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Consistency of supply management processes, supplier relationships and operative purchasing in a global company

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Abstract

The paper elaborates on purchasing and supply management (PSM), with focus on consistency in different aspects of the function. To understand the phenomenon, we wanted to find out the connections between questions *who should you deal with* to best satisfy the needs of your company, *how* should you deal with each of the selected suppliers, and *how to operate day to day* in a selected relationship. Based on the findings we develop a categorization of supply management processes, and position the categorization to a broader framework, including portfolio models and relationship management.

Keywords: Purchasing and supply management, supply chain management, differentiation

Introduction

The phenomenon this paper studies is consistency and coherency of different levels of operations in a global purchasing environment. Discussion on differences and fit in a broader context, in supply chain management (SCM) overall, was initiated by Fisher (1997) with his article on responsive vs. efficient supply chains. To improve the performance of supply chains the problem is to decide – out of all alternatives – how to build the right supply chain for a particular business situation (Fisher 1997). In a spirit of an end-to-end consideration regarding supply chain performance and competitiveness, alignment of supply chain capabilities should take place across the chain, including the upstream i.e. supplier capabilities, in a consistent manner. So far discussion on supply chain alignment, integration and fit to a certain business situation has focused on differentiating *demand chains* according to customer demand (J. Aitken et al. 2005).

However, the challenge continues to be pressing also upstream, where fit and alignment of supply chain capabilities in a particular business situation needs to be achieved. The paper proposes an initial framework to address the alignment on upstream part of a supply chain, i.e. global PSM processes. The paper starts with a literature review and continues by presenting the methodology. Next the case and case results are presented, and the initial framework is proposed. The results are then discussed in the light of the literature findings.

Literature review

Aligning purchasing portfolio approach and purchasing categories

Portfolio approach in purchasing, originally presented by Kraljic (1983) refers to analyzing and classifying purchasing items and creating purchasing strategies for each group. The introduction of portfolio approach has been considered as the major breakthrough in the development of professional purchasing (Gelderman, 2003). The benefit of portfolio models is that they simplify a complex situation, and help

companies to better understand purchasing problems to differentiate purchasing strategies, which has led to a more common use of portfolio approaches (Gelderman, 2003; Van Weele, 2005).

These models (Kraljic 1983) aim to 1) analyse products and classify them into four groups according to two dimensions, 2) analyse of required supplier relationships to deliver the products in each category, 3) develop action plans in order to bridge the gap between current and required supplier relationships. In the original Kraljic matrix the classification dimensions are importance of purchasing and complexity of supply market. The items are divided into four classes: strategic items, leverage items, bottleneck items and non-critical items. A later tendency in the development of portfolio approaches is to focus more on supplier relationships instead of purchasing items (Olsen and Ellram 2003, Bensaou 1999). Weighting of each factor, for example complexity of supply market, is the most important part of the implementation process (Olsen and Ellram, 1997). As such, portfolio approaches do not provide adequate support for daily business situations, but serve as a strategic tool.

A common way to manage supplier base in industrial firms is purchasing category management (Heikkilä and Kaipia, 2009). Purchasing category refers to a group of similar purchasing items for special business activities in a firm (Trautmann et al, forthcoming). Purchasing category management refers to global sourcing, which involves integrating and coordinating common items and materials across different manufacturing or purchasing locations (Trent and Monczka 2003). Forming purchasing categories has been practiced for decades in companies, in particular for direct expenses. A recent phenomenon is that companies are systematically analyzing all of their purchasing costs spent across different locations and forming purchasing categories covering the whole purchasing spend, including indirect purchases and services.

An information processing perspective to category management is taken by Trautmann et al. (forthcoming), who study management of 12 categories in three firms in order to understand the use of integration mechanisms among purchasing units. They conclude that the type of uncertainty in each category varies and requires different integration mechanisms: different information processing capacities and organizational designs are needed. Similar conclusions are presented by Das et al. (2006) based on a survey on the efficiency of integration mechanisms. The results from over 300 respondents indicate that the ideal profile of supplier integration practices depend on industry, product life cycle, and production strategy.

Supplier relationships and integration

A general opinion seems to be that buyer-supplier relationships should not be treated in a homogenous manner (Van Weele, 2005). Supplier and customer relationships are discussed in various ways, e.g. as an integration continuum (Spekman et al., 1998, Hines et al. 2000). The authors agree that integration improves supply chain performance, but implementing such a relationship is a challenge and requires trust, commitment, and resources and capabilities that are not always possible to allocate to a specific supply chain relationship. Therefore, not all relationships target the highest level of integration, but rather need to find an appropriate level of integration.

When looking at supply base management from the perspective of overall SCM, needs for alignment and fit are recognized. Fisher (1997) sees a difference in supplier selection between innovative and functional supply chains: Where in functional supply chains suppliers should be selected based on cost and quality, in innovative supply chains the criteria should be speed, flexibility, and quality. Lee (2004) supports this

perspective, and highlights the criticality of supplier selection from the point of view of adaptability. Complementary suppliers are necessary to ensure adaptability, and in complex cases vendors should be found close to main markets (Lee, 2004).

Considerations of consistency and fit from SCM perspective

From an architectural point of view, order penetration point (OPP) considerations appear among the most discussed means to modify a supply chain structure (e.g. Childerhouse et al., 2002; Heikkilä, 2002; Pagh and Cooper, 1998; Naylor et al., 1999; Olhager, 2003). Location of OPP influences various aspects of supply chain design and performance, e.g. operating model, i.e. whether the overall production and delivery takes place in e.g. make-to-order, assembly-to-order or make-to-stock model (Childerhouse et al., 2002; Naylor et al., 1999) or postponement strategy including aspects of product design and variation (Pagh and Cooper; 1998, Olhager, 2003). Through selection of OPP the core logic of a particular supply chain, and frame for achievable performance, is largely defined. Right positioning of inventory buffers in relation to OPP offer responsive supply capability i.e. speed (Pagh & Cooper 1998). Inventory is having a role as a hedging mechanism against demand uncertainty (Fisher, 1997; Heikkilä, 2002), or it absorbs the fluctuation of demand (Fisher, 1997; Lee, 2004).

Manufacturing responsiveness to different customer needs and competitive situations can be illustrated e.g. by the famous product-process matrix (Hayes & Wheelwright 1984), introducing how fit is reached with manufacturing and product demand characteristics. Second essential manufacturing perspective from supply chain differentiation point of view is dimensioning of manufacturing: How to manage capacity as such, and in particular excess capacity for flexibility. Fisher (1997) sees excess capacity as an alternative hedging mechanism, in addition to inventories. Product assembly and configuration capacity is widely recognized as a differentiating factor, which can provide agility and speed of delivery when needed (e.g. Childerhouse et al., 2002; Heikkilä, 2002).

Planning is one of the backbones of a supply chain, and a way to strive for fit is planning differentiation according to demand features. The purpose in selecting planning features for products is to ensure good quality planning result and to use resources efficiently (Kaipia and Holmström, 2007). The approach suggests that planning process needs to fit to the required flexibility in the supply chain.

Summary of the literature findings

According to the dominant views in PSM field, differentiation should take place either between purchasing categories, dimensions in portfolio models (Kraljic 1983, Bensaou 1999, Olsen and Ellram 1997), or suppliers, or through various types of buyer/supplier relationships (e.g. Dyer et al. 1988, Harland and Knight, 2001, Gelderman and Van Weele 2005, Hald et al., 2008). Guidelines for selecting alternative ways of organizing operative management of material supply and inbound material flow are discussed in few cases only. In the same way, alignment of operative processes which link buyer and supplier in a particular business context, are discussed separately from purchasing.

Research Design

Methodology

This research is an inductive case study research, rooted to literature around purchasing, integration, and SCM. The rationale for a case study is the depth of data that needed to be studied to understand the phenomenon, differentiating in supply chain upstream

operations. Purpose of the case study is 1) to identify the use of different management mechanisms in the supplier relationships, 2) to identify the factors in the relationships that differentiate the use of integration mechanisms, and 3) to identify the processes and practices which enable the case company to maintain consistency and alignment of actions in purchasing through its large global organization.

The case company is a large globally operating electronics manufacturer with manufacturing plants in Europe, Asia and the US. The company sources globally, and in many cases the suppliers are global players in their field. The product is delivered to customer sites and assembled. The complexity in the business comes from the wide variety of products, where the delivery size and configuration varies. Furthermore, the uncertainty in business has increased due to intensive competition. In the case, three supplier relationships were selected for investigation to cover all inbound logistics models, and different purchasing practices, but at the same time be able to limit to a number of cases which can be investigated in-depth, when considering the significant complexity of the case company.

Data collection

Main data collection method was structured interviews, supported by review of process descriptions, strategy documents and company operating guidelines. We carried out 28 interviews in four countries. Interviewees included persons who are mostly involved in buying (6 persons), supply chain planning (5), supplier development, quality and supplier integration (7), planning process development (3), and top management in procurement function (4). To ensure that each interview focuses on each person's specific expertise, three separate questionnaire forms were formulated. The first part targeted on daily operative tasks, and it was used with buyers and supply chain planners. The second part on supplier development and selection of collaborative modes was used with persons working with supply and supplier development and category management. The third part focused on broader perspective of overall strategy, and long-term directions in each supplier relationship. In most interviews there were two interviewers and one respondent. Seven interviews were made by phone. Questionnaires were sent to interviewees beforehand. Interviews were documented as memos, and, to ensure correctness, the interviewees checked the memos afterwards.

We analyzed the case data in two dimensions: Horizontally, comparing the buyer-seller relationships in question, and vertically, in order to identify the bridges between the different activities of the overall purchasing of the company.

In the horizontal data analysis the focus was on identification of interaction between the case company and the suppliers. Based on our literature review, we identified approximately 50 parameters to use for profiling and comparison of the three buyer-seller relationships. All collected information was summarized into excel-sheets using those parameters to formulate supplier profiles. Our main focus in data analysis was to identify differences and similarities between the relationships, with purpose to create a logical profile of each of the relationships answering our original research question, on how a company can align its PSM processes in a particular buyer-supplier relationship. In our vertical analysis internal integration efforts as well as external linkages were studied, as suggested by Das et al (2006). We followed the logic of strategy process, reviewed strategy documents and templates used, and interviewed the organization also from this perspective.

Results

On portfolios and category management

All selected suppliers were strategic suppliers, based on the classification developed by Kraljic (Kraljic 1983). First supplier, Supplier 1, is a component supplier. The second supplier, Supplier 2, is a contract manufacturer, and the third, Supplier 3, is a provider of a complementary OEM product, a ready end product and an essential part of a total system provided by the case company. Supplier 1 has a high technological capability and the ability to develop both products and processes with the case company. Supplier 2 acts as a capacity provider, and also collaborates in product development. Supplier 3 is a global OEM company. The monetary purchasing volume is relatively high in all three relationships, and all the suppliers operate globally, serving the manufacturing locations of the case company worldwide (Table 1).

Table 1: Key figures of the three buyer-supplier relationships

Volume	Supplier 1	Supplier 2	Supplier 3
Type of supplier	Component supplier	Contract manufacturer	OEM
# of items	500 SKU:s	5500 SKU:s	standard configurations, 600-1000 units annually
Purchases of total spend %	1,6	2,6	0,8
Purchasing order lines	Thousands / year	Over 10000 /year	appr. 500-1000 /year
Relationship coverage	global	global	global

From category management perspective, the importance of the suppliers is visible. The case company has over 100 purchasing categories in use, which are organized as larger category clusters. All three suppliers are major strategic suppliers in the category they belong to. The case company is applying Kraljic matrix -based portfolio models to help formulate a category strategy for each category. A significant amount of managerial and development resources, as well as executive support was dedicated to operate and develop various aspects of the important relationships.

On Buyer-Supplier relationships

When we consider the power-dependency situation in the relationships (Table 2) the differences between the suppliers becomes evident. In the relationship with Supplier 1 there is a strong dependency particularly for customized components. In the interviews the supplier was described as ‘willing and fast to implement changes’, ‘able to deliver technologically advanced products’, ‘able to offer several logistics models’ and ‘has a strong e-commerce capability’.

Supplier 2 is one of the largest suppliers for the case company. It has several plants located near case company plants that serve as capacity buffer for the case company. The companies are in a deep cooperation relationship also in product development, design, and new product introduction (NPI) activities. The supplier is flexible and is able to deliver changing volumes; typical variation between months may be from -70 % to +150 % of average load. In the interviews this supplier was described as ‘flexible’, ‘easy to do business with’ and ‘willing to implement changes in the business models’.

In the relationship with Supplier 3, the dependency is lowest. The Supplier 3 is considered as the technological leader in its field. For the supplier, case company purchasing volume is relatively low, compared to total sales of the supplier. The comments used to describe this supplier were ‘not easy to change practices due to inflexible business agreement’ and ‘quality of operations is on an average level’.

We analyzed the relationships also against a recent framework of buyer-supplier relationship attractiveness, developed by Hald et al (2009). They analyze the

relationship via four perspectives: Adaptation, specific investments, communication, and institutionalization. The results are illustrated in the Table 2 below:

Table 2: Buyer-Supplier relationship analysis

	Supplier 1	Supplier 2	Supplier 3
Adaptation	Tightly aligned product architecture	Tightly aligned and integrated business processes	Standard configurations, buyer adapting to fit supplier operations
Specific investments	Yes: R&D driven collaboration, joint action plans	Yes: dedicated assets and resources especially by the suppliers	No dedicated assets, investments some process development activities
Communication	Extensive communication and contacts	Extensive communication and contacts, shared budget and action plans	Regular communication, limited coverage especially on supplier side
Institutionalization	High level of personal and formal relationships	High level of personal and formal relationships	Medium level of personal relationships, formal relationship management

Operative supply management processes

Based on our case analysis it is possible to identify how the case company is modifying the three supplier interfaces within the existing strategic supplier role and long-term relationship, focusing on the interaction with the suppliers on operative level. We can identify four generic processes linking the buyer and supplier, which are modifiable in a relatively modular way. The processes are:

- **Communication** processes, involving operative communication and managerial support for execution
- **Supply chain planning** processes, strictly standardized, company-wide monthly processes, which capture customer information and transform supply plans for suppliers
- **Fulfillment** processes i.e. physical material flow including ordering, logistics and inventory management
- **Performance management**, including both KPI:s used, and the review methods and consequent improvement actions

Within each of the processes the differentiation takes place through:

- **Configuration:** Selection of activities that are taking place at each of the four processes (yes/no decision, or selection of operative mode , e.g. VMI implementation vs classical purchasing)
- **Frequency:** Frequency of the selected activities (monthly/weekly/daily/hourly)
- **Depth:** One-directional i.e. based on “broadcasting of information”, or whether activities are truly collaborative – two-directional – involving multiple people throughout both organizations, and oriented towards mutual actions as a result.

By modifying these four processes the case company has created three different operative interfaces, adapting to operative business situation at each case. In certain aspects the case company has made similar selections with suppliers 1 and 2, but differentiated for supplier 3. Summary of the modifications at the case company is presented in Table 3.

Table 3: Summary of modifications of operative supply management processes in the case company relationships

		Supplier 1	Supplier 2	Supplier 3
Communication	Configuration	systems + follow-up calls twice/week	systems / weekly calls + daily email communication	system-based, regular calls
	Frequency	weekly/daily	daily/hourly	Bi-weekly calls
	Depth	56-60 people involved, cross-functional	broad cross-functional involvement, dedicated people	A few contact points + account team
Planning	Configuration	13-month forecast + demand visibility	13-month forecast + manual weekly updates + demand visibility	13 month forecast based on planning items
	Frequency	weekly	weekly	monthly
	Depth	Collaborative	Collaborative	One-directional
Fulfillment	Configuration	classical purchasing, 3rd party WH, VMI	Classical purchasing, VMI	Direct delivery to customer
	Frequency	no / weekly ordering, deliveries weekly	daily ordering, daily buyer-coordinated deliveries	daily/weekly ordering and daily buyer-coordinated deliveries
	Depth	collaborative management	collaborative management	customer specifies
Performance management	Configuration	shared metrics	shared metrics	shared metrics
	Frequency	regular discussions	regular discussions	monthly reviews
	Depth	cross-functional involvement, supplier proposing actions	cross-functional involvement, corrective actions agreed	account team

Strategic integration across purchasing

In our vertical case analysis we identify three distinct linkages which are essential for achieving consistency:

- link between overall strategic direction in purchasing, and the actual activities affecting the evolution of the buyer-supplier relationship
- link between direction and objectives in a buyer-supplier relationship, and the actual configuration of the operative supply management activities
- link between strategic direction, and organization and use of development resources

In the case company, the main mechanism for achieving consistency between overall strategic direction in purchasing, and the rest of the activities, is the well established strategy process, and in particular the category strategy which is developed twice a year in a very collaborative fashion, and is mandatory for each of the purchasing categories. The category strategy specifies positioning of each supplier in the particular category to a purchasing portfolio, sets the targets for the most important relationships, and guides the use of resources. The category strategy, and the personal objectives set for every employee based on the strategy were identified by the interviewees as the most important guidance for daily work.

Consistency between the objectives set for a buyer-supplier relationship, and operative supply management activities can be analyzed through adaptation of processes, operative communication, and availability of resources to manage the interface between buyer and a supplier. This emphasizes in particular the implementation of the strategy, whether the targets set for a relationship can be brought to practice. Through the implementation perspective also the third link, availability and use of development resources become clear: Adaptation of the operative supply management to a relationship usually requires changes in processes and tools. This change is implemented by development resources, in the case company by supplier

development organization, and supplier integration organization focusing on logistics processes and tools. Decisions related to use of these resources determine whether the operative interface in a particular buyer-supplier relationship can be advanced in practice. The linkages are illustrated below at figure 3.

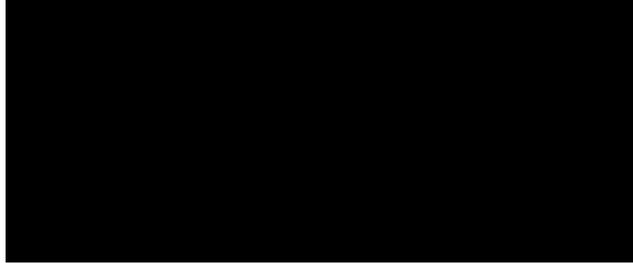


Figure 1: Linkages between levels of purchasing

We also identified gaps in the company activities, which further emphasize the importance in the linkages between layers. First, quality of the category strategies were perceived to vary. This was causing unclear priorities: Both overlapping activities with one supplier and at the same time slow progress with another. Second, the category management organization responsible for Supplier3 was not perfectly established to cover all the activities taking place locally at remote countries. This was a known problem, causing lowered business performance through variation on operative level in logistics terms, service levels, and prices.

Discussion and conclusions

Based on the literature review and case study, we argue that the consistency and coherence of the purchasing activities of a company is an essential perspective. Supply chain configuration should start by understanding the specific customer needs, how to serve them competitively, and continue by design of the overall chain, from customers to suppliers, to satisfy these needs (Heikkilä, 2002, Fisher, 1997, Juttner et al., 2006).

The literature review shows, that current models discuss the problemacy more on a siloed basis. However, our case study demonstrates how strategic supply base management, buyer-supplier relationship management, and operative supply management including inbound logistics are connected to each others, and how they can be aligned. The framework is illustrated in the Figure 4 below.

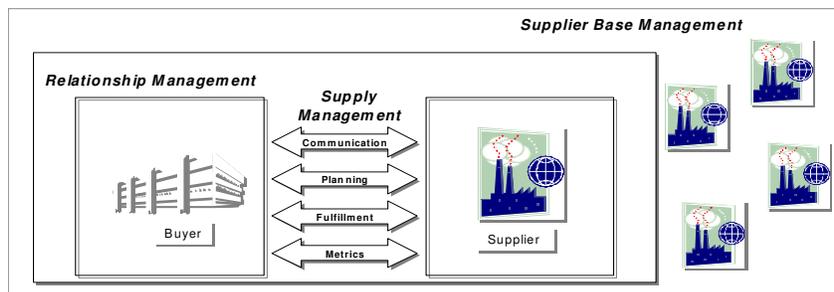


Figure 2: Framework for alignment of supplier based management, buyer-supplier relationship management, and operative supply management

Based on the findings from our case, we also argue that implementation should take place through the following step-wise approach:

1. Categorization of the purchasing, design of category-based organization, and overall strategic considerations from supplier base management perspective

2. Definition of strategic objectives and desired development activities for each buyer-supplier relationship
3. Design of operative supply management interface, and allocation of resources to implement the changes
4. Allocation of resources to operate the buyer-supplier relationship and supply management processes

When we compare the case findings to literature, our conclusion is that portfolio models, in particular relationship portfolio model developed by Bensaou (1999), provide a decent support for the first steps, strategic considerations and definition of strategic objectives for a relationship. On the other hand, the formation of purchasing categories play a central role here, and may affect the result. Our finding regarding the connection between purchasing categories and purchasing portfolio models is supported by the recent study by Kaipia and Heikkilä (2009); the case company methods however represents only one logic applied. From the perspective of buyer-supplier relationships as such, our analysis and findings are well in line with the existing literature. Looking at the operative purchasing level, supplier integration is also a relatively well-discussed topic in integration and SCM literature.

Contribution of this paper is two-fold. First, through the case study we identify the three logical layers of global purchasing: Supply management, supplier relationship management, and operative purchasing, and the linkages between the layers. Second, it becomes obvious that the case company has a good ability to differentiate its supplier interface at all of the three layers, and thus create alignment and fit to a broad range of different business situations. This ability, however, stresses further the importance of connecting mechanisms maintaining consistency and coherency in purchasing, 'one voice towards the supplier'.

Due to the nature of the case study, it is not possible to generalize the results and specify optimal configurations for various business situations; that would require controlled testing of fit with higher number of buyer-seller relationship of different characteristics. We would propose that to be further research.

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