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Portfolios in supply network management: An analysis of a Finnish company in the electro technical industry¹

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Abstract:

The aim of this study is to analyze the use of portfolios in supply network management. We discuss briefly the literature on supply network strategies and supplier portfolios, but we focus on analyzing empirically one case: a Finnish company in the electro technical industry. We also resort to some survey information on purchasing of ten companies in the field. We conclude that the companies have been active in developing close cooperative relations with their suppliers. However, both a more extensive supplier network analysis and a portfolio view that considers the variety in supplier relations are largely missing.

Keywords: purchasing strategies, supplier relations, portfolios

1. Introduction

There are many different kinds of relationships between an industrial buyer and a seller. One way of taking this variety into consideration in purchasing strategies is to resort to supplier portfolios: thus a buyer can determine and manage its purchasing strategy on the basis of the different products and services that are exchanged as well as the nature of the different supplier relationships. Essentially, the portfolio view stresses the need for designing the supplier network so that it considers different kinds of supplier relationships and consequently, the management of bundles of relationships. Although theoretical literature (see e.g. Gadde & Håkansson 2001, Gadde & Snehota 2001, Ford 2002) emphasizes the role that relationship management should play in purchasing, we know little about the actual purchasing strategies of the companies today.

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The aim of this study is to analyze the use of portfolios in supply network management. We discuss briefly the literature on supply network strategies and supplier portfolios, but we focus on analyzing empirically one case: a Finnish company in the electro technical industry. This company, called here Alpha, relies heavily on outsourcing and networking with its suppliers, and forms therefore a revealing case for analyzing portfolios in supply strategies. We resort also to (exploratory) survey information on purchasing of nine other companies in the field, which allows us to make some comparisons between companies.

The paper is organized as follows: this introductory section stating the background and aim of the study is followed by a review on trends in purchasing strategies and portfolios. Next, we present the case study: a description of the branch of industry and purchasing strategies in the field is followed by a description of the case company Alpha. We then discuss supply strategies and use of portfolios within this company and pose some recommendations for managers. As a conclusion we summarize the use of supply portfolios in the case company and more generally.

2. Literature review and theoretical background

2.1 Trends in supply strategies

As networking behavior and outsourcing have become more common in industrial companies, we would expect to see an increasing variety of buyer-seller relations as well as many different purchasing strategies. A company can manage its purchasing strategies by using portfolio analysis. Purchasing portfolio analysis was first introduced by Peter Kraljic in 1983 (Koskinen 1995: 235). It's a modification of the portfolio model developed for planning of sales and marketing. The basic assumption behind the portfolio thinking is that companies should consider *bundles of supplier relationships* and have *different kinds of strategies to different kinds of suppliers and products* they purchase. Especially in industrial markets, where the number of actors is limited and deeper interdependence exists, portfolio analysis can be a useful aid in the development of supplier relationship strategy.

Interest in supplier portfolios is a result of the general trends in purchasing in the past decades: supplier relationships form today the focus of attention in supply strategies. In the 90's the role of supply has changed from administrative towards a more strategic function in companies. In the early 90s researchers focused mainly to integration of purchasing to other functions of a firm (Carlson 1990, Reid 1990, St. John & Young 1991). The role of purchasing on the perspective of product development was emphasized as well. Companies allocated their resources mainly to long perspective strategies and development and utilization of various relationships (Saunders 1994, MacBeth & Ferguson 1994). Furthermore, comparisons between Japanese and American purchasing strategies were common (Burt & Doyle 1994, Hines 1994, Nishiguchi 1994).

In the late 90s, outsourcing of activities, creation of partnership relations and reduction of the supplier base were the major trends in various firms. Strategies of distant relationships and low price changed gradually towards more close, co-operational supplier relationships. Developing collaborative relationships was, however, resource demanding, and companies could not to have close relationships with very many suppliers, but were forced to focus only to the most important ones. Therefore, the focus of supply strategies changed from securing the lowest possible price towards co-operation, most often partnership based arrangements. Another trend in the 90s was the development of supply chain management, SCM. The purpose was to develop economic advantage by streamlining the whole supply chain from product planning to final delivery (Gadde & Håkansson 2001). Attention was targeted to management of individual supplier relationships.

2.2 Portfolios in procurement

The majority of conceptual relationship portfolio models are based on either supplier or customer relationships modeling. The models which have been developed are both two and three dimensional. Model by Shapiro et al. (1987) present dimensions such as net price and cost to serve. Zolkiewski & Turnbull (2000) suggested that this model has been the most widely adopted as the basis for further research. However, also other authors, like Fiocca (1982), Campbell & Cunningham (1983), Krapfel, Salmond & Spekman (1991) and Yorke & Droussiotis (1994), have influenced the research area. According to the study by Bensaou (1999) companies really need to manage a portfolio of relationships. Bensaou suggests that properly balanced portfolio of relationships needs to be adapted to product and market conditions and then, every relationship needs to be managed efficiently. Furthermore, a two step framework is offered to help companies

in practical portfolio management; first, identify what type of relationship matches the competitive conditions surrounding the product exchanged, and second, design the appropriate management model for each type of relationship. In general, relationship portfolios, which are based on two dimensions, have faced a lot of criticism. Researchers like Fiocca (1982), Yorke & Droussiotis (1994), Krapfel, Salmond & Spekman (1991) have suggested alternative dimensions, which all emphasize certain variables. Such variables as relationship profitability, relationship value and interest commonality have been presented. Criticism has been directed especially to extensions that the models ignore. In addition, a common problem in defining the extensions is often the combination of qualitative and quantitative data. In Shapiro et al. (1987) portfolio model only quantitative dimensions are used, thus disadvantages caused by subjective interpretations are avoided. Clearly, the issue of defining the dimensions to be used is critical. However, if suitable dimensions can be found, the portfolio model would provide an easy-to-grasp and usable tool for management of supply relationships. Determination and estimation of these dimensions is not, however our goal here. Instead, our interest is to see whether and how the portfolios are used or could be used in companies.

2.3 Summary: development of purchasing strategies

Figure 1 summarizes our discussion on the development of purchasing strategies. Earlier, companies used to have a great variety of different kinds of suppliers and thus a large supplier network. Because purchasing was considered as cost causing administrative function, purchasing strategies emphasized mainly low price. Management of purchasing was based mainly to coordination of supply, and only little focus was allocated to relationships. Recently, companies have strike out their supplier network, and formed closer relationships with remaining suppliers. Purchasing strategies have emphasized not only price, but also quality of products, co-operation in relationships and especially cost efficiency. In order to improve their cost efficiency further, companies have recently started to outsource their activities. Due to outsourcing, management of supplier network has focused on management of supplier relations. Companies have wanted to ensure the availability of products and components. However, companies have simultaneously made suppliers to compete against each other, which complicates supplier network management. Companies seem to be moving towards more holistic purchasing strategies and relationships. More suppliers are becoming more and more important to companies, and therefore purchasing

strategies emphasize long term relationships and flexibility of the whole supply chain. Focus is allocated to extensive and open co-operation, instead of competitive bidding of suppliers. Thus, management of supplier network is based more on management of different kinds of supplier relationships.

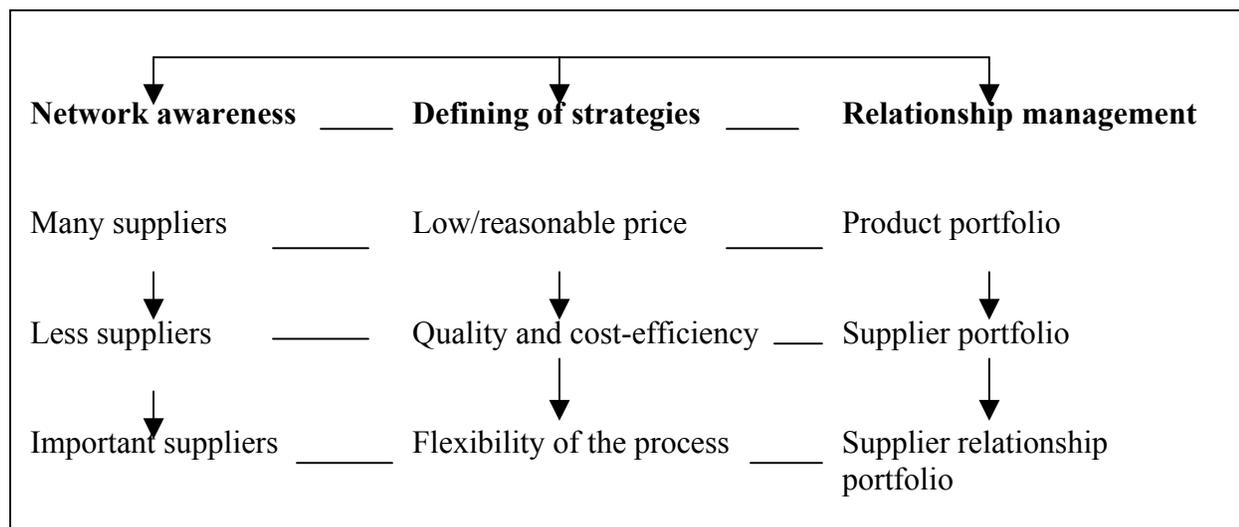


Figure 1. Development of purchasing strategies and supplier relationship management.

3. Empirical analysis: purchasing in electro technical industry

3.1 Method

Our empirical analysis concentrates on one Finnish company operating in the electro technical industry; more specifically, in manufacturing of electric motors, generators and transformers (Statistics Finland, SIC 1995: 3110). This industry was chosen due to the international nature of its business. Thus, our results, although collected from Finnish companies, are expected to be of more general relevance and interest. The chosen case company (called here Alpha), in turn, relies heavily on networking and outsourcing, which makes it an interesting object for a deeper study on supplier relations. We conducted two personal interviews with the logistics coordinator of Alpha in June 2002, and used written material about the company. An extensive case analysis was sent to the company for comments before writing the final report (Ahonen, 2002). We also resorted to survey information on purchasing practices and strategies in Finnish companies

collected in 2002. In this exploratory study a mail survey was carried out in five different branches of industry (see Salmi 2003). There were 53 companies (with personnel of 5 or more) in this branch of industry, and we received 10 usable replies (including Alpha), thus representing 20 % of the companies. The small number of responses does not, naturally, give basis for any statistical analysis, but rather describes purchasing practices in the field and forms a backdrop to the case analysis; i.e. the study is essentially exploratory by nature.

3.2 Electro technical industry and company Alpha

Companies in the electro technical industry operate in global markets. The largest actors in the industry are multinational electronic companies with a broad range of products and services to offer. Alpha is an independent supplier supporting open automation and international standards. The industry is fragmented; 13 companies call for 80% of markets. The market leader holds for 15% share of world markets, while Alpha's market share is ca. 2 %. The main customers for products are end users, equipment and machine manufacturers, retailers of electrical components together with brand label and system manufacturers. The global markets for Alpha's products are worth ca. 5.5 billion USD and expected annual growth rate is 10 % (strongest in Asia, especially in China). A large number of competitors and increasingly tough competition are continuously driving down the price level of the products. At the same time, technology of the products is developing fast, as seen in terms of higher performance of products and a wider range of applications. Thus, continuous development of both products and working methods are required, and many actors are deliberating what is their core competence and focus area.

Alpha was established in the early 1990s and it has grown rapidly: turnover was 90 million euros in 2001 and number of employees ca. 400. Alpha produces highly sophisticated electrical equipment, which are based on software. Its devices are easily adapted and therefore widely used in many industries. Alpha's business is based on extensive subcontracting and networking; it concentrates on assembly and R&D. In addition, the products are made only to order, which increases the requirements set to suppliers and purchasing strategies in general.

3.3 Purchasing in the industry

Purchasing forms an important strategic area to all of the **ten** companies analyzed in the survey.

The following characterizes their *supplier relations*.

- All 10 consider that technological standards/demands of their procurement are high.

- Established suppliers (relationship of more than 6 years) account for 80 % of purchases and new suppliers (3 years or less) for 10 %.
- For 8 companies 1-15 companies accounted for 80 % of their purchases. For 8 companies the total number of suppliers was 100 or less.
- All companies had strategic partners in purchasing: six companies 1-5 strategic partners and in the rest four companies the number was 8-20 partners.
- 5 evaluated constantly the development and nature of supply relationships
- 4 firms used portfolio analysis for supplier evaluation, while 5 did not use it at all
- *Stability of supplier relations* is shown by the facts that
 - 7 say that there are only few potential suppliers of essential products/commodities
 - 8 companies strive to center their procurements to established suppliers, and
 - 7 did not foresee any rapid changes in supplier markets
- However, also *development and change in supplier relations* is looked for, since
 - 6 are actively seeking new potential suppliers, and
 - 7 companies say it is important to make the suppliers to compete against each other
- For *purchasing strategies in critical products*,
 - 6 companies used dual sourcing with two main suppliers, while 3 companies relied on single-sourcing and only one company used several competing suppliers.
- We found relatively little *networking behavior*, since
 - 5 companies said they worked together on R&D with their suppliers,
 - only 4 tried to increase cooperation between their suppliers, and
 - only 3 were in contact with their sub-suppliers
- Companies seem to rely on *traditional ways of purchasing*, since
 - 6 companies did not use e-commerce in their procurement, only one uses intranet, while
 - 9 take personal contacts with the suppliers to be necessary

3.4 Purchasing strategies in the case company Alpha

Alpha is a company, where network thinking is widely adopted. Alpha recognizes a great variety of relationships in a network characterized by interaction and inter-dependence, and it explicitly considers its suppliers as external resources. Purchasing has a particularly strong role in Alpha's business operations: suppliers form as important interest group as customers and owners. Therefore purchasing strategies emphasize mainly co-operation, whereby supplier relationships can be best described as partnerships. Only relationships to some minor suppliers are handled without mutual cooperation.

The value of procurements in 2001 was ca. 30 million euros. Some 70 % of procurements consist of components, while special parts, MRO-products and services call for 20 %, 5 % and 5 %, respectively. Furthermore, system contracting has clearly strengthened its position in Alpha's procurement, although purchased systems are still very simple. In the future, however, purchased systems will gradually become more complicated. Interestingly, half of the products purchased

are considered as strategic, where as only 1 % as routine products. The share of bottleneck products is relatively high, ca. 20 % of total procurement.

The geographical coverage of Alpha's purchasing is relatively wide, but clear majority of purchases come from the home country and local suppliers have eminent share as well (especially in strategic and bottleneck products). Thus, geographical distance is considered as one of the keystones for management of supplier relationships. The number of Alpha's active suppliers is on average ca. 90. Most of them are rather small firms, which have concentrated on some specific field of technology. However, only 10 % of suppliers call for almost 90 % total procurements. With the most important components, Alpha has secured the quality and continuity of supply by getting a substantial ownership of companies in case. In general, the company has been active in developing its relations with the suppliers and follows an internal 'concept for partnership' in its operations. It seems, however, that the company concentrates on managing individual supplier relationships instead of taking a more holistic view to supplier network. Yet Alpha has rather comprehensive knowledge of the structure of its supply network. It just seems that company does not see any advantage in controlling the network as a whole. Thus, Alpha leans on Bensaou's (1999) thesis; relationships are defined according to product and market conditions (availability etc.) and then, every relationship is managed individually.

Alpha's supplier relationships are very similar to each other. Company strategies emphasize continuity and security of supplier relationships, due to the critical nature of most of the components. The company is closely committed to almost all of its suppliers and all relationships are long-lasting. Therefore co-operation and development are the key variables in purchasing strategies. Accordingly, cooperation and conflicts appear simultaneously in Alphas relationships. Conflicts are considered as accelerators of co-operation and development. The firm constantly questions and deliberates different activities and procedures.

According to portfolio thinking, Alpha should perhaps have more heterogeneous supplier relationships. Alpha leans easily on "biased" cooperation-based relationships. The concept of partnership does not necessarily allocate resources of the company as efficiently as possible. Furthermore, portfolio analysis revealed clearly that purchasing of routine and volume commodities of the case company causes eminent costs compared to the importance and value

produced by the commodities. Therefore purchasing of these commodities needs to be streamlined. One way for this would be the use of e-commerce, which is basically non-existing procedure in the company nowadays. Another option would be more efficient and wider use of system sourcing. To intensify the efficiency of purchasing even more, Alpha could consider even more close cooperation with its key suppliers. Accordingly, relationships to minor suppliers could be developed towards more distant, e-based relationships.

4. Results and conclusions

Main results of our empirical case study are presented as an Appendix 1. It summarizes our findings as comes both to the network theory on purchasing strategies and empirical case analysis. Purchasing strategies and practices in company Alpha are in many ways in line with our findings from other companies in the field. In general, it seems that purchasing strategies that are based only on competitive bidding and short term advantage seeking are past behavior. In the light of this study it can be concluded that in companies where networking and outsourcing are widely used, purchasing strategies tend to emphasize co-operation, in one way or another. Thus there seems to be a trend from competition to the other end of the continuum; cooperation. There is a tendency to build strategic partnerships with key suppliers. However, few companies are in contact with their sub-suppliers or encourage co-operation between the suppliers. This shows that companies focus on direct supplier relations instead of a more extensive supplier network. We found only some use of the portfolio tool. Thus, individual relations seem to attract attention, although more holistic, or extensive view of portfolios is less common.

This raises the question, whether companies should make better use of the portfolio thinking – more attention should perhaps be directed on increasing and using fully the variety of supplier relationships, instead of only relying on close co-operative relations. As we see it, in addition to managing individual supplier relations, companies should be more active in using and managing *portfolios* of them. This would put *variety in supply relations* into focus. Our study shows that (Finnish) companies have moved towards using not only product portfolios, but also supplier portfolios and to some extent supplier relationship portfolios as a basis of their supply strategies. However, more extensive *network analysis* or establishment of supplier nets with more levels, is still missing. We conclude that true network approach to purchasing and full use of portfolios in

supplier networks are still largely lacking. Therefore, there still seems to be new challenges for those managers who wish to take full advantage of the network view to purchasing.

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APPENDIX 1. Key conclusions of the purchasing theory and *key characteristics of the case company Alpha's purchasing strategies.*

1. Companies operate in a network environment and they are dependent on the resources of other companies. Indirect control of resources enables externalization of activities and focusing on core competencies. *Alpha is widely networked, and dependent on its suppliers. Alpha focuses only on it's own core competence. Suppliers are considered as external resources of Alpha.*

2. Relationships in the network are complex and multilevel. Conflicts and co-operation appear often simultaneously. Conflicts are considered necessary for the development of relationships. Regulation of the power balance of the relationships is the basis for managing relationships. *Although there are many levels in the interaction between Alpha and its suppliers, company has tried to keep its supplier relations as simple as possible. Alpha considers conflicts as accelerators to potential and developing relations It is important that balance of power is clearly on Alpha's side of the relations.*

3. Deep understanding of the network is a prerequisite for managing the network. Development of the network, on the other hand, requires sufficient degree of uncontrollability. In a network context optimization of actions is impossible. *Alpha analyses its network mainly through its suppliers and suppliers` suppliers. Only little focus is targeted to competitors. Development of purchasing is considered as a continuous process.*

4. Purchasing plays a key role in business operations. Purchasing strategies are based on company's competitive strategy and consist of many sub decisions. One key decision is to determine the number of suppliers per product. *Purchasing is essential for Alpha's operations. All components for the final product are purchased. In accordance with the competitive strategy, purchasing strategies emphasize quality and security of supply, and they are based on single sourcing.*

5. Purchasing strategies can be classified into three groups: co-operative, competitive & command strategies. Different strategies are appropriate in different situations. *Alpha's purchasing strategies emphasize co-operation. Competitive strategies and short term advantage seeking is highly unusual. Command strategies are considered totally useless.*

6. There are many different kind of relationships between buyer and seller. According to portfolio analysis, the importance of the purchased commodities defines the strategy to be used and the nature of the relationship. *Supplier relations of Alpha are very similar. Most of the commodities purchased are crucial. Therefore, continuity and security of supply are emphasized. Co-operation and development are the key variables of all supplier relationships.*

7. The closer the relationship, the more costs the relationship causes. Costs consist of various, often hidden, components. According to portfolio analysis, a company should have closer and deeper relationships only with the most important suppliers. A company can be highly involved only to few suppliers. *Alpha is closely committed to almost all of its suppliers. Only relations to some routine suppliers are more distant. Because it is very difficult to allocate costs to a single relation, relationship costs are only roughly estimated.*

8. Holistic approach requires a careful analysis of the network environment of the firm as a whole. Managing needs to be considered as a process, which means that decisions once made are not considered as permanent solutions. *Alpha manages its supply network through individual relations. Holistic network management has not been in use. Suppliers are assessed continuously.*