversely gaps in RBV are expected to be filled in by this application. RBV is considered a very popular theoretical perspective to explain organizational performance (Newbert, 2007). From the arguments of RBV, relationships among resources, organizational capabilities and performance are still controversial among scholars and thus, a comprehensive research question about the relationships is raised to answer in this paper. Based on these backgrounds, the purpose of this study is to examine the relationships among these theoretical constructs of firms belonging to supporting industries.

2. Literature Review

Over the last two decades, RBV has emerged as one of the most dominant theoretical perspectives in the field of strategic management (Newbert, 2007). The first formalization of RBV is considered to be the empirical paper written by Barney (1991), Based on the works of previous scholars such as: Penrose (1959), Wernerfelt (1984), and others, Barney (1991) suggested that firms possessing valuable, rare resources and capabilities would attain competitive advantage, which would in turn improve their performance. In the theoretical outstanding works of RBV, Grant (2002:139) attempted to conceptualize a comprehensive framework of relationships among resources, organizational capabilities and competitive advantage (see Figure 1). He suggested that the basic and primary inputs into organizational processes are the individual resources of the firm such as tangible resources (financial capital, physical equipment), intangible resources (intellectual property, reputation, firm culture and organizational structure), and human resources. Nonetheless, in most

cases, resources on their own are not so productive. In order for the firm to create competitive advantage, individual resources must work together to initially establish organizational capabilities. Hence, it can be interpreted that there is no direct link between the individual resources and the competitive advantage or performance.

In empirical studies of RBV, there have so far been many researches which focus on the different approaches. Newbert (2007) categorized theoretical approaches into four types: resource heterogeneity, organizing approach, conceptual-level, and dynamic capabilities. The resource heterogeneity approach argues that a specific resource, capability, or core competence controlled by a firm, affects its competitive advantage or performance. The organizing approach tends to indicate firm-level conditions in which the effective exploitation of resources and capabilities is implemented. Scholars utilizing the conceptual-level approach try to investigate if the attributes of a resource identified by Barney (1991) such as value, rareness, and inimitability, can effectively explain performance. The dynamic capabilities approach emphasizes specific resource-level processes influencing on competitive advantage or performance, in which a specific resource interacts with a specific dynamic capability as an independent variable.

Although Grant (2002)'s comprehensive framework has not been linked to approaches by Newbert (2007), they seem to be consistent with each other. By looking at Figure 1, these four approaches may also be somewhat observed through the framework. Based on a detailed analysis of all approaches, Newbert (2007) concluded that the firm's organizing context and its valuable, rare, inimitable capabilities (dynamic and otherwise) and core competencies may be more important to determine its competitive position than its static resources, identified mostly by the resource heterogeneity approach. Based on Newbert (2007)'s conclusion, this study focuses on dynamic capabilities approach. The underlying theoretical logic links from the organizational capabilities rather than the specific or individual resources to the competitive advantage and then the performance. Moreover, Vietnam's supporting industries are at the early stages of development. The prerequisites for the industries to improve competitiveness are capabilities such as cost reduction and quality (Ohno, 2006).

This said, although the term "capabilities" is often cited above, its implication in different contexts may not be similar. It can be said that there are three types of capabilities: the first is understood as specific or individual, the second is processes, and the third are the organizational capabilities. Capabilities are characterized as skills or expertise of employees, or intangible resources such as reputation or culture (Carmeli & Tishler, 2004), which seem to be quite specific or individual. In this sense, capabilities are only considered as the basic inputs equivalent to the specific resources or parts of overall resources in Grant (2002: chap. 5)'s definition (Galbreath, 2005). On the other hand, in the most recently emerging trend of RBV, scholars have emphasized more on the firm's capabilities as processes. Although authors of many researches used different terms (Kogut & Zander, 1992; Amit & Schoemaker, 1993; Eisenhardt & Martin, 2000), their definitions of these terms all indicate the firm's processes that use specific resources and integrate them together, reconfigure and release new resources of competitive advantage.

To some extent, these new resources can be regarded as output of the processes that turn out to be input of new processes (business operation process) toward competitive advantage and performance. We do not hesitate to name the output of the resource integration processes as a third type of capabilities. This third type can be called organizational capabilities, as Grant (2002) implies in his comprehensive framework (see also Figure 1). Moreover, in that sense, it can be said that the term 'resource-based capabilities' used in the empirical studies by Chandler & Hanks (1994), and Wang & Ang (2004) should be listed in the third type. In an attempt to distinguish between these underlying terms, this paper considers empirically the link between the specific resources and the new resources (the so called organizational capabilities). Therefore, the significant academic purposes of this paper are to provide more empirical evidences for the dynamic capabilities approach of RBV, and to seek to answer a research question about the relationship between resources and organizational capabilities recognized theoretically by Grant (2002: 139) and then performance (see also Figure 1).

Figure 1 Relationships among resources, capabilities, and performance
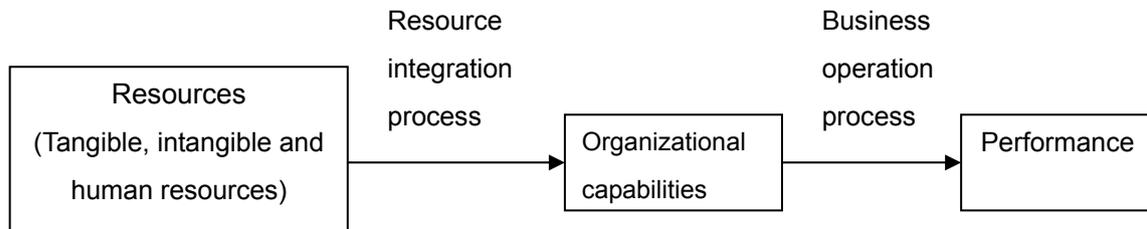
Source: modified by authors based on Grant (2002: 139)

Based on the literature review above and previous empirical evidence (Chandler & Hanks, 1994; Wang & Ang, 2004; Wu & Wang, 2007), several hypotheses can be set as follows.

H1a,b,c: A firm's resources have significantly positive impact on its cost reduction capability, quality capability and innovation capability.

H2a,b,c: A firm's cost reduction capability, quality capability and innovation capability are significantly positively related to its performance.

3. Methodology

First of all, it is necessary to discuss the definition of supporting industries in Vietnam. The term supporting industries began to be used in 2003, and it can be defined as a group of industrial activities which supply intermediate inputs (i.e., parts, components) and parts of capital goods (tools to produce these parts and components) for assembly-type or processing industries (Thuy, 2006). In this paper, the analysis is limited to supporting industries such as mechanical, electric and electronic industries for assembly-type industries.

3.1 Data and Sample

A representative sample of 250 manufacturing firms in Hanoi city, which belong to supporting industries (mechanical, electric and electronic), was obtained from the Vietnam Business Directory, which is the largest business

directory in Vietnam. Due to unavailability of secondary data, a survey by questionnaire was conducted during August and September, 2008 in Hanoi city. A structured questionnaire was administered to the directors of the 250 firms. Out of the 250 questionnaires sent out, 118 were returned. Among the 118, 102 were valid. Thus, 102 firms are the analysis sample for this paper, accounting for 40.8 percent of the true response rate. Among these 102 firms, the average number of employees is 294, and the average firm age is 11 years.

3.2 Research Variables

3.2.1 Resources
This study measures resources on the basic of Grant (2002:140)'s definition. This definition is also used in several other empirical studies (Galbreath, 2005). Thus, resources include tangible (financial, physical), intangible (intellectual property, company reputation, organizational culture and structure) and human resources (skills, expertise and creativity of employees). Specifically, respondents were asked to rate the resources currently available in their firm in comparison with competitors in the same product lines over the last three years (five-point Likert scales, 1 = great disadvantage, 5= great advantage). Totally, there are six items measuring resources.

3.2.2 Organizational Capabilities
In accordance with the above discussion about organizational capabilities, Grant (2002) classifies this construct into two commonly used approaches: a functional analysis and a value chain analysis. This study utilizes organizational capabilities in the value chain analysis. The value chain analysis separates the activities of the firm into a sequential chain such as: purchasing, engineering, manufacturing, inventory, sales and marketing, distribution and customer support (Grant, 2002). Organizational capability items are factored as three separate scales supportive of competitive advantages: cost leadership, quality, and innovation (Chandler & Hanks, 1994; Wang & Ang, 2004). Regarding these three scales as organizational capabilities is also quite compatible with key required factors for the competitiveness of supporting industries in Vietnam (Ohno, 2006). Each factor is considered in the value chain analysis. Specifically, respondents were asked to rate a set of capabilities of cost reduction, quality and innovation in comparison with competitors in the same product lines (five-point Likert scales,

1 = great disadvantage, 5= great advantage). The first capability is measured through sub-scales: low-cost materials, labor, designs to economize on materials, level of capacity utilization, degree of automation, effective sales promotion, and execution. The second capability is perceived through purchased inputs, product engineering skills, strict quality control, identifying and responding to market trends, and quality and effectiveness of customer service. The final one is also observed on purchasing, product engineering, process engineering, and marketing.

3.2.3 Firm Performance

This paper uses a subjective financial performance (sales growth) as the only measure. Respondents were asked to evaluate sales growth in five consecutive years on a five-point Likert scale (1 = significantly decreased to 5 = significantly increased).

3.2.4 Control Variables

This paper controls some variables, including firm size (total number of employees), firm age (measured from established year up to the year 2007), legal status (limited liability companies = 1, others = 0), and environmental dynamism (measured by averaging four aspects of environment: technology, market, industrial organization, and government regulation for industry in a five-point Likert scale from 1 = minor change to 5 = major change).

4. Analysis and Results

In regard with measurement of the dependent variables, this paper uses an analysis method of ordered probit regression. This kind of regression is appropriate with the dependent variables measured by ordinal level. In particular, according to Long and Freese (2006), the following structural model is used to analyze the data:

$$y = \beta x + \varepsilon$$

where y is a vector of the dependent variable, ranging from $-\infty$ to ∞. X is vector of independent variables, β is the parameter to be estimated, and ε is a random error. A standard formula for the predicted probability in the ordinal regression model is as follows:

$$\Pr(y=m|x) = F(t_m - \beta x) - F(t_{m-1} - \beta x)$$

where m is ordinal categories, t_{m-1} and t_m are cutpoints, F is the continuous distribution function for ε. In ordinal probit, F is normal with $Var(\varepsilon) = \pi^2/3$.

This paper estimates four below models:

$$Model\ 1: Pr(crc=m|x) = F(t_m - \beta x) - F(t_{m-1} - \beta x)$$
$$Model\ 2: Pr(qc=m|x) = F(t_m - \beta x) - F(t_{m-1} - \beta x)$$
$$Model\ 3: Pr(ic=m|x) = F(t_m - \beta x) - F(t_{m-1} - \beta x)$$
$$Model\ 4: Pr(grs=m|x) = F(t_m - \beta x) - F(t_{m-1} - \beta x)$$

where *crc* is cost reduction capability; *qc* is quality capability; *ic* is innovation capability; and *grs* is sales growth. In order to reliably implement the regression analysis, some initial statistics are considered to check multicollinearity. For instance, by checking the variance inflation factor (VIF) for variables of resources and organizational capabilities with the highest coefficient of less than 4, which is still below the VIF of 10 (Kennedy 1992: 183), it can be said that there is no problem with multicollinearity.

Table 1: Determinants of organizational capabilities.

	Cost reduction capability (*model 1*)	Quality capability (*model 2*)	Innovation capability (*model 3*)
Log (firm age)	0.06	0.07	-0.23
Log (firm size)	-0.20	0.02	-0.17
Legal status	-0.00	0.12	-0.06
Environmental dynamism	0.07	0.09	-0.01
Financial Resources	0.56[a]	0.23	-0.06
Physical Resources	0.23	0.37[c]	0.70[a]
Intellectual Resources	0.50[b]	0.53[c]	0.65[a]
Company Reputation	0.08	0.59[b]	-0.10
Firm culture & Organizational Structure	-0.08	0.18	0.33
Skill, expertise, creativity of employees	0.27	0.50[b]	0.40[b]
Pseudo R2	0.29	0.46	0.38
Log Likelihood	-99.76	-70.95	-85.79
a, b and c indicate statistically significance at 1%, 5% and 10% level, respectively			
Standardized coefficients reported			

Table 2: Determinants of performance

	Sales growth (model 4)
Log (firm age)	-0.10
Log (firm size)	0.29^b
Legal status	-0.14
Environmental dynamism	-0.12
Cost reduction capability	0.34^b
Quality capability	0.56^a
Innovation capability	0.16
Pseudo R2	0.28
Log Likelihood	-109.99
a, b and c indicate statistically significance at 1%, 5% and 10% level, respectively	
Standardized coefficients reported	

Table 1 indicates the results of the ordered probit regression analysis used to test the hypothesis *H1a,b,c.* There are three models, in which each model considers each individual organizational capability (cost reduction, quality, and innovation) as one dependent variable. The Pseudo R^2 in Table 1 shows that the independent variables in all three models explain jointly a considerable amount of the variance in the dependent variable. For testing hypothesis *H1a* (*Model 1*)*,* only two independent variables are significant and positive in the cost reduction capability model. They are financial resources and intellectual resources. Thus, hypothesis *H1a* is partly supported.

In the quality capability model (*Model 2*), physical, intellectual resources, company reputation and skill, expertise and creativity of employees are

significantly and positively related to quality capability. Hence, hypothesis *H2b* is also partly supported. In terms of innovation capability *(Model 3)*, physical, intellectual resources, and skills, the expertise and creativity of employees have a significantly positive impact on this capability. Therefore, hypothesis *H2c* is only partly accepted. In short, for hypotheses *H1a,b,c,* it can be said that each capability is created and affected by different resources. For instance, financial resources significantly affect only cost reduction capability without affecting the quality and innovation capability. As a matter of fact, it is not easy to explain why one resource affects a capability (capabilities) without the others. Perhaps, it had better be explained by a group of resources. Generally, as can be seen, the quality capability is affected by the most resources than the other capabilities. The reason may be that cost reduction and innovation capability are more influenced by external factors and thus, they might lead to higher uncertainty (Wang & Ang, 2004). With respect to the *Model 4* testing hypotheses *H2a,b,c*, as can be seen from results in Table 2, parameter estimates for cost reduction and quality capability are significant and positive, indicating that a firm's cost reduction and quality capability are indeed very important explanatory variables to its performance. However, the innovation capability variable is not significantly related to the firm's performance. These findings suggest that hypotheses *H2a* and *H2b* are supported, but not *H2c.* Moreover, results in Table 2 also report that the quality capability has the strongest influence on performance overall.

5. Discussion

These findings may be of interest to both academics and practitioners for several reasons. For academics, firstly, our findings confirm empirically Grant (2002)'s conceptual framework about the relationships among resources, organizational capabilities and performance. It can be said that this is one of the first researches that makes an effort to partly prove this framework. Secondly, by classifying the organizational capabilities into three constructs including cost reduction, quality and innovation, this study reached interesting findings by following the dynamic capabilities approach of RBV. As mentioned above, each capability is affected by different resources and numbers of resources. It may thus be implied that when considering the contribution of resources to each capability, these should be discussed in a group of resources, but not as a specific one which can create one organizational capability. The most important thing is the priority order of organizational

capability development. As indicated in the results of this study, the group of priority resources is emphasized on the basis of each capability.

For practitioners, as hypothesis *H2a,b* are supported and *H2c* rejected, this finding indicates that the cost reduction and quality capabilities make a great impact on the performance of firms belonging to supporting industries. It may lead the way in which owners/managers make decisions to improve their performance. It is also consistent with suggestions by Ohno (2006) about key factors such as quality and cost for competitiveness of supporting industries at their current stage of development. Additionally, as shown above, the quality capability has more explanatory power for performance than the cost reduction capability. For Vietnamese parts manufacturers, at present, the most crucial aspect for competitive advantage is quality capability, especially product quality. On the other hand, it may be true that the innovation capability is rejected in Vietnam's case. The first reason might be that at the stage of development of supporting industries in Vietnam, innovation is not considered a priority in comparison with quality and cost reduction. The second reason is likely to stand at feature of the supporting industry itself, where the innovation capability, especially product innovation should come mostly from assemblers.

From our results of testing two hypotheses in this study, it may be implied for practitioners that the quality capability should be the first priority to develop, and the second would be the cost reduction capability. Each capability is respectively involved into a specific group of resources. Obviously, the sampled firms can implement it so that such findings show the significance of resources and organizational capabilities and by that, give empirically hope and motivation to owners/managers of firms to realize what the most important resources are and leverage them into the preferential organizational capabilities.

6. Limitations and Directions for Future Research

Firstly, due to unavailable secondary data, this study uses self-report data as perceived by owners/managers. This method may cause some biases. Secondly, in terms of analysis methods, it would have been best if this paper had conducted a factor analysis for constructs such as resources and organizational capabilities before proceeding to the next steps. However, based on the results of the pilot survey and the appropriate analysis method of

ordered probit regression, it is believed that this study is still secured under the above mentioned limitations. The last constraint may be the relatively small sample size and the limitedly targeted location of the research. Regarding these, one should be careful before making any generalization from this study. Ultimately, further studies should be implemented. This paper only indicated which group of resources contributes to each organizational capability, but this does not explain how these organizational capabilities can be created or the processes in which they are established. Thus, we would strongly suggest trying to answer this question in further studies.

7.0 References

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