The Role of Resources and Capabilities in Global Sourcing: An Empirical Study Using Structural Equation Modeling

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Abstract: This study empirically investigates how firm-specific capabilities and resources acquired through global sourcing activities affect process performance. The underlying research model was based on the resource- and capability-based view of the firm. In order to test the model, an empirical study was conducted through structured telephone interviews with Chief Procurement Officers and Purchasing Managers of 200 large-sized companies in five European countries. The results showed that process performance was strongly influenced by the level of external resources in control, which in turn were very strongly related to the extent of global sourcing capabilities of the firm. The overall conclusion is that global sourcing capabilities help firms getting access to a larger resource pool, which in turn affects performance in terms of effectiveness and efficiency positively.

Keywords: Global Purchasing, Strategy Development, Supplier Management, Factor Analysis, Structural Equation Modeling

I. Introduction

Globalization has induced immense competition in most industries. Moreover, firms competing in mature markets have experienced increasing difficulties to grow revenues in their home markets, especially in the aftermath of the recent global financial crisis. As a result, firms are increasingly focusing on cost reduction as a means for increasing shareholder value. As indicated by Monczka [1], offering low product prices as a result of being a low-cost producer is one of the most important competitive advantages today. However, firms with strategies focusing on differentiation also benefit from low cost since freed-up capital can instead be spent on more value adding activities. Furthermore, cost savings translate directly dollar by dollar to the bottom line result, making it the most effective means for improving corporate profitability [2].

In order to reduce costs and thus satisfying internal customer demand [3-4], an important objective of the corporate supply function is to source goods and services in a way that yields reductions in total cost while delivering adequate quality. The strategic importance of this task has increased significantly over the last few years, as manufacturers increasingly rely on contract manufacturing as a means to reduce production costs [5-6], especially as the bargaining power of contract manufacturers have grown steadily [7]. One of the most effective ways to achieve cost-saving targets is to source from countries at a global level, with the objective to achieve total cost reduction and less focus on purchase price [8], so called global sourcing [1, 9-11].

Earlier research suggests that global sourcing is a crucial task that needs to be planned and executed with great care. Despite anecdotal evidence of vast cost-savings opportunities, a company can easily end up with increased instead of decreased total costs if not doing global sourcing operations properly as transportation and logistics costs can comprise more than 30 percent of total landed cost [12]. Due to the many challenges imposed by globalization, there are numerous challenges and obstacles to overcome, for example cultural barriers, fluctuating currencies, increased distances for travel and transportation, political instability among others [13]. The question is not just which countries are attractive for sourcing in order to obtain reduced purchase prices, but rather which supplier that can deliver a certain type of goods or service at adequate quality to the lowest possible total cost, not only today, but over an extended period of time. As will be further elaborated in the next section, earlier research has primarily been focused on external market conditions, often omitting the role of the focal firm and its interaction with the external environment. Having said that, this paper aims at answering the following questions:

1. How can global sourcing performance ideally be conceptualized?
2. What are the antecedents to global sourcing performance?
3. What particular roles do capabilities and resources play in this context?

II. Conceptual Framework and Hypotheses

Over the last two decades, a rich body of research on global sourcing has emerged. Most of this research has either focused on the nature of the supplies sourced by applying transaction cost theory (TCT) [14-16] or situational factors as motivation for global sourcing [17]. However, less attention has been paid to the role of resources as a source of competitive advantage in a global
environment. Hence, from a scientific perspective, the findings of the research will provide a novel and different perspective of global sourcing, compared to the dominating TCT-based research on global sourcing done during the 1990s and early 2000s.

By applying resourced-based view (RBV) as a theoretical lens, it is interesting to examine the driving forces behind global sourcing strategies where companies are seeking new opportunities in overseas locations. According to RBV, global sourcing can be seen as a way of increasing the available resource pool to gain comparative advantage [18-19], and in turn gain competitive advantage, as firms expand their sourcing markets into new geographic regions. Such resources have two characteristics: they are (i) external to the firm and (ii) imperfectly mobile. (i) implies that the resources are not in full control of the firm, but can be at least partially controlled through management decisions. An example is a joint venture with a manufacturing firm or an exclusive strategic relationship with an overseas supplier [20]. (ii) implies that local presence is necessary to some extent in order to take advantage of the resource, since it cannot be moved to the home country of the buying firm. Such resources are referred to as external resources, as they are located outside the firm’s boundaries. In contrast, an example of an internal resource could be effective deployment of Internet-based purchasing systems [21].

As a consequence, one of the key objectives of global sourcing is hence to acquire such external resources possessed by suppliers, and convert them to internal resources where they can generate competitive advantage [22]. Another goal is also to integrate and coordinate internal customer demand depending on category and market uncertainty as well as internal dependencies among purchasing offices [23]. In a similar fashion, Terpend et al. [24, p. 28] claims that the value derived from buyer-supplier relationships include global sourcing improved operational performance, better integration, supplier capabilities and financial improvement, all of which global sourcing practices can help enhancing. Srivistava et al. [25] suggests that many key resources arise from the firm’s interaction with the external environment. This notion is also supported by Dyer and Singh [26] who claim that “a firm’s critical resources may span firm boundaries and may be embedded in inter-firm resources and routines”. In particular, “cooperative competencies” are becoming increasingly important as value chains become more and more fragmented, with increasing dependency on suppliers for creation of customer value [5, 27-31]. Increased access to suppliers can also help creating a strong market position of the firm, ultimately generating competitive advantage [32]. A Delphi study conducted by Ogden et al. [33] indicated that leveraging supplier capabilities and improving supplier relationship were key strategic issues among purchasing managers. Based on the discussion above, it is plausible to believe that firms that possess a high level of external resources through global sourcing also have higher performance.

However, there are several difficulties in trying to operationalize competitive advantage, due to the fact that there are many intermediary moderating and mediating variables that can potentially obscure the effect of resources on higher-level performance metrics such as ROI, market share etc [34-36]. Instead, Ray et al. [36] suggests to choose process performance as the endogenous construct when testing the resource-based view empirically. Positive impact on process performance from supply-side activities has been observed earlier, for example through supply chain integration [37-39], early supplier involvement [40] and strategic supplier development [41]. Since this approach has proved to be successful in the past, global sourcing performance was selected as the endogenous construct in this particular study. Furthermore, process performance can also be dichotomized into two subcategories, namely effectiveness and efficiency. Here, effectiveness refers to the extent to which a pre-defined objective has been achieved, whereas efficiency refers to the extent of inputs needed to achieve those pre-defined objectives [42]. Based on the discussion above, the first two hypotheses are as follows:

Hypothesis 1: Global sourcing efficiency is positively influenced by the level of external resources in possession by the firm.

Hypothesis 2: Global sourcing effectiveness is positively influenced by the level of external resources in possession by the firm.

Moreover, while dealing with effectiveness and efficiency, one must also consider the relationship between the two: which one follows the other? The logical answer is rather straightforward: In order to achieve effectiveness (i.e. accomplish a set of business objectives), resources are needed. Unless necessary resources are in place, and unless the economic returns exceed the cost of those resources invested, business objectives cannot be accomplished. In other words, for every business objective, the cost of achieving that objective must be considered (i.e. efficiency must be considered). Therefore, effectiveness must primarily follow efficiency and not vice versa. Based on this discussion, the third hypothesis can be defined as follows:

Hypothesis 3: Global sourcing effectiveness is positively influenced by global sourcing efficiency.

The next obvious question is how to acquire external resources. For this purpose, it is worthwhile investigating the types of resources that exist. Although numerous resource classification schemes exist, resources of the firm are usually categorized by their physical nature [43] or by

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what the company has or what it does [44-45]. Using this classification, one can identify organizational capabilities as a broad category that involves several dimensions such as skills [46] and invisible assets [47]. Amit and Schoemaker [48] defines capabilities as “the firm’s capacity to deploy Resources”, meaning that they represent what the firm is “doing” rather than what it is “having” [44]. Several scholars have claimed that organizational capabilities are not only based on the capabilities of the individual people, but also the interpersonal capabilities when employees work in teams [49-50], a notion derived from Nelson and Winter’s [51] concept of organizational routines. Capabilities have also been frequently been pointed out as the strategic factor that makes the firm dynamic in a sense that it lets the firm “renew competences” [52]. Moreover, several scholars claim capabilities to be the ultimate source of competitive advantage, as they make firms truly distinguishable and unique [45, 53].

This discussion fits quite well in a global sourcing context, as it is obvious that it takes certain organizational capabilities to acquire external resources in foreign countries. For example, as the degree of value added is decreasing, capabilities for effective supplier collaboration is becoming increasingly important in order to realize competitive advantages for the buying firm [54-55], and overcome the disadvantages of foreignness [56]. Furthermore, in order to successfully manage supplier relationships, the capability to share information and communicate is highly important [57], and is even more important when sourcing in emerging and transition economies where accurate information is scarce and uncertainty is high [58]. This statement is further supported by Harvey et al. [59] who state that both technical and social competencies are essential for effective supply management in global account relationships. Therefore, the fourth and final hypothesis is as follows:

**Hypothesis 4:** The level of external resources accessible to the firm is positively influenced by the level of global sourcing capabilities of the firm.

The hypotheses jointly form a conceptual framework as shown below.

![Conceptual framework](image)

### III. Data Collection

The survey methodology followed a standard research protocol where data was collected through computer-assisted telephone interviews (CATI). The initial questionnaire was pre-tested for time length, clarity and other problems. It was also translated into the corresponding language of the countries subject of study and then translated back to the original language to ensure that no meaning was lost during the translation. Before and during the pilot study, meetings were arranged with the interviewers on a regular basis in order to identify and solve problems that might arise during the interviews, but also as a means for eliminating potential problems associated with inexperience of the interviewers [60]. Only a few minor problem areas were identified and corresponding changes were implemented for the second wave of the survey. Random audio tapping were also carried out in order to assure face validity [61]. If a telephone number did not result in a completed questionnaire, another telephone number was randomly selected from a database consisting of 6,833 entries. Only native speakers of the corresponding countries were used in order to facilitate the execution of the interviews and reduce the risk for misunderstandings.

### The Sample

A stratified sample for the study comprised Chief Procurement Officers and senior Purchasing Managers at business unit level of large-sized companies operating in France, Germany, Italy, Spain and the UK. These tend to be involved in decision-making regarding localization of sourcing activities. Furthermore, they are frequently positioned at board-level where strategic sourcing decisions normally are taken. Consequently, this category of respondents can be considered the most suitable for this study and hence key-informant bias is minimized [62]. The qualifying criterion for participation was an annual revenue exceeding 300 million euro. A total number of 200 interviews had been set as a target and all in all 1,273 phone calls had to be made in order to accomplish this. Out of the total number of calls, about 15 percent resulted in no answer, and another 14 percent resulted in an answering machine. Three percent of the numbers were invalid. The remaining 68 percent equals 866 firms which yields an effective response rate at 23.1 percent. The response rate is comparable to those of mail surveys and poses no problem as sometimes have been pointed out in literature [63-64]. The sample represented a wide range of industries, distributed as depicted in Table 1. The industries correspond to NAISC codes 11, 21, 23, 32, 33, 44, 45, 48 and 52. Mean direct and indirect spend volume were 651 and 262 million Euros, respectively. About 80 percent of the completed interviews came on a follow-up call; this differentiation was used to detect possible non-response bias. To test for this, a modified procedure
suggested by Armstrong and Overton [65] was applied. A chi-square test indicated that no significant differences existed between first-call and follow-up call respondents for country ($\chi^2_{\text{diff}} = 5.70, p = 0.34$), spend volume ($\chi^2_{\text{diff}} = 5.580, p = 0.23$) or industry ($\chi^2_{\text{diff}} = 11.43, p = 0.41$). Thus, there was no evidence of obvious response bias in the sample.

Table 1. Industry representation

<table>
<thead>
<tr>
<th>Industry</th>
<th>#Companies</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and agriculture</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Machinery</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Energy/resources/material</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Construction</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Automotive</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Electronics</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Pharma/Chemical</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Telecom</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Retail</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Transportation</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Financial services</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Measures

All items were measured on a five-grade semantic scale ranging from one to five. The construct items were not rotated from interview to interview, but were randomly ordered. The questionnaire was pre-tested during a purchasing and supply management seminar with eight sourcing experts comprising a mix of researchers and industry practitioners. Items that were not immediately understood or found ambiguous were changed in their wording or dropped altogether unless it would detrimentally affect construct validity. Out of the original set of items, all constructs were operationalized through three items each.

IV. Analysis and Results

The analysis procedure was divided into two steps according to an approach as suggested by Anderson and Gerbing [66]. First, the measurement model was assessed, followed by testing of the structural model itself. The empirical data was analyzed through maximum likelihood (ML) structural equation modeling (SEM) using the statistics software package Amos v18.0.

Measurement Model

In order to assess convergent and discriminant validity for the various constructs used in this study, confirmatory factor analysis was applied. As a first step, assessment of convergent validity was performed. Obviously, there is evidence for convergent validity as all factor loadings were highly significant. The model fit indices used in this study were $\chi^2_{314} = 64.2$ ($p = 0.059$), $\chi^2/df = 1.34$, RMSEA $= 0.046$, GFI $= 0.95$, NFI $= 0.91$, CFI $= 0.97$ and standardized RMR $= 0.053$, indicating that the model was acceptable [67-68]. Furthermore, PGFI was 0.54, which indicates a high parsimonious fit [69]. Discriminant validity was evaluated through chi-square difference tests for each pair of constructs in the measurement model. For the measurement model, all constrained model specifications had significantly higher chi-square values than the oblique (i.e. unconstrained) model; hence, discriminant validity was deemed adequate.

Moreover, construct reliability was highly satisfactory, as the parameters for each corresponding latent variable exceeds 0.70 [70]. Furthermore, item analysis was conducted. Kumar et al. [71] suggest that item-to-total correlation should exceed 0.3; those lower than that do not share enough variance with the rest of the items in that scale. This criterion was also fulfilled in this study. Furthermore, a recommendation by Homburg [72] saying that average variance extracted should exceed 50 percent was apparently fulfilled with a good margin; in the case of this study, the amount of variance extracted ranged from 65.8 to 72.6 percent.

Path Analysis

After assessing the fit of the measurement model was assessed, the next step was to evaluate the previously defined hypotheses by examining the interrelations between the different constructs (Figure 2).

The model fit indices used in this study were $\chi^2_{50df} = 58.8$ ($p = 0.18$), $\chi^2/df = 1.18$, RMSEA $= 0.049$, GFI $= 0.94$, NFI $= 0.90$, CFI $= 0.97$ and standardized RMR $= 0.062$, indicating that the model was acceptable [67-68]. Furthermore, PGFI was 0.60, which indicates a high parsimonious fit [69]. The intuitive reason to the relatively high value is the low complexity of the model structure.

Evaluation of Hypotheses

Hypothesis 1 postulated the relationship between two variables. In line with expectations, it turned out to be a significant predictor variable ($p = 0.002$) and the relationship was relatively high (0.31). Hence, hypothesis 1 was accepted. Hypothesis 2 explored the relationship between two external variables and global sourcing effectiveness. For this variable, the relationship was positive and strong (0.41), and also highly significant ($p < 0.001$). Thus, hypothesis 2...
was accepted. Hypothesis 3 investigated the relationship between global sourcing efficiency and global sourcing effectiveness. As expected, it turned out to be a significant predictor variable \((p = 0.019)\) and the relationship was moderately strong \((0.25)\). Hence, hypothesis 3 was accepted. Finally, hypothesis 4 examined the relationship between global sourcing capability and access to global external resources. For this variable, the relationship was positive and very strong \((0.82)\), and also highly significant \((p < 0.001)\). Thus, hypothesis 4 was accepted. A an overview of the research model with path coefficients is shown in Figure 3.

![Figure 3. Structural model with path coefficients](image)

### V. Conclusions

Global sourcing is a critical undertaking that needs careful strategy development and execution in order to yield total cost reduction while assuring quality and delivery [12]. Most prior research has focused on motivations for global sourcing [17], transaction-specific aspects [73] or international supplier evaluation [74]. This study provides a novel perspective on global sourcing by elucidating the interrelation between internal and external firm resources by extending extant theory on RBV. Furthermore, the empirical investigation on the role of firm-specific resources in a supply-side context provides insight in a topic that has yet only been examined theoretically [75-76].

### Theoretical Contributions

From a theoretical perspective, the results clearly showed that capabilities has a very strong positive influence on acquisition of external resources and thus creation of competitive advantage, in line with the capability-based view [77]. Furthermore, the fact that firm capabilities played a very important role for acquiring and controlling external resources through global sourcing activities also support the notion of the strategic importance of purchasing and supply management that has been under scrutiny for several years [75-76]. Also, the strong relationship between external resources and performance indicates the relevance and validity of RBV as a viable theoretical lens to explain the global sourcing phenomenon, but also creates a crucial linkage between RBV and the capability-based view which historically have been perceived as rather independent and disparate theories of the firm. Finally, the study results also highlighted the relationship and causal direction between effectiveness and efficiency which has been under scrutiny for a long time [78].

### Managerial Implications

First, the results underline the necessity to have adequate resources in order to create competitive advantage from sourcing in emerging and transition economies. If global sourcing efforts fail to acquire and control scarce external resources, expectations will simply not materialize. This finding is supported by various anecdotal evidence where global sourcing objectives are frequently not accomplished [79].

Second, as activities at operational level are derived from strategy, this highlights the importance of purchasing and supply management, where managerial skills play a key role in locking up scarce resources in the external environment, allocating internal resources in order to maximize value creation, and ultimately generating superior market performance [75]. Earlier studies have shown that all too often companies have vaguely defined sourcing strategies, which lead to disparate expectations, misallocation of resources and ultimately a vicious circle of declining performance [80].

### Limitations of the Study and Suggestions for Future Research

The study has several limitations. First, the study is cross-sectional, which means that the results only provide a static picture of the current situation. Second, only large-sized firms were included in this study. Since large-sized firms generally have more resources available to deploy through subsidiaries in foreign countries, they can potentially overcome barriers associated with sourcing in emerging and transition economies. As a result, the results from this study may not be generalizable to small or medium-sized firms. Third, as the sample in this study represents a wide range of industries, one has to be cautious about drawing conclusions at industry-level as the number of firms in some industry categories (e.g. financial services) is very low and thus cannot provide any statistically significant results. Fourth, as the aim of this study is to validate a theoretical model for global sourcing, the number of predictors in this study is limited to twelve, as a means to preserve parsimony. Finally, as many firms have their own specific performance objectives, it is likely that the performance measures used in this study do not perfectly correspond to the measures of the responding firms.

### VI. References
