CHALMERS
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Purchasing Category Management in Practice

Mapping the current state in Swedish Manufacturing MNCs

Master's thesis in Supply Chain Management

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Gothenburg, Sweden, 2014
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Abstract

Due to increased specialization and outsourcing in industrial firms during the last decade, most manufacturing companies today have a cost structure where purchased goods and services are taking up 60-80 percent of cost of goods sold. As a result, purchasing has increasingly become strategically important and companies are realizing that they can benefit from a new organizational model that facilitates cross-functional collaboration and pooling of resources and activities. Purchasing category management has the potential to provide organizations with these traits, and is frequently used by multinational manufacturing corporations today.

The problem is that while there is plenty of research on strategic purchasing, there is a lack of research on purchasing coordination at a practical level in general and on purchasing category management in particular. Industry is ahead of academia on the topic, and the objective of the thesis is to map the current practice of purchasing category management in ten Swedish multinational manufacturing corporations by presenting the findings from 25 two-hour interviews with senior purchasing managers in the studied corporations.

An interview guide was developed through a literature review in related topics as well as multiple consultations with purchasing professionals and researchers on the topic. The study evolves around three dimensions of purchasing category management: organizational structures, categorization, and processes and tools. The findings include detailed descriptions of purchasing structures and team configuration implemented in the case companies and how these structures are utilized as integration mechanisms within the organizations. The section covers purchasing structures; team configurations; team responsibilities; rewards and compensation for category teams; category team communication practices; and team resource availability.

The categorization part covers how companies are selecting what goods to bundle in to categories; how they select what categories to prioritize under resource constraints; and how companies are applying hierarchical structures and different layers of categorization to organize their category tree. Lastly the process and tools part describes how some case companies are applying sophisticated IT applications to structure necessary processes and tools in order to facilitate category work; and that cost savings potential is still the undisputed performance metric in all case companies but that some companies are implementing practical tools for measuring category management performance on other levels.

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Furthermore, I want to thank all the purchasing people that have been acting interviewees during the study and helped me understand how category management worked at their organizations. I am extremely grateful for everything I have learned from you guys and I believe that this knowledge will give me a great start on my career.

Last but not least, I want to thank Professor Dr. Lydia Bals and Dr. Jussi Heikkilä for giving me valuable tips before I got too far into the project and for giving me some feedback on my initial interview guide. The study would not have been the same without you. Thank you!

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1. Introduction

1.1 Rationale for the research project

During the last decade, the purchasing profession has changed considerably in many companies. This is reflected by an increased interest in the discipline from both practitioners and researchers (van Weele, 2010). Most manufacturing companies today have a cost structure where purchased goods and services are taking up 60 to 80 % of cost of goods sold (van Weele, 2010). Another study found that over 60% of revenues goes back to suppliers in terms of purchasing for the average North American Manufacturing firm (Giunipero & Monczka, 1997). This is partly because of increased specialization and outsourcing during the last decade (Bitran et al., 2007; Ford et al., 2003). As a result, the purchasing profession has gone from being a clerical function to strategically important, and a key area for improving competitive advantage (Driedonks et al., 2010). The traditional organizational model, focusing on functional managers operating within separate functions without much connection to other functions, is becoming obsolete (Trent & Monczka, 1994). Instead, companies are increasingly realizing that they can benefit from using an organizational model that features cross-functional coordination and pooling of resources (Trent & Monczka, 1994).

Purchasing category management, not to be confused with marketing category management, refers to the practice of segmenting the majority of a company's spend according to the function of the goods and mirror how the supplier marketplaces are organized (O'Brien, 2012). Cross-functional teams are assigned to these categories with the objective to generate increased value to the organization. The main rationale is to gain volumes, negotiation power and expertise (Heikkilä & Kaipia, 2009). The value can be materialized through reduction in price or total cost of ownership; reduced supply-chain risk; or increased rate of innovation by key suppliers (O'Brien, 2012; van Weele, 2010).

While (purchasing) category management is frequently used in industrial firms and is at the heart of many purchasing organization today (van Weele, 2010), there is limited academic research on how companies form and manage categories in practice, and how to actually integrate purchasing units across business units at a practical level (Trautmann et al., 2009; Heikkilä & Kaipia,

2009). In large multinational corporations, the sourcing activities are characterized by integration of decision making across functions in geographically dispersed parts of the organization (Trautmann et al., 2009). This makes the coordination of category management complex from an organizational point of view (van Weele, 2010). At the same time, most of the research on global sourcing is rather strategic, and is not thoroughly dealing with the challenges on a practical level, like how to form purchasing categories or how to organize the purchasing organization in practice (Trautmann et al., 2009).

Similarly, there is limited research on how the teams that are managing the categories are set up and how the composition of the teams is affected by the characteristic of the category (Heikkilä & Kaipia, 2009; van Weele, 2010; Monczka & Trent, 2006; Driedonks et al., 2013). For instance, O'Brien (2012) pointed out that if categories are designed at the wrong level, e.g. too small or to large, opportunities for cost savings and value creation could evaporate. So the problem is that while many firms recognize the importance of coordinating purchasing on a global scale (Trautmann, et al., 2009), few know how to actually make it successful in practice (O'Brien, 2012).

1.2 Research questions

This paper will contribute to the limited empirical research on the topic of category management by mapping how 10 global corporations, based in Sweden, design and manage categories in practice by answering the following research questions:

1. How do companies organize category management?
2. How do companies select and manage their categories?
3. Which processes, tools and KPIs are used in category management?

The result of this paper will have both practical and theoretical contributions. On the academic side, it will open up possibilities for further research by providing empirical material on a topic that currently suffers from a scarce empirical base. As of practical contributions, it will give purchasing managers and other practitioners a way to benchmark against competition and get ideas for improvement from other global corporations. Specifically, the results will be of value to the participating firms since they will be able to benchmark their purchasing organizations against each other's.

1.3 Delimitations

Category management is commonly practiced on both direct and indirect spend (van Weele, 2010). This study will exclude indirect spend in the case companies. The reason is that the purchasing practices between the two are very different from an organizational point of view. While suppliers for indirect material can typically be phased out fast and without any investments, phasing out a direct material supplier might take many years and require substantial investments (van Weele, 2010). Additionally, the company is only looking at industrial companies, i.e. manufacturing companies, because purchasing is generally playing a larger role in this sector (Rozemeijer et al., 2003).

Other constraints have been that of resources, mostly in terms of time and budget. A larger budget would have allowed for more interviews and perhaps some different choices for interview candidates would have been made. In order to limit the number of trips, interviewee availability during certain days have affected the choice.

1.4 Outline of the report

The rest of thesis is structured as following. A literature review of purchasing category management and related topics is outlined in chapter 2 and includes review of purchasing structures, sourcing team research and an overview of the current research on category management. The chapter will provide the reader with a picture of the current state of research and prepare the reader with a baseline for assessing the empirical findings. The research model that has been followed throughout this report will be presented and described in chapter 3. The methodology is outlined in chapter 4 and describes the process of developing the interview guide, sample selection, carrying out the interviews, and the qualitative data analysis. Chapter 5 contains the findings of the thesis and the interviews in the format of the research model. A discussion of the most important findings is presented in chapter 6. The chapter elaborates on what the findings might mean and suggestions as to why and to whom they might be valuable. A conclusion of the report is outlined in chapter 7 and includes a discussion of possible contributions of the report as well as suggestions for future research.

2. Literature review

The aim of the literature review was to identify and highlight variables that are potentially used in industry. These variables were investigated and their level of implementation and usage was assessed during the data collection. It is important to note that since the main objective of this thesis was to map the current stage of a research topic with a scarce empirical base, the literature review was not intended to identify and classify good and bad practices, but only to identify possible variables so that the interview guide could be as complete as possible. To support the formation of the interview guide and the writing of the literature review, excel was used as a tool during the review (See **Appendix 1** for complete list of variables). Evolving form the research questions of the present paper, the literature review was divided into four parts, which was later organized into three overall segments in a research model.

The academic contributions on category management in general, and particularly on a practical level, are scarce. One of the few articles that are using the term purchasing category management is written by Heikkilä & Kaipia (2009). They carried out an empirical research on seven companies in order to map how these companies formed categories and how that affected how the Purchasing and Supply Management (PSM) function was organized. They summarized that the research on purchasing category management is very limited. However, they recognize that there are related topics that have received more attention from academia. These include pooling of purchase items, commodity teams, cross-functional teams, and common requirements across business units (Heikkilä & Kaipia, 2009).

Trautmann et al. (2009a) addressed the organizational aspects of global sourcing. They found that three contingencies of category characteristics, supply environment and interdependence of purchasing units affected the integration of global sourcing. Furthermore, they found that to succeed in global sourcing, companies must take a category-level perspective, because different categories require different integration mechanisms. They also developed a template for organizing a global sourcing organization at a more practical level than most other studies in this topic. Their work will be important to develop a set of hypotheses in the conceptual framework.

O'Brien (2012) provides a practical guide to implementing category management and contains several case studies that can be of interest to the present report. It is based on a five-step approach to successful implementation for category management and is based on years of experience as a purchasing consultant in many companies.

2.1 Purchasing organization and team structures in category management

One ongoing debate that has received extensive attention in purchasing research is whether to use a centralized or decentralized purchasing structure (van Weele, 2005; Trautmann et al., 2009a). The level of centralization on the purchasing structure overall have a significant impact on how category management is organized within the organization (van Weele, 2005). There are basically three main types of purchasing structures referred to in literature: Centralized, Decentralized and Hybrid purchasing structure (van Weele, 2005). Centralized structures are usually preferable in situations when different geographical units are purchasing similar goods (Trautmann et al., 2009a). Trautmann et al. (2009a) found that the position of a category in the organizational structure depends on the characteristics of the category. They also found that different purchasing structures were suitable for different categories. It will therefore be important to investigate the purchasing structure of the participating companies to get a grasp of how category management works in their organizations.

Trautmann et al. (2009a) found that how companies structure themselves depends on the category characteristics. This is interesting as it suggests that the organization might be different for different categories. As a result of the category characteristics, they suggest that category team members might be located differently within the organization. It will also be important to investigate the dominant and subdominant dimensions (Bals et al., 2011) in order to understand what drives the organization and subsequently what challenges that might arise in the category work. Whether the dominant structure is geography or business unit based on customer needs, it will have different implications for the structure of the purchasing organization (Bals et al., 2011) and ultimately the category work.

Since one of the main reasons for implementing category management is to achieve economies of scale, the strategic purchasing responsibility for a particular category is usually centralized to a category manager (Trautmann et

al., 2009a). Operational purchasing is located at local sites and responsible for implementing the strategies developed by the category manager (Trautmann et al., 2009a). In order to fully understand the different level of decisions in the purchasing organization, one can add tactical purchasing into the equation to understand where certain types of decisions are taken within the organization (van Weele, 2010). Although the category manager is often positioned centralized to some extent, the level in the organization can still vary. For instance, Monczka et al. (2006) found that many organizations used to have centralized category managers on regional level. They would still coordinate purchasing needs from several business units and hence create economies of scale, but only form the regional business units. Some organizations have begun to retool their category teams to take on a global responsibility however (Monczka et al., 2006).

Another organizational construct in category management organizations is the use of sponsors or external facilitators within the organization, but external to the team (O'Brien, 2012). The role of these people is to facilitate the implementation of strategic decisions made by the category team throughout the organization. This is necessary because the category teams usually need support form other functions in the same organization, both to get input for decision-making and to get strategies implemented and executed through the proper channels (O'Brien).

Purchasing councils are frequently used as an integration mechanism for purchasing coordination in global organizations (van Weele, 2010; Smart & Dudas, 2007). The council is typically headed by a CPO and includes non-purchasing executives form the different business units (van Weele, 2010). The meetings can be held monthly and more strategic discussions about coordination potential among otherwise isolated business units are carried out (van Weele, 2010).

2.2 Sourcing team characteristics

Although there are plenty of research on general team performance and management, the amount of research specifically on sourcing teams are far more limited (Driedonks et al., 2010). Furthermore, even less research is specifically focusing on the performance and characteristics of category teams. Of course, the category team concept is a partial set of sourcing teams (van Weele, 2010).

2.2.1 Team composition

The composition of sourcing teams is usually a complex matter because of the inherent complexity in creating integration mechanisms between geographically and functionally dispersed team members (van Weele, 2010). In addition, it adds further complexity because members of the category teams are in most cases working on the team on a part-time basis (Driedonks et al., 2010; Trent, 1998). Heikkilä & Kaipia (2009) found that the category manager might be a full-time position while the rest of the team is part-time positions. In addition to the cross-functional character of category teams, the cross-location nature of sourcing team seems to be prevalent (Monczka et al., 2006). Monczka and Markham (2007) stated that category teams are frequently limited to purchasing members today, but that organizations will transform their teams to be increasingly cross functional in nature.

Another construct used to describe the composition and characteristics of category teams is the notion of core-team members and extended-team members (O'Brien, 2012). The work content and role of the extended team can differ in terms of workload and responsibility. For instance, the extended team members can have more of a supporting role while the core team members are recruited for their knowledge of the category. Members of the team can also be working in several different category teams (Heikkilä & Kaipia, 2009). Depending on the characteristic of the category, it seem some companies are having cross-functional core team members, while others using only purchasing people in the core team (Driedonks et al., 2011). The optimal team size for work teams in purchasing and integrated product teams has been found to be 6 to 8 members. In terms of category team structure, that would be translated to the number of members in the core team, as the extended team is usually not involved on a continuous basis.

Inviting suppliers as formal team members have been utilized with success in different kinds of teams. For instance, suppliers can play a vital role in new product development teams by bringing expertise to the table and help identify opportunities at their customers (Holland et al., 2000). Similar patterns have been observed in sourcing team literature (Trent & Monczka, 1994) and some companies are even inviting their suppliers as formal team members during especially innovation-focused projects (O'Brien, 2012). Indeed, Driedonks et al. (2010) also found that the composition of the team might depend on the category. More different functions of the company might be represented in a more

strategic category group than in a category team buying commodities (Driedonks et al., 2010; Trautmann et al., 2009a).

2.2.2 Different views on the role of category teams

There are mainly two different views in literature on how category teams are used within the organization. O'Brien (2012) describes category management more as a project based construct, where categories with high potential for value-generation are identified and then assigned a cross-functional category team with the objective to realize the potential. In this setting the category team might change members during the different stages, because of different requirements on expertise, and almost or completely dissolve after the project has been completed (O'Brien, 2012). The category team manager then takes on another project, which might or might not be with the same core team and extended team. In other sourcing team literature, however, the role of the teams is usually painted as more static in terms of the categories. Heikkilä and Kaipia (2009) found that the categories used were stable over time at the highest level and represented a large share of the companies' spending. The companies were adding new categories rather than switching categories over time. Several other researchers likewise describe the character of the teams on a more static manner (Driedonks et al., 2013; Trent, 1998). Monczka and Markham (2007) predicted that category strategies have to reach several years into the future and that the planning horizon will have to increase even further in the future.

2.2.3 Rewards and compensation of teams

Compensation has been found to be important success factors for sourcing teams success, and most success factors for regular teams are also success factors for sourcing teams (Driedonks et al., 2011). Therefore, it will be important for this thesis to assess how the case companies are dealing with the common issues related to these factors. As a result of the often cross-locational and cross-functional character of category teams, compensation problems can arise and create conflicts or sub-optimal behavior in teams. There are really two problems with finding a proper compensation structure in category teams. The first is to decide what compensation that should be given to category teams and the second is to decide which part of the organization that should pay it (Englyst et al., 2008).

A couple of different alternatives for managing the first part can be identified in the sourcing team literature. First, rewards and compensations can be based on individual or team performance, and secondly it can be distributed evenly among members or as individual rewards (Driedonks et al., 2013). Individual rewards based on team performance have been found to influence team performance positively (Driedonks et al., 2013).

The second part can be particularly troublesome for category teams in decentralized organizations, as the teams often consist of members form different business units. Englyst et al. (2008) found that some organizations with commodity team structures used the business units to pay for commodity teamwork. Thus, the individual business units paid for their own people, even when they worked for the commodity team. This sometimes created conflicts as a business unit manager had to give away his strategic purchaser and pay travel expenses just so that he could go and work on cost savings for another business unit (Englyst et al., 2008). For instance, reducing the total number of suppliers could make sense from a team perspective but for some individual team members there might be advantages with maintaining relationships with specific suppliers. Tangible rewards have been found to be an important mechanism to motivate team success (Murphy & Heberling, 1996).

2.2.4 Meeting structure for cross-locational teams

Virtual team structures and virtual meetings is commonly used in commodity teams and also used as a means of compensating for lacking lines of communication in the organizational structure (Englyst et al., 2008). The frequency of physical and virtual meetings becomes especially important in situations where team members are spread out on several locations and the well-performing teams have introduced high-frequency meetings to keep track of performance (Smart & Dudas, 2007). Researchers on cross-functional teams rarely reach similar conclusions about the most important factors affecting the team effectiveness (Trent, 1996). The existence and effectiveness of the formal leader, however, is one factor researchers generally agree on as being critical for success (Trent, 1996). Keller (2006) also found that transformational leadership is more effective in teams where knowledge outside the team is necessary for the work, which is characteristic for sourcing teams (Driedonks et al., 2013). Furthermore, the role of the leader is often to provide the team with access to external contact as customers, suppliers and people at other functions within the organization (Englyst et al., 2008).

2.2.5 Resource availability and team authority

Availability of key organizational resources directly influences sourcing team success (Murphy & Heberling, 1996; Trent, 1998; Englyst et al., 2008). Specifically, there is a strong relationship between availability to key organizational resources and the teams 's capacity to meet its objectives (Trent & Monczka, 1994). In an extensive study carried out by Trent and Monczka (1994), they found that the most critical resources were budgetary support, time availability, and getting help from non-team people within the organization. Peters and O'Connor (1980) found that the same resources were important, but additionally emphasized the importance of having the proper equipment and tools to carry out the job. Standardized tools like portfolio models are also frequently used in purchasing organizations in general and purchasing category management in particular (O'Brien, 2012; Gelderman & Semeijn, 2006)

Empirical evidence suggests that higher levels of team authority has a positive impact on team performance for sourcing teams (Driedonks et al., 2013; Trent & Monczka, 1994). This is consistent with research findings for other types of teams as well (Holland et al., 2000). Team performance improve when teams are given full responsibility for something important, such as development of a new product design, or manage a business unit, or plan their own work schedule (Murphy & Heberling, 1996). As category teams commonly and increasingly are taking on global responsibility (Monczka et al., 2006), providing the teams with appropriate levels of authority should be critical. Schedule team meetings and activities, select new team members, make sourcing decisions without approval from people external to the team, and the absence of frequent managerial interventions are all sign of higher team authority in a sourcing team context (Driedonks et al., 2013; Trent & Monczka, 1994).

2.3 Categorization

During the last decade, there has been an increased interest form companies on how to effectively align purchasing strategy with the overall corporate objectives of the firm (Rozemeijer, 2000). The main challenge is to understand how to structure and manage the purchasing organization in order to efficiently generate purchasing synergy among different business units (Rozemeijer, 2000). Global categories play an important role in realizing synergy among geographically and functionally dispersed purchasing units (van Weele, 2005).

The existing research on categorization is very limited in general (Smart & Dudas, 2007), particularly on item selection (Heikkilä & Kaipia, 2009).

2.3.1 Identification and definition of categories

Category identification refers to selecting the items that should be included in a particular category as well as selecting what categories that should be prioritized. Trautmann et al. (2009a) defines a category as: 'A category encompasses a group of similar items that are required for specific business activities of the firm'. Van Weele (2010) defines a category as: 'a group of coherent products or services, bought from the supply market that are used in our company to satisfy internal or external customer demands'. Examples of categories are casting, bottles, parts, sheet metal, and tires (O'Brien, 2012). O'Brien (2012) highlights that the most important characteristic of a category is that it must mirror how the individual marketplaces are organized. That is, O'Brien (2012) is explicitly focusing on the importance of factors outside the firm to find effective categories, whereas Trautmann et al. (2009a)'s definition is focusing more on 'business activities of the firm'. These are not necessarily contrasting views, but the focus is slightly different. It can be complicated to find categories that truly mirror the individual market places, however. For instance, a company might be tempted to choose 'travel' as a category based on that there are travel agencies that are offering travel solutions in all forms (O'Brien, 2012). But traveling is not a real market, and agencies are rather intermediaries who facilitate communication between its customers and multiple real markets: 'air travel', 'hotels', 'car rental' et cetera (O'Brien, 2012).

A thorough spend analysis is the starting point for a good category identification (O'Brien, 2012). However, the complexity of many decentralized purchasing organizations can make it a complex and long-lasting project to get good quality data. For instance, a major petroleum company spent some six months just to get a picture of what they bought at different business units (Trent & Monczka, 2003). Common hurdles are low data quality and different IT and coding systems across business units (Trent & Monczka, 2003). It is not unusual even for large companies to have to ask their major suppliers what they are buying in order to get even a sufficiently good picture of what they are buying (Trent & Monczka, 2003). In fact, few large corporations have fully integrated information systems where they can access data on group level. Growth through acquisitions will elevate the complexity in spend integration further (Trent & Monczka, 2003; O'Brien, 2012). Good quality data that can be aggregated over all business units

are not enough however, but the data most be coded so that it can be sorted by means of a spend cube: per category or item, per supplier, and per cost center (van Weele, 2010).

When spend data is available, O'Brien (2012) suggests that companies are using the Pareto principle to sort the data and focus their categorization on the 80 percent of the spend that are with 20 percent of the suppliers. Furthermore, companies have to chose how much of total spend they will aim to categorize. O'Brien (2012) classifies the total spend in the three groups: 'categories', 'non-addressable spend', 'and rest of spend'. Non-addressable spend is spend that is almost impossible to influence, like tax or government-set license fees. Rest of spend is the part of total spend that is not categorized because it is not economically viable.

Smart and Dudas (2007) provide some direction of what companies in general find most valuable to bundle. MRO goods, commodities, and indirect materials are the most preferred item groups when companies start a pooling initiative. In addition, leverage and routine categories are most likely to be prioritized from a portfolio perspective, using Kraljic (1983) here (Smart & Dudas, 2007). Although portfolio models are frequently and successfully used in many purchasing activities (Gelderman 2003; Trautmann et al 2009b; Gelderman & van Weele 2002), the approach result in categories substantially different from what is normally used in industry (Heikkilä & Kaipia, 2009). Both current and future spend should be included in an analysis in order to create a comprehensive picture of the spend on a particular category. This is particularly important for categories with a high variation in spend over time (van Weele, 2010).

2.3.2 Prioritization of categories under resource constraints

Purchasing's resources must be put to the best possible use by allocating resources to categories with the highest potential for value generation (van Weele, 2010). Global purchasing synergies can broadly be divided into economies of scale, which relates to pooling of volume in order to enforce purchasing power, reduce number of suppliers or standardize requirements; economies of information and learning, which refers to sharing knowledge on suppliers or new technologies; and economies of process, which refers to establishing a common way of working and representing worldwide one line of communication towards suppliers (Trautmann et al., 2009a; Faes et al., 2000). All of these potential synergies are important to consider when selecting categories

to prioritize when under resource constraints (Faes et al., 2000). However, many purchasing organizations tend to focus mostly on economies of scale and overlook the other two.

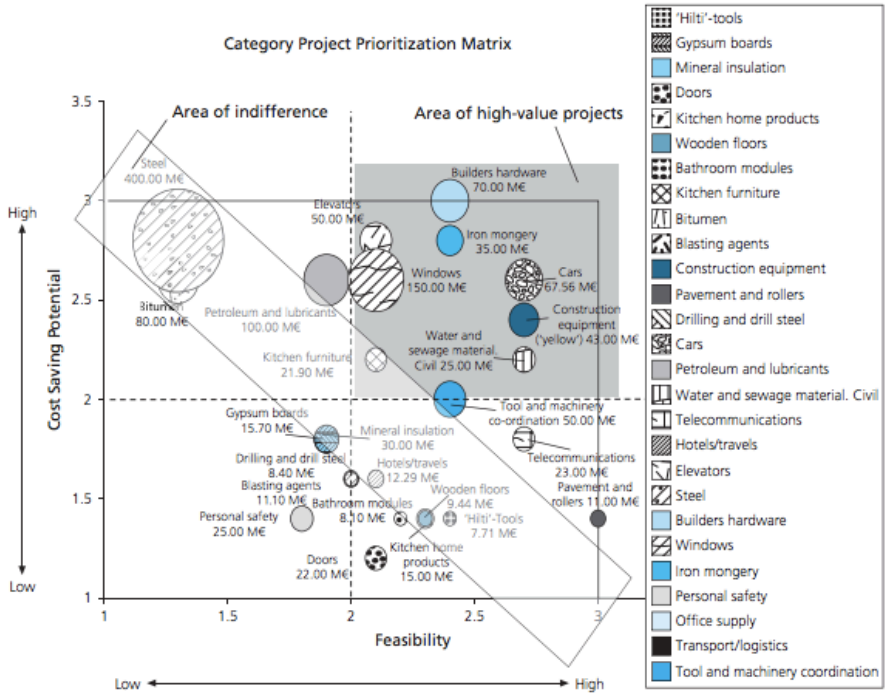


Figure 1 Category Prioritization Matrix

Companies must be able to select and prioritize between categories in order to be able to allocate resources to the categories with the best value-generation potential (van Weele, 2010). Van Weele (2010) suggest that one common method for selecting categories is to use the Category Prioritization Matrix (see Figure 1). Categories are evaluated on their cost saving potential on the y-axis and their ease of implementation on the x-axis. The upper right hand corner quartile corresponds to a set of high-value projects that should be assigned cross-functional teams first. Van Weele (2010) suggests that projects are carried out in different waves, starting in the high-value quartile. Common criteria for evaluation of cost savings potential includes: potential to replace a customized solution with a off-the-shelf solution; possibility to change from buying individual components to buying modularized systems; mitigate an unfavorable supplier-buyer power imbalance; and renewing contracts that have not been renewed for several years. Ease of implementation can be measured by the expected resistance in the organization of changing suppliers for a specific category; the internal technical expertise on the specific category; and the supply market expertise for the particular category. There are other types of opportunity

analysis tools for prioritizing categories in literature, but they all have very similar characteristics (O'Brien, 2012). Categories around MRO items have been found to be the most common product categories used (Smart & Dudas, 2007).

2.3.3 Sourcing categories at global, regional or local level

Another complex decision for category management organizations is to decide on what level different categories should be managed. As Monczka et al. (2006) pointed out, some organizations are stepping up their category management ambitions, allowing category teams take on global responsibility from previously having regional responsibilities. Not all categories should be managed on a worldwide basis however (O'Brien, 2012). Trautmann et al. (2009b) developed a portfolio approach that captured relevant category selection criteria to support decisions of whether to give a category global responsibility or have it remain under local authority (See **Appendix 2** for purchasing portfolio model for global sourcing). They argue that a decision to source a category on a global level is determined by the synergy potential on the one hand, and the strategic importance on the other hand. Synergy potential is influenced by potential for economies of scale, economies of information and learning, and economies of process respectively (Trautmann et al., 2009b). Strategic importance is determined by evaluating the company's inherent competence of the category as well as economic factors of the category (Trautmann et al., 2009b).

O'Brien (2012) provide decision guidance that is more externally focused on the marketplace, from which the category is sourced. Specifically, he referrers to the 'geographical boundaries of individual marketplaces', and argues that this has to be the driving factor. As categories should mirror the individual marketplaces, it should be adapted to whether the marketplaces are global, regional or local. For instance, a 'fleet' category might appear to be a global market since most automotive companies have global brands, as Volvo, BMW, or Toyota. However, these companies are generally not organized to serve global accounts (O'Brien, 2012). The marketplace is characterized on regional level and in many situations the requirement from internal customers are also regional or even national. Acceptance for accident statistics, taxation treatment, and size requirements by the drivers are all examples that vary by region and country (O'Brien, 2012). Trautmann et al. (2009b) and O'Brien (2012) views on global-regional-local decisions are not at all polar counterparts. Having a category at the corporate level in the portfolio from Trautmann el al. (2009b) does not necessarily mean that one cannot make regional adaptations for the category.

2.3.4 Hierarchical configuration of categories

The hierarchical configuration of category structures in organizations has been highlighted in the study of Heikkilä and Kaipia (2009), but otherwise received limited attention in research (Heikkilä & Kaipia, 2009). The notion of having categories broken down to sub-categories have been mentioned by other research as well, but the hierarchical characteristics has not been described at a practical level (Heikkilä & Kaipia, 2009). They found that the number of categories in a category organization reflects and is in several cases influenced by the availability of competent personnel. In addition, the number of categories at the highest hierarchical level varies substantially among companies. For instance, one company in their study had 60 categories at the highest level whereas two other companies had only 3 categories at the highest level. All companies did not have multiple hierarchical levels form the beginning however, but a level were rather added when the number of categories at a level reached about 100 categories (Heikkilä & Kaipia, 2009).

2.4 Processes and performance measurement

Following established rules and procedures is referred to as formalization in much of team research (Driedonks et al., 2013). Formalization has been found to increase the use of external information in industrial companies (Deshpande & Zaltman, 1987), which in turn is critical for effective sourcing teams (Driedonks et al., 2013). Empirical evidence additionally suggests that formalization improves performance in other functions, such as marketing, as well (George & Martin, 1984). Specifically for sourcing teams, empirical research suggests formal procedures to influence both team effort and communication positively (Driedonks et al., 2011). Processes and information technology structures are critical enablers for successful category strategies as well (Monczka & Markham, 2007). Indeed, in an e-survey where 180 companies participated, critical enablers such as spend analysis, a formal category management development process, and having a global contract management process were rated as having the highest importance for sourcing organizations in the decade ahead (Carter et al., 2007).

2.4.1 Critical processes and tools for category management

In contrast to the more stable categorization, where categories are assigned to cross-functional teams (van Weele, 2010), and managed on a three to nine year horizon (Monczka & Markham, 2007), O'Brien (2012) provides a process-view on category management (See **Appendix 3** for category management process with workshops). Specifically, he states that 'Category management is a process that involves completing many discrete activities in an overall sequence', and that 'Overall, category management has a start point and potentially an end-point and is fundamentally a series of processes'. Although the number of steps in a category management process can vary, the fundamental process is usually similar from company to company (O'Brien, 2012).

This view of category management is quite different form what is suggested as category management in e.g. Trautmann et al. (2009a) and Heikkilä and Kaipia (2009) however. The results in those studies suggest a more static category structure, at least on the highest level, where cross-functional teams are having long-term responsibility for strategic sourcing of the category as well as responsibility for the suppliers' performance (Markham & Monczka, 2007). That is, category management is more of an organizational construct. However, O'Brien (2012) is describing category management at a quite practical level and is hardly using any academic sources, which makes it difficult to make any conclusions about the compatibility or incompatibility of the two views.

To realize synergy effects across different business units, it is necessary to have standard purchasing processes with clear responsibilities and tools for each step (Trautmann et al., 2009a). Monczka & Markham (2007) similarly argues that standardized processes and tools are critical enablers for category strategies in the decade ahead. Purchasing portfolio models are effective complementary tools in many purchase organizations. While few tools can provide complete support for a strategic purchasing decision, they can certainly help decision makers to organize their minds and take more structured decisions (Gelderman & van Weele 2002). Smart and Dudas (2007) carried out a case study where they developed a decision-making flowchart for the case company that helped the firm create purchasing synergy across business units. Additionally it will be critical for organizations to have clearly defined global contracting processes in the future (Markham & Monczka, 2007). Continuous updating of category documentation will also be a critical part of the company's knowledge management system (Markham & Monczka, 2007). The category documentation works as a 'playbook' where the category team and other stakeholders can read the essential information on the category (Markham & Monczka, 2007).

2.4.2 Data requirements for category management

Access to relevant purchasing data is critical for successful category management or purchasing integration overall (van Weele, 2010). In a category management environment where the main objective is to identify and transform commonalities in purchasing requirements across business units and geographies, it is critical that there is basic data supporting those operations (van Weele, 2010). All spend should subsequently be able to be aggregated across all business units and geographies (O'Brien, 2012). Purchasing spend data should be able to be analyzed by means of a spend cube: per supplier, per category, per internal budget holder (Van Weele, 2012). Best-in-class companies are even able to present data based on what suppliers offer (O'Brien, 2012).

2.4.3 Changing requirements of performance metrics

Performance measure and metrics are playing a significant role for the success of organizations in all parts of the supply chain and its importance cannot be overstated (Gunasekaran et al., 2004). Category organizations have historically been most focused on traditional benchmarking capabilities as unit price decrease, delivery performance and quality (Monczka & Markham, 2007). Companies are increasingly shifting their focus to broader measurements as total cost of ownership however (van Weele, 2010). The next stage of this development will be to increasingly rely on value, in favor for cost, and focus on performance measures as speed of new product development, perfect supplier launches, and number of innovations contributing to the buying company's revenue (Monczka & Markham, 2007).

3. Development of research model

On the basis of the literature review, a number of potential factors that could influence how companies are working with category management were identified. The factors were selected on the basis of what other researchers identified as important influencers on category management and related topics. These factors were be used to create a preliminary research model, which will be the basis for development of key influencing variables and interview questions. The research questions served as the main areas of investigation, from which a set of mutually exclusive working hypotheses were set up to test which factors that were actually used in the case companies (Figure 2). The model allowed for a structured research approach, where information from the literature review were developed to set of concise variables, which was ultimately tested during the data collection. The development of the research model was an iterative process, and new information was added during the data collection phase. It represents the key areas of investigation in this thesis and had been guiding the project along the way.

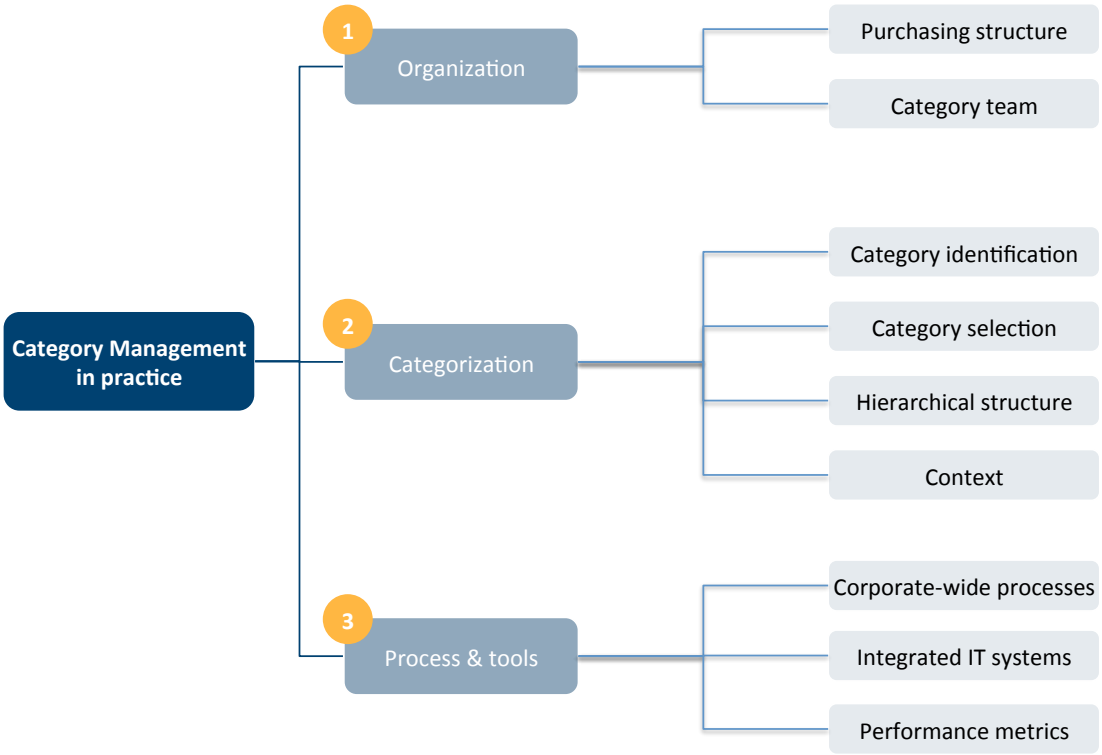


Figure 2 Research model for category management

4. Methodology

The present paper investigates and map how purchasing category management is practiced in 10 multinational corporations through identifying and describing critical variables. 25 interviews in total were conducted during the data collection phase. The study can best be described as taking the form of a deductive theory approach. That is, the current research within the present domain will be used to deduce working hypotheses, which will then be subject to empirical investigation (Bryman & Bell, 2011). However, because of the limited research in some areas related to category management, especially in terms of theoretical models and category formation (Trautmann et al., 2009a; Heikkilä & Kaipia, 2009; van Weele 2012) the present study will be complemented with an inductive approach, in order to feed empirical findings back into the theory. For instance, interviews with some of active researchers on the topic of category management were carried out during the literature review stage, and hence fed back into the research model before it was transformed into an interview guide. The research strategy, therefore, could be described as having a tendency towards deductive strategy on a continuum from inductive to deductive (Bryman & Bell, 2003).

Specifically, the literature review aimed to collect ideas of ways in which companies are working with category management. These ideas were transformed into the research model (Figure 1), which worked as a base for developing the design of the data collection phase, i.e. development of interview guide and interview material. Companies that had experience in working with category management was contacted by phone and asked to be part of the research project. The goal was to involve 10 multinational manufacturing corporations in the study, to get general results over several industries, rather than in detail describe how one company operates. The sampling of these companies can be described as a theoretical sample, where companies from different categories were selected in order to get a representative sample (Bryman & Bell, 2011).

Face-to-face semi-structured interviews were conducted with senior purchasing executives and managers at the participating companies to map how they work with category management, with the objective to describe the most important variables and answer the research questions. The motivation behind a semi-structured approach is twofold. First, there is a lack of research in many areas of category management and industry practice might be more developed than academia in some cases (van Weele, 2010). The second reason is to try not to

influence the answers of the respondents by using too direct questions (Bryman & Bell, 2003). In addition, there are some areas where there is a lack of research and hence where the interview must be allowed to explore upcoming subjects. Specifically, one senior executive with global responsibility for integrating purchasing and two other managers was interviewed at each company to get a representation of several hierarchical levels at each company. Overall, the present research approach can best be described as a middle-range theory (Bryman & Bell, 2003). Middle-range theories fall somewhere between grand theories and empirical findings, and is theories that can be used for guiding managerial decisions within the specific domain in which the research is carried out. Using several cases, in contrast to one case company, will provide more compelling evidence and increase the robustness of the study.

In order to increase the confidentiality of the findings of the study, methodological triangulations have been applied by asking interviewees for documentation to support their statements (Jack & Raturi, 2006). In some cases the documents have been sent to the interviewer after the session, and in some cases statements had been backed up directly during the interview. The interviewer consistently asked for examples to verify the statements of the interviewee by using phrases as 'can you show me an example of that?', and 'can you show me how you are doing that in practice?', and 'do you have that information available on your PC? Can I see?'.

4.1 Description of participating companies and selection criteria

During the planning stage of the study, it was agreed that the population was defined as multinational manufacturing corporations with revenues exceeding 15bn SEK with operations in Sweden. Most of the companies have headquarters in Sweden and are noted on the Swedish stock exchange. The motivation for focusing on manufacturing companies is that their third-party spend usually corresponds to a larger share of their cost of sales, and hence their purchasing organization is more strategically important (van Weele, 2010). As a result, manufacturing companies are generally having more advanced sourcing organizations (van Weele, 2010).

The case companies were selected based on size, industry, and estimated length of experience in working with category management. The ambition was to select a sample that covers a range across these three dimensions, in order to create a representative sample. A gross-list of 20 companies that met the size, industry and maturity requirements were evaluated as first and second priority, based on

the anticipated level of purchasing category management maturity in these organizations. This was achieved by consulting the supervisor of this report, who has over 15 years of management consulting experience with strategic purchasing in the Swedish industry. 14 of these companies got the top priority mark to be included in the study. These companies were then contacted and asked if they used purchasing category management to organize its sourcing organization. Only one of the companies contacted was not using category management at all. 10 of the remaining companies were willing to participate in the study and agreed to have a 2-hour interview at their office.

The aim was to have three interviews at each company at different hierarchical levels. Because of the complexity in organizing purchasing organizations in large multinational companies, the positions interviewed vary from company to company. For instance, some companies are having a purchasing executive in the top executive management team whereas others are having purchasing managers at each division. One category manager and one high-level purchasing executive at each company were interviewed. The reason was to get a good picture of both the coordination mechanisms between categories, typically managed by a high-level purchasing executive, and also get information from a category manager perspective. There might be a bias in how the sample was selected for two main reasons. Companies who have longer experience in, and more developed category management practice, might have been more likely to participate in the study (Heikkilä & Kaipia, 2009). Secondly, my supervisor might be biased in prioritizing the companies, which he has greater knowledge about or is more interested in from a client perspective. In order to avoid an industry bias, companies from several different industries were included in the sample.

4.2 Data collection

The development of the interview guide was an iterative process where with several feedback activities during the phase. The first article written by Heikkilä and Kaipia (2009) was supplied as a starting point by the supervisor. This article was used to identify key words and areas for further searching on the Internet. It also included a suitable reference list to some of the few research articles carried out on the topic. A number of variables and characteristics of category management organizations was starting to take form during the embryonic stages of the literature review. During a number of meetings with the supervisor at the consultancy firm, these variables were starting to form into three overall

categories that were later, and after some modifications in naming and content, decided to be the overall areas of investigation. The initially identified variables were placed into one of these three areas and further variables were identified and placed in the now evolving conceptual framework.

A draft version of an interview guide was developed simultaneously as the conceptual framework and was subject to several feedback iterations by the supervisor and other initiated purchasing consultants at the consultancy firm where the thesis was conducted. Furthermore, two other independent external sources was utilized to improve the interview guide, and hence the conceptual framework. The first review was carried out by Dr. Jussi Heikkilä[1] who is a senior researcher at University of Tampere in Finland and co-author of one of the articles referenced in this thesis. Dr. Heikkilä provided valuable feedback on the interview guide and shared his view on purchasing category management in general as well as learning point from a similar research project, namely *Purchasing Category Management—From Analyzing Costs to a Proactive Management Practice* (Heikkilä and Kaipia, 2009). After further literature review and slight modifications of the interview guide according to Dr. Heikkilä's feedback, another phone interview was set up with Professor Dr. Lydia Bals[2], co-author of several articles used in this study and many years of experience in working as a consultant with strategic purchasing in German companies. Professor Dr. Bals went through the interview guide and gave feedback and shared experiences that helped to improve the interview guide further. It should be noted that both of these researchers were contacted because of their research contributions, and not the other way around. Specifically, I contacted them after having read their articles because I found those articles especially interesting. For the record, no other researchers were contacted for interview propositions.

The interview guide was set after some further iteration with purchasing consultants and the supervisor at the firm and the supervisor from the university (See **Appendix 4** for final interview guide). All interviews were tape-recorded, after approval from the interviewee, in order to ensure a complete account of the exchanges from the interviews. This was important because it made it possible to pay closer attention not just to 'what' was said, but 'how' it was said, which is often important in qualitative research. Overall, there are several advantages with tape-recording interviews in qualitative research (Bryman & Bell, 2003). The presence of a recording device might make some interviewees uncomfortable,

[1] Jussi Heikkilä at Helsinki University of Technology

[2] Professor Dr. Lydia Bals at University of Applied Sciences Mainz.

and as a result the information obtained from the interview might be of less value. However, most interviewees will loosen up after a short time (Bryman & Bell, 2003), and all interviewees were assured that their responses and the recordings would remain anonymous.

A number of methods were exploited to facilitate a smooth and effective interview process; an initially longer interview guide was compressed to one page to avoid unnecessary distractions for both the interviewee and the interviewer; the interview guide was numbered to allow for faster and more accurate note taking during the interview; approximate time distribution marks were included to make sure everything got covered; and the opening and closing questions of the guide was intentionally easy questions in order to start and end the interview with a pleasant atmosphere. The writing of findings, and to some extent analysis, was carried out in parallel with interviewing and transcribing, which allow for identification of emerging themes that could be paid further attention to during the remaining interviews. As a result, some areas turned out to be less interesting for the particular companies and less time was spent in these questions in later interviews.

4.3 Data analysis

The major problem with qualitative research and interview data in general is that it generates large and often unstructured data (Bryman & Bell, 2003). It has been important in the coding of interview material to use short descriptions from the interviews in order to guard against 'analytical interrupts', i.e. the richness of the data impedes the valuable outcome of the analysis. The analytical framework for analyzing data in this study can best be described as a coding approach frequently used in a grounded theory approach (Bryman & Bell, 2003), in which data collection and analysis of findings has been carried out in parallel in an iterative manner. It is important to note that this is not a claim that this study follows a grounded theory method. But there are tendencies in the present study that can show some similarity to grounded theory. That is, there was no real working hypothesizes that could be completely set up by literature, but rather ideas from literature was mixed with data collection from experienced purchasing professionals. The complete interview guide and its grouping of similar items could indeed not have been done with literature only. Practically, findings have provided a deeper understanding during the interview process, which in turn has been fed back into the model and interview guide. For instance, this allowed for a more efficient interview in later interviews. Coding was done in excel with questions on the y-axis and the companies on the x-axis

(See **Appendix 5** for sample of coding using excel). This allowed for constant comparison of findings, which is critical in also grounded theory (Bryman & Bell, 2003). Since the purchasers interviewed at any company were at different levels and had different roles, some people were better equipped to answer certain questions. Sometimes judgments had to be made when two interviewers answered the questions differently, which called for a more structured approach. In those situations, the last interviewer was typically asked to back up his statements with data or documentation.

4.4 Trustworthiness of the research

Reliability refers to consistency of a measure, while the validity refers to whether the method really provides a good measure of the concept (Bryman & Bell, 2003). While both validity and reliability are complicated concepts in qualitative research, some comments can be outlined about the two. The many iterations and feedback loops with several different researchers and consultants as described above is one attempt to address the face validity of the study. Bryman and Bell (2003) states: 'Face validity might be established by asking other people whether the measure seems to be getting at the concept that is the focus of attention…possibly experts'. The internal reliability of the thesis has been positively enforced by the fact that one person did all interviews, and the problem of differences in interpretation from the receiver-side has thus been eliminated.

In addition to face validity, an alternative approach to evaluate validity and reliability, as suggested by Bryman & Bill (2003), has been used. According to the criteria, trustworthiness of a report consists of four sub-criteria: credibility, which refers to internal validity; transferability, which refers to external validity; dependability, which refers to reliability; and conformability, which refers to objectivity. Triangulation methods described in the prior section has been used to improve the credibility of the study. Transferability has been addressed to some extent by scoping the population of the study to be relatively small. That is, while the names of the companies remain undisclosed, using a similar approach to sample selection would likely produce a similar sample. The problem formulation phase, interview questions, and field notes from the project are described and shared in appendix, which should improve the dependability criteria of the study. (See **Appendix 6** for summary of reliability and validity criteria)

5. Empirical findings from case companies

The main empirical findings are presented in this chapter. The objective of the chapter is to provide rich and detailed information on how category management works in practice from the perspective of organization; categorization; and processes and tools. This is attempted to be fulfilled by providing a mix of general descriptions of the different variants seen in the companies and case examples that in detail describes how one of the case companies are approaching the problem at hand.

5.1 Organization

5.1.1 Purchasing structure

The organizational structure of the participating companies varies form companies that are very decentralized, with a large amount of small independent factories, to companies that are almost fully centralized. The level of centralization is having a profound impact on how category management is organized and how category teams are located within the organization. Two fundamentally different purchasing structures, and thereby ways to organize category management has been identified. The first one is a decentralized, or decentralized hybrid, which is typically lead-buy oriented. The second is a centralized hybrid structure in which a central purchasing organization has the majority of purchasing's resources. Although all of the companies could be classified into one of these structures, there are different variations between the companies in each of the fundamental structures.

The companies with a decentralized purchasing structure are typically evolving from a lead-buy oriented purchasing organization. These companies are characterized by a very decentralized organization in general, not just in terms of purchasing, and many of them have a highly diversified product range. Some of these companies have a few people working with purchasing at the corporate level to generate guidelines and processes for the decentralized organization to follow. The category managers are strategic purchasers in one of the divisions of business units and the team usually consists of representatives form the other divisions or business units with a larger spend in that category.

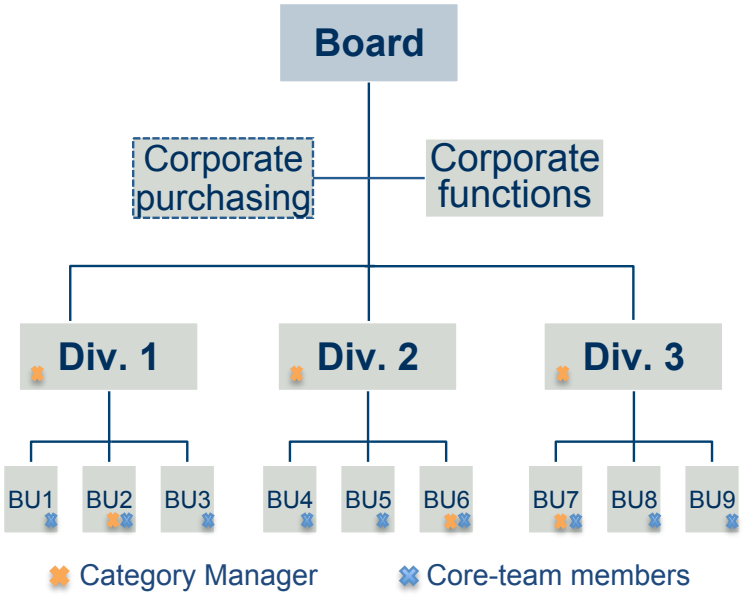


Figure 3 Purchasing structure in decentralized company

Case company 10 put strong emphasis on enforcing their local purchasers rather than increasingly moving volumes to central categories. They have a head of global purchasing and two other purchasing employees at the corporate level, and the rest of the purchasing organization is distributed on divisions, business units and factories throughout the organizations (See Figure 3). There are a number of independent factories under each of the BU's. A high level of authority at local sites characterizes the organization, and each site has P&L responsibility. As one purchasing executive put it: "Each of these factories are like small companies on their own, and the CEO of those companies doesn't even want to share information with other sites within the same group". Category managers are located at either divisional or business unit level, as represented by orange dots in the figure. Depending of the characteristics of the category and where the majority of the category purchases are done, the category manager can either be a strategic purchaser on divisional of business unit level. In addition, there are local purchasers at each factory who has the overall responsibility for that particular factory's spend and who reports directly to the head of the factory. Category team members (blue dots) are representing other business units and divisions with spend on the specific category.

The other common purchasing structure identified among the case companies is a centralized hybrid purchasing structure. A corporate purchasing function is typically headed by the CPO, and the responsibility is divided into either business units or categories at the highest level. The spend is then distributed on a number of category managers. Although a considerable part of the purchasing

employees often belong to corporate purchasing, most case companies with this structure have local strategic purchasers at the sites as well. Their job is to implement the category strategies as well as purchase eventual goods and services that are not covered by the central contracts.

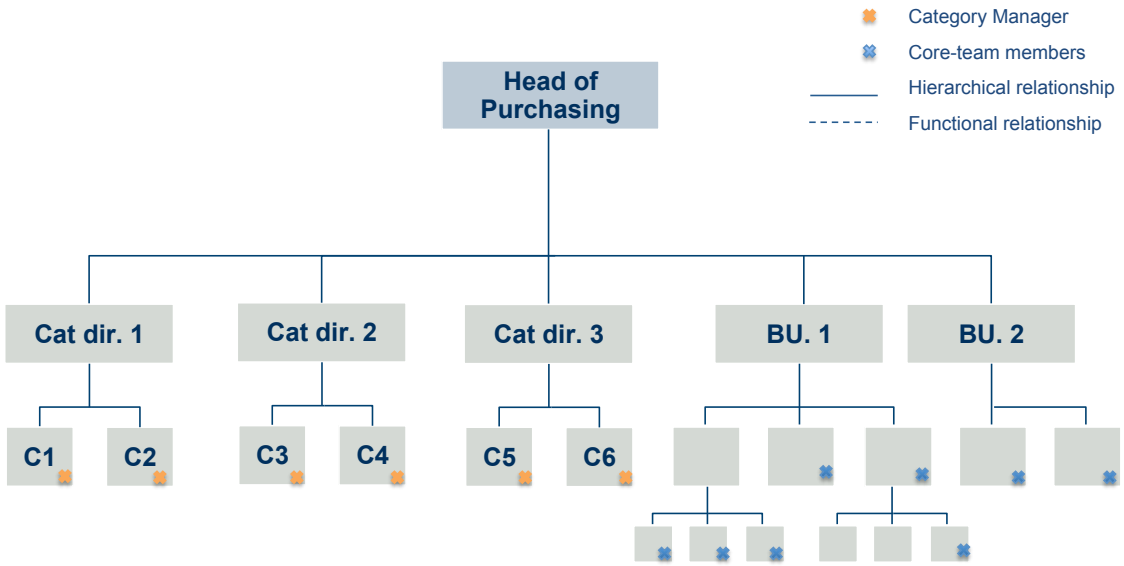


Figure 4 Centralized purchasing structure with core members at BU

Case company 2 recently restructured their purchasing organization with an increased level of centralization as a result (See figure 4). The CPO, who is member of the executive management team, heads the new central purchasing organization. All spend is categorized into one of three main categories under the responsibility of a category director. Each category director has a number of category managers as direct reports, who has the full responsibility for all spend in that category. In addition to the category directors, there are two directors responsible for all purchasing employees in the rest of the organization. While the category directors and category managers are all located at the company's headquarters, the BU directors are responsible for all purchasers throughout the rest of the organization. That is, strategic purchasers at the business unit level and at individual sites all have direct reporting lines to the BU directors. There are seven business units under BU director 1, and each of the business units controls a number of factories. For instance, the purchasing organization under BU director 1 includes some 100 purchasers. The category managers are thus responsible for the entire spend in a particular category, and the core team consists of purchasers in the part of the organization that has the best expertise or high spend on the category.

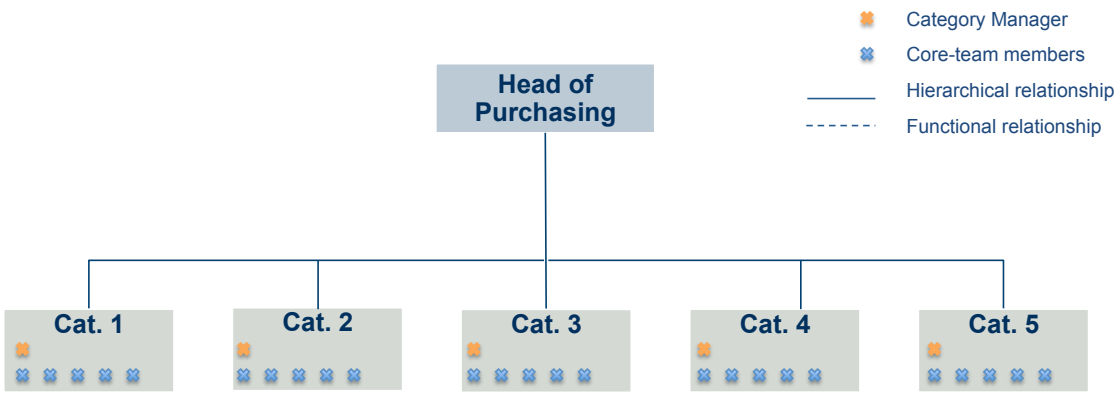


Figure 5 Centralized purchasing structure with core team at centralized location

Case company 4 also has a centralized hybrid structure, but in this case the entire teams belong to the corporate purchasing organization (See figure 5). There are still strategic purchasers at business unit and factory level, but the entire core-team belongs to the category structure, organizationally. In contrast to case company 2 the category spend is divided among the team, each member having responsibility for a number of sub categories, rather than playing a supporting role. Coordination between the central category structure and the local purchasers are coordinated through extended teams in projects.

Out of the ten case companies, there is a slight tendency towards centralization overall. In fact, six out of ten companies have located their category managers centrally rather than in the operative divisions (see figure 6). The most centralized company is an automotive company with basically the entire purchasing force in the corporate purchasing function. The company with the lowest degree of centralization had only three people in the corporate purchasing function. Although the centralization here is defined as having strategic and tactical purchasing on corporate level, the organizations of the case companies requires a more detailed view to fully describe the centralization-decentralization question.

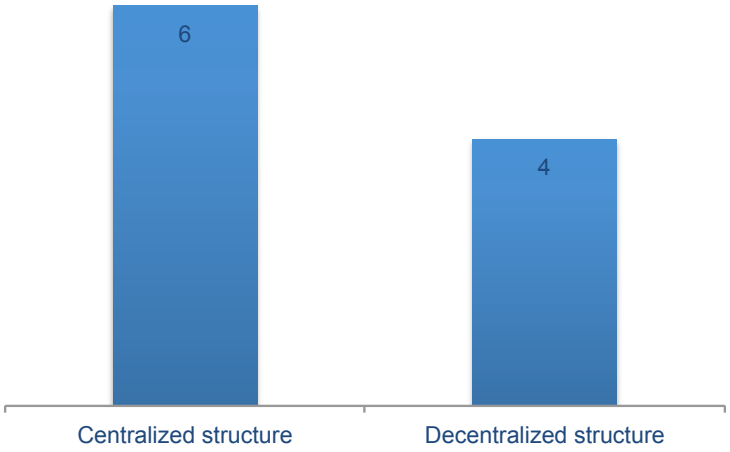


Figure 6 Placement of category managers within the organization

Many of the case companies are very large organizations with highly a diversified product range and the divisions are sometimes very isolated form each other, operating almost as separate companies. One division, however, can incorporate a number of business units controlling some 10 factories each. In this case, one division sometimes has their own central purchasing organization, and another division within the same company might have a completely different structure. That is, the highest level of coordination within the case companies varies as a result of the poor coordination capabilities between divisions. While 8 of 10 companies have at least some global coordination of purchasing activities, two of the companies had the highest level of coordination at regional and divisional level respectively. Several of the other companies were using a mix of global and divisional categories where they typically identified a few global categories, which was complemented with divisional categories. The divisional categories are still serving its purpose, as there are synergies in purchasing needs between the many business units and factories within the division. In fact, one company had decreased the number of global categories and increased the number of regional categories over the last couple of years.

Purchasing councils were frequently used as a coordination mechanism in the studies companies. The members are typically high-ranking executives from purchasing and business units, and supporting functions such as quality and finance. The role of the purchasing council differs across companies. The most common role is to approve sourcing decisions above a certain monetary amount. Organizations with well-implemented standard sourcing processes usually have

tollgates at some steps in the process where the category manager needs a go or no-go decision from the purchasing council. In companies with poor coordination mechanisms between business units, the purchasing council might work as a forum for voluntary coordination cases with large spend and high potential. Another common role of the purchasing council is to approve category strategies for the year ahead, signing off on the category manager's goals and resource requirements. Some companies with several purchasing executives as the same hierarchical level are using a rotating chairmanship for the council, while purchasing council with a more informal character might miss a specified leadership role and works more as a informal forum for discussion. The most common characteristics of the purchasing council in the present study are summarized in table 1.

Role	Members	Leadership
▪ Approve sourcing decisions above certain amount ▪ Approve category plan ▪ Develop guidelines, processes and training activities ▪ Follow up main purchasing objectives ▪ Voluntary cooperation when coordination mechanisms are missing	▪ Purchasing directors ▪ Business unit directors ▪ Supporting functions (controller, HR, quality) ▪ Secretary	▪ Rotating chairmanship between category directors ▪ Head of purchasing ▪ No leadership

Table 1 Purchasing council characteristics

Case company 1 have a central purchasing organization at the regional level, and the central purchasing organization is organized to mirror the organizational structure of the company as a whole. All categories are then divided among the purchasing directors for the business units, based on whichever business unit has the largest spend on a particular category. The purchasing directors then allocate their spend to a number of portfolio managers who in turn allocate their spend on a number of category managers. The purchasing council consists of the purchasing directors from the business units within the regional division. The role of the purchasing council is to develop common guidelines and processes for the category organization and approve or disprove sourcing decisions amounting to a certain monetary value. In addition, there are a number of tollgates in the sourcing process, which requires approval from the purchasing

council in order for the category manager to continue with the process. Lastly, the purchasing council needs to accept the category plan for the year ahead put forward by the category manager. In the category plan, the category manager states the main goals and activities as well as the required resources for the year ahead.

5.1.2 Category team composition

There are basically three different types of team structures that can be identified among the case companies. They are mostly different in terms of workload, responsibility, and functional affiliation. Because of the great variety and complexity of the organizations, however, some companies can indeed be seen as using all types of team structures depending on the perspective taken. The first team structure, type 1, consists of a core team headed by a category manager plus an additional set of people who together defines an extended category team. The type 2 team consists of a category manager who has the sole responsibility for the category and forms an extended category team with people with a supportive function. The last team structure, team type 3, consists of a of a core team who share the responsibility for the category and which has no formally assigned additional resources in terms of an extended team.

Team type 1

The team consists of a core team who are all purchasers, in addition to a category manager who has the overall responsibility of the category. An extended team is added to support the core team in some staged during the sourcing process (See figure 7). The category is typically divided into sub categories, which are distributed among the core team members who specialize in these areas. The sub categories are to the largest possible extent divided into groups to mirror the supplier market, but workload considerations of the team is usually play its part as well. The category manager might also be responsible for more than one main category. In these situations, the category manager can have two separate teams or manage them as one team, which allows the manager to move resources between the team to realize the highest value creation. The structure used commonly depends on the level of similarity between the categories. The category manager and the core team members are from purchasing in all case companies, and the core team members might also be member of several teams. The extended team includes other functions, such as R&D,

quality and executives form business units with large spend on the particular category. It can also include purchasers at an international purchasing office, who can support in finding supplier in emerging markets.

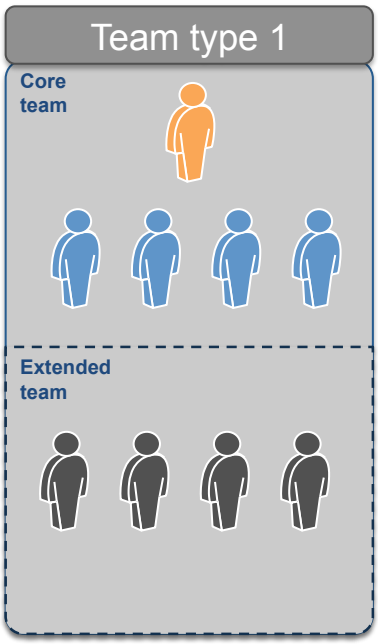


Figure 7 Category team type one

Case company 4 provides a good example of the utilization of type 1 teams. They have 6 main categories that includes about €800M and which is further divided into some 60 sub-categories. The sub-categories are allocated among the core members and the category manager, which is additionally responsible for the overall performance of the category. The category team has the responsibility to identify and realize a certain amount of cost savings every year. In order to reach the target, the team set up project teams with the business unit or factory that will be affected by the cost saving. This project team defines the extended category team, and does usually not include the whole core team but the core-team member responsible for the affected subcategory. When changing supplier of a technically complex product, an engineer from the business unit with the highest spend might spend 50% of his time on the project during the most intense period. If a material can be sourced from emerging markets, the project team might include purchasers from IPOs in China, India and Mexico in order let them compete with each other to find the best supplier.

Team type 2

The second team structure consists of a full-time category manager with an extended team of people who play a supporting role in the category work (See figure 8). They are typically not full-time resources and in contrast to core team members, they don't have responsibility for any part of the spend within the category. The category manager has the sole responsibility for managing one or several categories and the extended team members have signed off to spend a small amount of their time on supporting the category manager with various tasks. The members of the extended team come from a variety of different functions depending on characteristics of the category as well as the specific activities and project undertaken during the period the members signed up for.

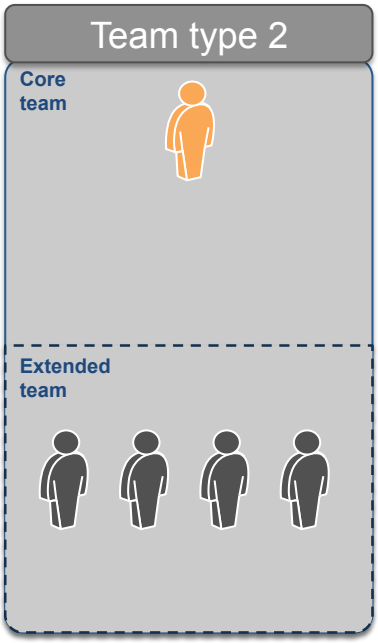


Figure 8 Category team type two

Case company 1 is organized according to the type 2 structure. The company has about 50 categories allocated to some 40 category managers. Each category has a number of subcategories, but in contrast to type 1 teams, they cannot distribute subcategories on the members of the team. The extended team consists of people from the line-organization, quality, R&D, internal customers and purchasing specialists. Members in the extended team sign up for about 20-60 hours per year, and the category manager is authorized to utilize the time as he pleases. The size of the extended team varies greatly depending on the category characteristics.

Team type 3

The third and last team structure identified in the study is one that includes a core team, but no formal extended team (See figure 9). The core team basically operates in the same way as the core team in type 1 teams, dividing the subcategories among the member in order to balance the workload. In the companies who used this structure, core team members were always from purchasing. The need for external support was principally the same in these teams as the other team structures; they still needed R&D resources to approve a new supplier. But the difference is that type 3 teams need to get support ad-hoc by presenting a business case for the business unit they need help from. The business case doesn't have to be a slide deck, but they have to convince another party to help them on a case-by-case basis. The success in these teams depends greatly on personal relationship and how prioritized purchasing is in the organization. Some of the category managers saw this as their top challenge, while others had it working really great.

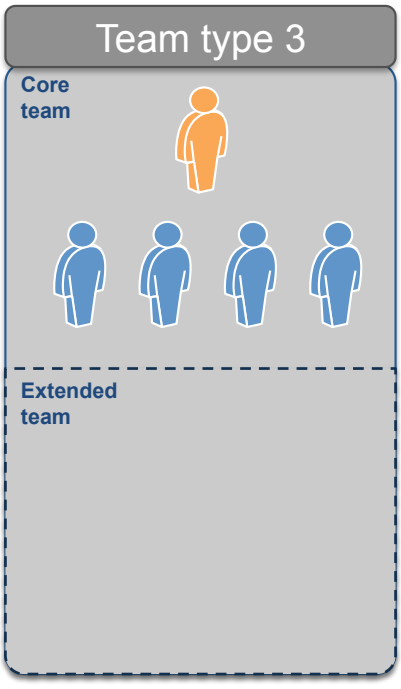


Figure 9 Category team type three

Case company 2 used the type 3 team structure in its central hybrid purchasing organization. The category manager is located at the headquarters and reports to a category director, whom in turn reports directly to the CPO. The core team members are physically located at local sites across the world, but have a direct

reporting line to the purchasing director of business units, whom also reports directly to the CPO. The core member might split their time between two categories. Direct reporting lines from factory-level purchasers, makes it easier for the category teams to get support from other functions.

Table 2 summarizes the main characteristics of category teams in general for the companies participating in the study. Three of ten companies had not full-time category managers for their teams. In all cases, these were companies with a low degree of centralization and typically having a lead-buy oriented structure with low attention from management. Category managers had to divide their time between the category and their jobs as strategic purchasers for a business unit or product area. One category manager expressed in the following terms: "The intention is that it should be a 100% role, but there is not enough time. However, I think category management will grow in importance and that management will commit more resources to it". Out of the seven companies who have core teams, only three have assigned them full-time to category work.

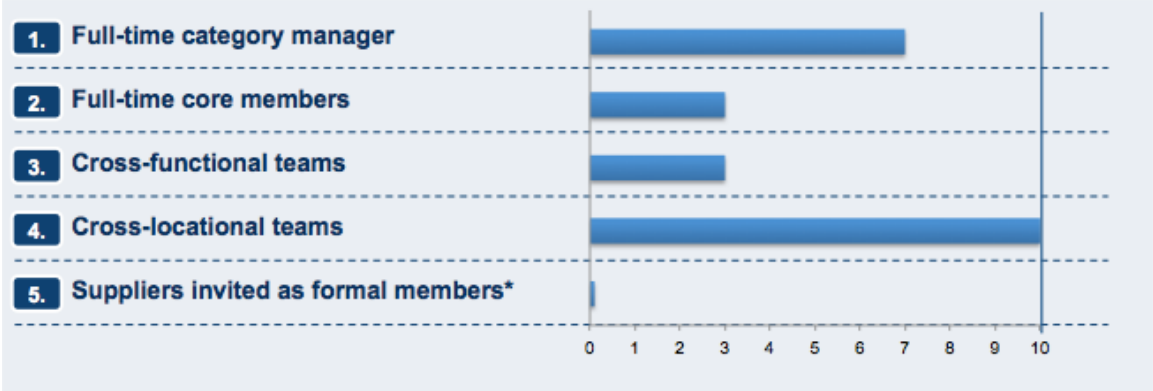


Table 2 Characteristics of category team composition

While category teams at all companies had to work cross-functionally in order to do their job and reach their targets, only three of them actually had people from other functions in their teams. Several category managers perceive this as one of their top challenges while others have found ways to get it to work well. All companies studied had cross-locational teams however, as all companies had global operations with factories across several countries. Furthermore, there was not a single case where any company had invited a supplier to participate as a formal team member.

5.1.3 Team responsibility

The responsibilities of category teams differ greatly between the companies in the study. On a high level, the core responsibilities were always to manage the strategic purchasing for the particular category for the entire organization. Many, but not all, of the interviewees explicitly stated that they intended to give the category team more responsibilities in the future, but that they were simply not there yet in terms of maturity. In the interest of fairness, one company wanted to reduce the responsibilities of the categories in order to enforce the local purchasing organization and to better mirror their decentralized organization. The key responsibilities that distinguish responsibilities between the companies are summarized in figure 10. The companies with a lead-buy oriented approach to category management were not all having full-time category managers. In addition the category work, they had to manage other strategic purchasing activities for their respective business area or factory. Although the job as strategic purchaser for the business unit and as category manager should ideally overlap because of the lead-buy structure, category managers express that long-term category work often suffer as short term fire-fighting has to be prioritized.

Figure 10 Category team responsibility in different organizations

Case company 5 has a decentralized purchasing organization with a lead-buy orientation, where category managers and core team members are both part-time jobs. One category manger allocates 25% on her time on category work, and 75% as a strategic purchaser at the local site, and the rest of the team spend 10-15% of their time. The main responsibilities for the category teams are set by the purchasing council and includes creating and maintaining a SharePoint page with an up-to-date preferred supplier list. The category manger negotiate neither prices nor volumes for the business units, but requires local purchasers to at least send out an RFQ to the preferred supplier whenever a need arise. As one category manager expressed: "We want the R&D people to at least send an RFQ

to the preferred supplier, and then they might send one to their own friend [local supplier] as well and compare the price. And different categories have succeeded better than others here, mainly because of resources. For some categories, the preferred supplier list is not even known yet, so that is a big problem." As of today, not all categories are having general agreements at the global level but all of the business units with spend on the preferred supplier might have their own general agreement. Is is also a goal for the category team to be able to negotiate the high-level terms for all business units, such as payment terms, which is not always the case today.

Case company 4 is using a central purchasing structure and have more enforced category teams. In addition to having responsibility for choosing preferred supplier lists, they also negotiate prize and sometimes volumes for the entire organization. As a category manger expressed it: "We try to avoid any promises on volume but we do it in some cases for raw material. Then we're generally speaking in numbers like 100 tons or so." In addition, the category team has the main responsibility for the supplier performance. Local strategic purchaser deals with small-scale delivery and quality issues, but if problems get systematic or critical they are escalated to the category team.

In case company 7, there is not even a difference between strategic, tactical and operative purchasing. The category teams are responsible for the entire span for the category; form new product development to production problems in the factory. One purchasing executive pointed out the trade-off: "The benefit is that the team gain a lot of expertise and commercial leverage, but the hard part is that you will have to work for the long-term at the same time as there are production stoppages that need your attention. The long-term work can easily suffer if not properly managed."

5.1.4 Rewards and compensation

A general finding among all companies is that the variable part of the compensation perceived as small in relation to the regular salary, and the variable compensation is usually paid as a bonus in the end of the year. The summarized findings are presented in figure 11. Most of the companies who use variable compensation or bonus for category managers divide the potential compensation into two parts, one that is category related and one that depends on the overall performance of the company. Core team members do not get any monetary reward in any on the companies studied. In some cases, a core member

has a variable compensation based on his position outside the category work. For instance, in one case a high ranking purchasing executive put himself in a team because the category were highly important for his business unit. In four of the companies, there was no real purchasing budget for the category teams to use for category-related expenses, e.g. traveling. The business unit or product area in which the category member worked had to pay for all expenses for its own employees. Some category mangers expressed concerns with this model as business unit mangers sometimes get reluctant to lend resources to purchasing when one of his purchases might spend some 50% of his time doing work that mostly benefit other business units.

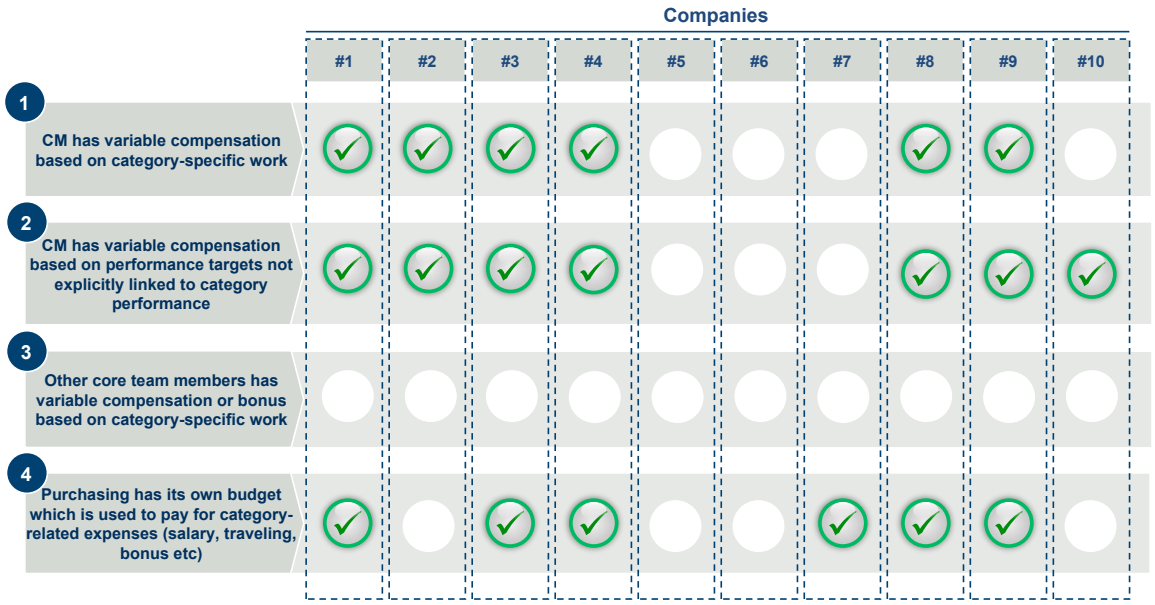


Figure 11 Category team rewards and compensation

Case company 4 has 50% of the potential bonus for category managers dependent on category-related performance based on three KPIs: cost, delivery performance, and quality. Category managers in case company 3 also have one part of the bonus based on 11 key performance indicators that are followed up every month. In case company 1, the bonus is based on some or all targets in the one-year category plan that is agreed upon between category manager and his manager every year. In this case, the bonus can be based on more qualitative measures or activities as ensuring the team receives a certain training program; increase expertise in an area; or hire another core member with technical expertise to the team.

5.1.5 Category team communication

As all companies were using cross-locational teams, the effective mechanisms for communication become vital. Virtual meetings via teleconference services like Microsoft Lync are regularly used for communicating within the team. The planned number of virtual and physical meetings is presented in figure 12. Half of the companies had planned meetings at least once a year to get to know each other better and have longer discussions about more complex issues. Many of the interviewees expressed the importance of having physical meetings as a complement to the shorter follow-up meetings via Lync. The main reason for the lack of physical meetings was budget restriction on travel expenses. Half the companies had planned virtual meetings every second week or more often, and the rest had virtual meetings whenever needed. Some purchasing councils had guidelines for the number of meetings but in most cases the category manager was authorized to decide the frequency of the meetings.

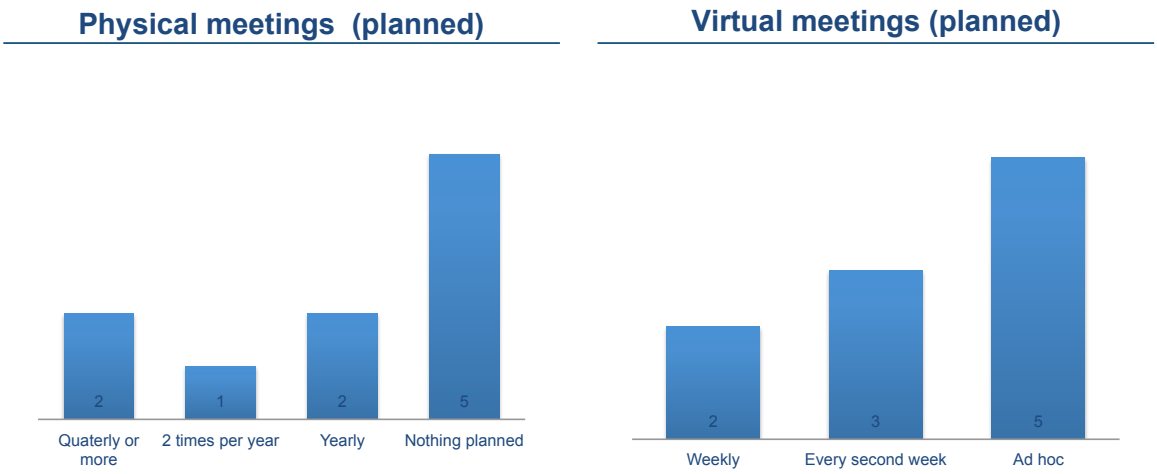


Figure 12 Planned physical and virtual meetings for category teams

In case company 1, extended team members signed off to spend 60-200 hours per year in supporting the category. The category mangers could utilize the hours in whatever way he thought was most efficient, and a physical meeting would take up a relatively large share of those hours. One portfolio manger, responsible for a number of categories, expressed the trade-off: "The category manager can spend the hours as he please. If he thinks spending all hours on a two-day workshop is the best way to use those hours, then it is okay but they usually think they can get more by having short meetings via Lync." Case company 2 had no planned physical meetings because of budget constraints, but the members of the teams met in other occasions. One category manager explained: "We don't have any meetings [physical] planned but I meet some of the members in my team very frequently, and some of the members meet often too. It is just that we don't meet as a team and perhaps the guy in China almost never meet the guy in Mexico."

5.1.6 Resource availability and category team authority

The main findings and differentiators in terms of resource availability and external and internal team authority are summarized in figure 13. The answers are based on how the category mangers in the companies perceive the situation. Category mangers in six of the companies can make sourcing decisions without approval from non-team members or managers. There is of course always some situations in which the category manager has to ask someone else, e.g. if there is a very large amount of money involved. All companies have some monetary level where the category manager needs to ask a manager, but 6 of 10 companies can make most of the decisions without approval. There are basically three methods companies use to control decisions taken by category managers. First, some use tollgates in the sourcing process where the purchasing council must give a go for the category manager to proceed to the next step. Secondly, companies use a category plan with activities that is approved once a year and anything that deviates from plan should be discussed with a manager. The final method among the companies is to require the category manager to escalate any sourcing decisions above a monetary level that is low enough to affect most decisions. One manager in a company with a new purchasing organization said: "We use a very low level in the beginning because we want to learn how the new organization works and what kind of problems the category managers will face. The level will be increased stepwise as the organization evolves."

Figure 13 Resource availability and team authority

Category managers were responsible for choosing new team member in three of the companies. These companies were are having a relatively high degree of

centralization, which gives the category manager more authority to select members. In the decentralized companies with a lead-buy oriented structure, the business units were often allowed to select a purchaser from their own department. Thus, in decentralized structures, the core team members are more representatives of their home departments rather than selected for their skill. All category teams were authorized to schedule their own team meetings and how they carried out the job. Category managers in 6 out of ten companies felt that is was difficult to get support from non-team members, which is critical for good category work since help from R&D is needed in order to test new products when changing supplier et cetera. The category teams that did not perceive this as a problem were having good personal relationships within the functions they needed support from, or very strong purchasing organizations where the importance of purchasing was known in the organization.

Nine of ten companies had formal training programs for category members or purchasing. The content of the training were however of a general character and not specifically tied to category management. One company focused on a new theme of purchasing every year and last year had been about category management. Most interviewees agree that a good category manger should have good commercial purchasing skills and some technical competence about the category. The training programs typically involve the commercial part and most category managers prefer on-the-job training for improving the technical part. Category managers frequently mentioned using suppliers or the own quality department to gain the technical knowledge. About half of the companies felt that time and budgetary support for the category teams was insufficient. Indeed, many category members had to manage other jobs on the side of the category-specific jobs.

5.2 Categorization

Categorization in general was far more informal and unstructured than suggested by other literature. The identification of categories were to a large extent carried out by a evolving strategy rather than by using a deliberate set of methods or standard classification systems. While the selection of categories to prioritize certainly is based on volume and the potential value that can be realized, few companies are using any tools or established methodologies for category selection. There are mainly three types of categories that can be identified in the companies studied and the number of categories as well as the hierarchical structure of categories varies extensively among companies. See

Appendix 7 for typical category organization in relation to the number of categories.

5.2.1 Category identification

Category identification is the selection and definition of what to include in a category and answers questions like: How do you select what items do define a category? How do you decide the volume of a category? What are important characteristics for a category to be able to perform well? Three fundamentally different types of categories could be identified in the studied companies, namely material categories, system categories and manufacturing method categories. The category types are presented with examples in figure 14.

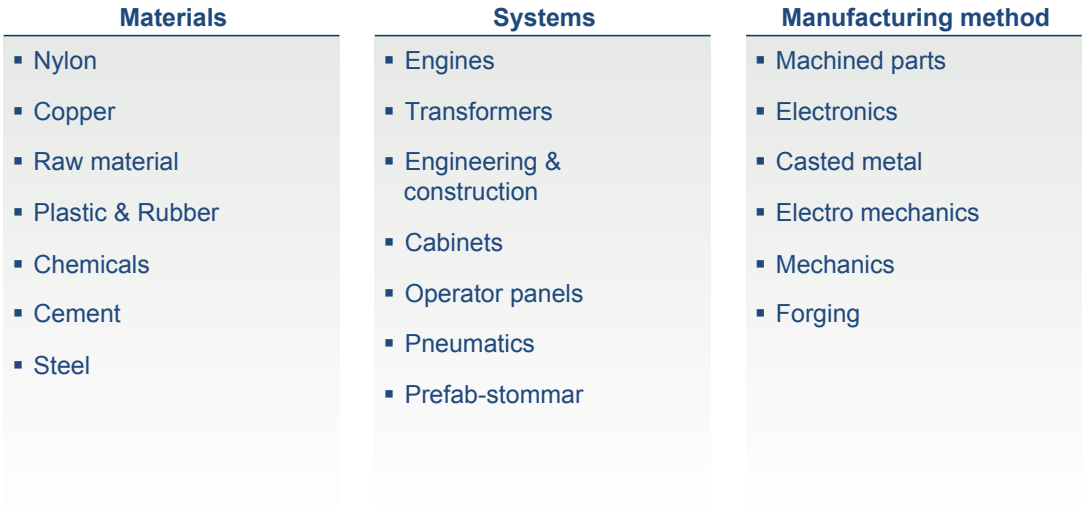


Figure 14 Predominant category types in case companies

Although the majority of the interviewees had more than 10 years of experience in working with purchasing and many had been working in the same company for a long time, few actually knew how the categories had been created from the beginning. At least they could not recall any particular methods being used, but described the identification of categories more as an emerging structure that had been fine-tuned over many years. Most companies aimed to create categories that would mirror the supply market, however, and a trail-and-error process had been used to get to the current state. The main source of data used to identify categories was their own internal spend data, forecasts and supplier data. The size of spend in a category seem to be the second most important variable for categorization after the structure of the supplier market. The importance of size is highlighted by the following quotations:

"It is a risk that the category manager becomes too operative if the categories are small. Then the local purchasers start to call us [category managers] because they get a busy tone when calling a supplier. It must be obvious that we have large amount of spend and cannot engage in small things like that." – Category manager, case company 2

"It's crucial that a category is large enough to be really attractive for the suppliers. We basically sell our spend to suppliers, and they have to see that they can get something really interesting, usually a large volume, via one point of contact. That is what creates the leverage we need to make a good deal." – Head of Purchasing, case company 4

No company used a standard classification system, such as German Eclass or American UNSPSC, to categorize spend but all companies had come up with their own categories. A company in the construction industry looked at some standards when establishing their category management organization in 2005, but felt that it was a poor fit with their own products. Although the categories had typically evolved over time in all companies, they had become quite stable in the last couple of years. Several interviewees took that as a sign of increased maturity of their category management organization.

5.2.2 Layers of categorization

70 percent of the companies in the study aim to categorize 100% of the total third-party spend, and 30 percent of them succeed to categorize above 90% of total spending. The numbers are summarized in figure 15. The companies who categorize 100 percent generally argue that they want full control over the entire spend so that they can find new opportunities for value creation. Companies who intentionally target less than 100 percent gave two different motivations.

First, two companies aimed to have 90 percent of spend categorized because they did not believe the value of the effort would outweigh the additional costs. They thought it would be a huge job to categorize the tail of small suppliers and products and that it would take time from generating value in the already defined categories. Secondly, one company targeted 25% of spend, which was the current level of categorization, because they did not believe that the potential synergies were large enough to motivate a higher level. They were already a very decentralized company with a large number of factories with their own P&L responsibility. In addition, they were increasingly reducing the usage of standard product because of increased competition from emerging markets. In response to

the market conditions, the overall strategy of the company was to increasingly offer more specialized and differentiated products. Hence the purchased materials also had to be more specialized, which in turn reduced the synergies between the products. The CPO expressed the evolving strategy: "One cannot purchase water and sell wine. As we sell more unique products, our input will have to be more unique as well, and the potential supplier base is shrinking. It might just be one supplier in the world for those advanced materials"

In the companies who target a categorization level of 100%, the gap is often due to a number of sites not yet being connected at all. The main reasons given is that newly acquired companies has not yet been integrated, since there is usually quite some manual work that has to be done by the acquired company to categorize their entire spend; or that some smaller companies or factories has been reluctant to plug in to the category system because they feel it is not worth the effort. In very decentralized companies the local sites are like their own companies and tend to be stronger than the global purchasing organization, and it is up to the chief executive of that site to decide whether to join the category organization.

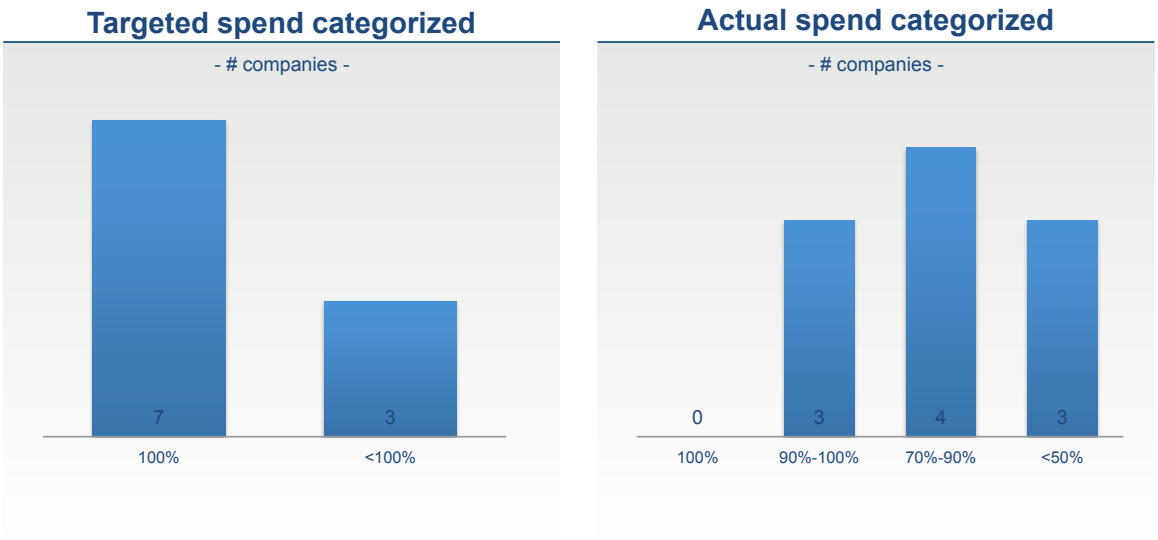


Figure 15 Targeted and actual categorization

The complexity of categorization was found to be more complicated than suggested in literature however. In fact four different layers of categorization, rather than the two or three suggested in the literature review, were identified in the companies participating in this study.

The four different layers of categorization:

(1) Target spend- share of total spend they intend to categorize
(2) Actual spend - how much of the spend that is currently categorized
(3) Assigned spend - how much of the spend that is assigned to a category responsibility
(4) Active spend - how much of the spend that is actively managed

Going through the four layers, there is consistently a smaller part of total spend in each layer. That is, the target spend is usually larger than the actual spend, the assigned spend is always larger than the actual spend and so on. The assigned spend is different from the actual spend because it not always that at categorized spend is distributed to category managers. There might be that some subcategories are still purchased at local sites because there aren't enough category managers for all spend. In one company, a number of category manager positions were empty because of budget constraints and that one manger had left the company and they had not ben able to find a replacement for some time.

The active spend is the percentage of the total spend that is actively managed by a category team. Because even if the spend is assigned to a category team, the team might not actively work on all of the assigned spend every year. Sometimes the reason is that a large deal has been completed and a decision has been made not to change anything for three years or so. But it could also be that the category manager simply doesn't have time for all categories and must prioritize as a result. The prioritization can be more long-term in character as well. One company decided that all category team should choose 3 sub-categories to develop more advanced category strategies for. The other sub-categories in each category were still active, but the strategies had to be more comprehensive on the top three. The selection was not based on cost saving potential for the next year, but on the importance of the category in the long term.

5.2.3 Category prioritization

Cost savings potential and absolute monetary value of the category was by far the most used criteria when the category managers selected what categories to focus their efforts on. One purchasing executive expressed the importance of reducing cost in purchasing: "Once in a while I have hired category managers who present a hockey stick graph with no savings for year one and two and a huge saving year three. Then they can have about three years to get a new job. It just doesn't work like that in purchasing organizations." Most category

managers used the market knowledge and experience of the team to select what categories they thought had the best potential for cost savings during the year. Few companies had standardized tools or methodologies for identifying potential in a structured way. One purchasing executive explained:

"The category managers usually have a very good picture of the market and where the greatest potential is. They discuss the potential of the different offers and the ease of implementation within the team before they make a decision."

Four of the companies answered that they looked at both future and current spend when selecting what categories to work on, whereas the other six only used current spend in their assessments. The companies that doesn't look into the future usually perceive their spend as relatively stable. Three companies said that their companies was generally poor at making forecasts and that it probably would help to include future spend in assessments.

5.2.4 Top challenges in category management

The top challenges in getting category management to work within the organizations are presented in figure 16. The information is summarized per company as the number of interviewees per company differs. Access to reliable data about the category and attention from top-management was mentioned as top challenges in 40 percent of the companies. Good data with efficient tools to enable category managers to quickly sort and present up-to-date information on the category was also mentioned as a critical enabler at companies who already had good data quality. For instance, case company 1 had the highest level of coordination at country level and was unable to consolidate spend efficiently on a Nordic level because of poor data quality in Finland. A purchasing executive expressed the complication: "Data quality is a big problem to us on the Nordic level. We need to have an analyst do a lot of manual work and ask suppliers what we buy to get a fair picture." The companies with decentralized organizations had the biggest issues with getting support and attention from top management. Lack of top-management attention some of the other top challenges, as getting support from other functions and get enough resources to materialize expected savings.

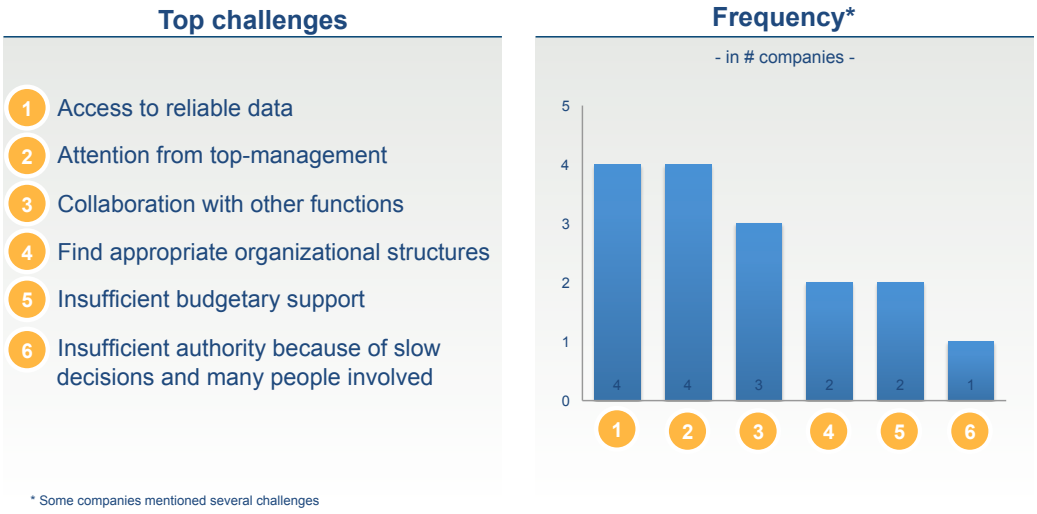


Figure 16 Perceived top challenges in category management

Collaboration with other functions, R&D in particular, is a top challenge because it slows category teams down. Several category managers said they sometimes have to wait several weeks for an R&D person help them. Case company 10 partly improved their situation when they started an e-learning program about purchasing. The Global head of purchasing explained: ”The program really increased the understanding of purchasing and why it is important for everyone. Now people from other functions are running around asking the purchasers to explain things they forgot from the training. People are really enthusiastic.”

Poor organizational structure was perceived as a problem in organizations where it was unclear who really had responsibility. For instance, case company 8 had an organizational structure where about half of the spend was managed through global categories and the other half is managed by regional purchasers who reports directly to regional directors responsible for all factories and the business in the region. This gets problematic when purchasing problems occur, since its unclear who is actually responsible between the category manager and the regional purchaser. The following quotation highlights the problem:

“When the director of Europe has a problem with purchasing, he would turn to his regional purchaser to solve the problem. But then he can say that it’s not his problem and blame the category manager.”

5.3 Process and tools

5.3.1 *Corporate-wide sourcing processes and tools*

Several companies had developed global processes and tools for the category teams to follow and put them up on the intranet for everyone to access easily. Some companies had programmed interfaces that included all necessary processes and tools that were used by the teams as illustrated in figure 17. One category manager highlighted the benefit: "We always had processes and tools but it was really hard to find them and there was no structure at all. Now everything is in its right place and we can follow the processes step-by-step and everything is easy to access."

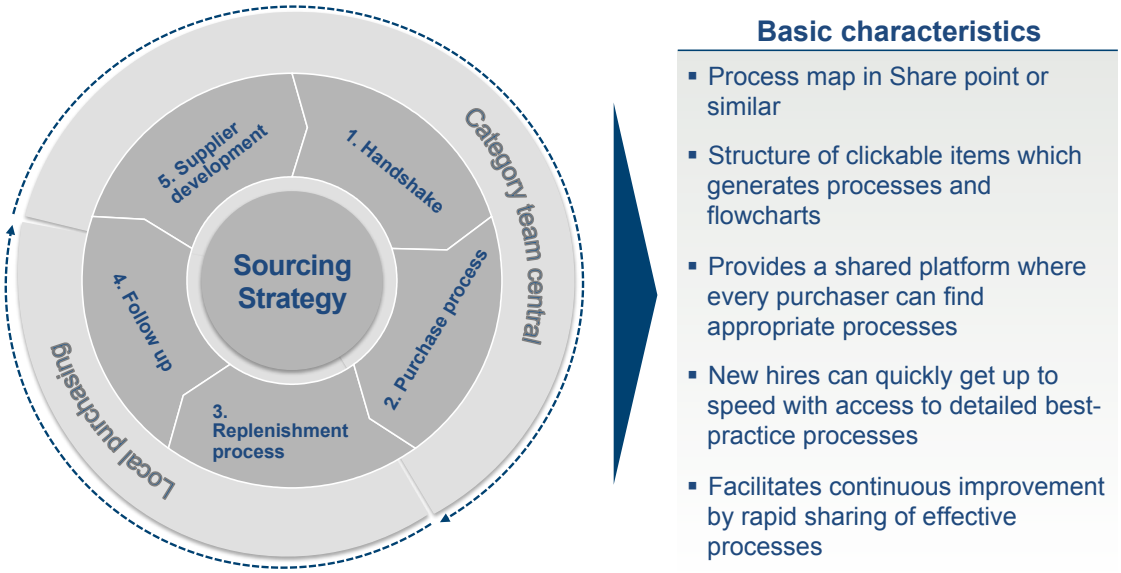


Figure 17 Corporate-wide process map for category management

The sourcing strategy includes three-year category strategies for prioritized categories, and is accessed by clicking on the Sourcing Strategy tab in the intranet. Templates for creating category strategies are provided and includes why and what of the strategy, long-term risks, market assessments and so on. The handshake process is carried out yearly and starts with setting targets on cost, quality, and delivery. It also includes an idea-generation phase where a gross-list of projects that are prioritized to the category team. The projects are executed in the Purchasing Process stage, which also includes for example auditing tools for assessing suppliers. The output of the Purchase Process stage is a handover-agreement between the category team and the local purchasers, which initiates the Replenishment Cycle stage with processes for measuring time-, cost-, and inventory requirements. This is also the step where the control of the contract is handed over to the local purchasers. The local purchasers

provide feedback to the category teams through weekly meetings where discrepancies in performance are discussed. Appropriate resources are assigned to deal with systematic performance issues that might initiate the Supplier Development process, in which a set of improvement programs can be run to resolve the issues. For instance, one company is using a task force with production mangers who they send out to poor performing suppliers. The task force runs the supplier's factory for one or two weeks to identify problems and potential solutions.

Nine companies had developed some kind of category documentation, which was unique for the category and presented the most important characteristics of the category, typically for one to three years ahead (See figure 18). The format of the category documentation was very different among the companies however. While some companies had developed 40-page templates in PowerPoint, others summarized the most important information on an A3 report or an Excel sheet.

Case company 1 and 10 used A3 reports to summarize the most important information on the category. A typical layout is presented in **Appendix 8**. The document is typically the output of a handshake process described in the last section. The category plan includes an overview of the category strategy and plan, where the targets for the year ahead is presented together with the main activities to achieve the targets. Key information on spend characteristics as sourcing from emerging markets, subcategories with single sourcing and the environmental impact of the category are presented. By summarizing the key information on one document that can be put on the wall, it will be easier for executives to understand what purchasing is doing. For instance, one company uses the A3 report to get sign-off form the factory managers. Head of purchasing explains: "The intention is that the purchaser should be able to present the strategy to the manager and make an appealing business case. Then we want the manager to sign off on allocating the necessary resources."

The category plan is also used to set individual targets for the category managers. In one company, all category managers have to develop an A3-plan every year. The document includes a commitment by extended team members to put in 60-200h in supporting the category manager during the year. KPIs and key activities for the year are agreed between the category manager and his manager, and they decide what KPI or activities in the plan that will determine the potential bonus to the category manager.

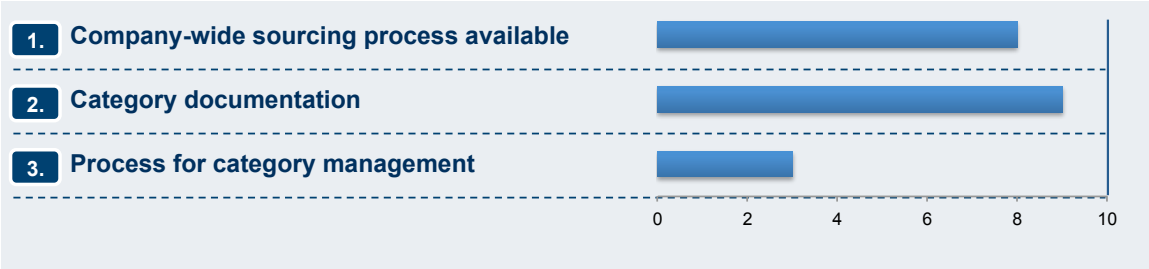


Figure 18 Processes and tools for category management

Three companies have processes specifically related to category management (figure 18). All of these processes were related to starting up the category management companies that had used category management for a long time did not have any category management processes. Case company 3 used a category management process very similar to that suggested by O'Brien (2012) when starting up its categories, according to the head of purchasing. Case company 6 had a process for starting up a category teams, since its organizations was very decentralized and there is a number of different requirements for teams, e.g. all affected business units must be allowed to put a representative in the team.

5.3.2 Integrated IT-systems

A summary of key IT capabilities for category management is presented in figure 19. Spend data could not be aggregated at group level of the company in three of the companies. The reason in all cases was lack of system integration and compatibility between different divisions. Case company 3 had so far going decentralization between its divisions that it was almost no communication between them except in the top management team. Head of purchasing in one division did not even know what systems they used in other divisions, or if they even had a category management organization. Another company did use the same systems and could access the data from one entrance, but the divisions all used different measures for price and quantity. Although seven companies could aggregate some data on group level, the volume actually coordinated at group level varied considerably. Several companies complemented global categories with divisional categories, which meant that they only had to use the same definitions on price and volume on the global categories.

Case company 6 upgraded their IT systems considerably in the last 3 years, and the impact for the category teams has been extremely positive. In the past, they suffered from a variety of different definitions on key input as price and volume. E.g. one business unit measured price per ton, and another measured in price per

unit. "It was impossible to make sense of the data" – One category manager recalls. In addition, the data was uploaded to the ERP system once a month, and it took a lot of manual work to get reliable data. As of today, they have implemented a data warehouse where data from all factories are automatically uploaded every night. The category manager explains the difference: "I had to do so much manual work before, and by the time I was done the data obsolete. Now I have all necessary data at my finger tips and I can swiftly generate reports for the category team meetings." Response time for category managers are much faster now, as the data updates once a day.

"If a local purchaser is using a local supplier for one of my items, I can call him the same day to figure out what happened. Before it took 1.5 months before the new supplier even showed up in the system, and it would take another month or two before I actually knew that the local purchaser stopped using his local supplier." – Global category manager, case company 6.

Figure 19 IT capabilities in case companies

No company in the study was able to present data based on what suppliers offered. They could easily present data based on what they spent on each supplier, but they could not see other parts of the supplier's product line. The reason being that no company shared their category system with suppliers or used standard classification systems.

5.3.3 Performance metrics

The performance measures in the ten companies was quite similar, the most frequently used being presented in figure 20. Cost reduction was the most frequently used performance metrics, and was mentioned by all companies in the study. Furthermore, there were basically two different types of performance metrics used, fixed and variable metrics. The fixed metrics were the same from year to year but the target for the metric was changed. The variable metrics was typically specific for the category and had a duration of only one period. An

example of a variable metric would be to add another supplier for a specific sub-category or make a market analysis in China. Some companies also measured a set of maturity variables in order to understand how far their category organization had come, as well as track and compare the development of the category teams.

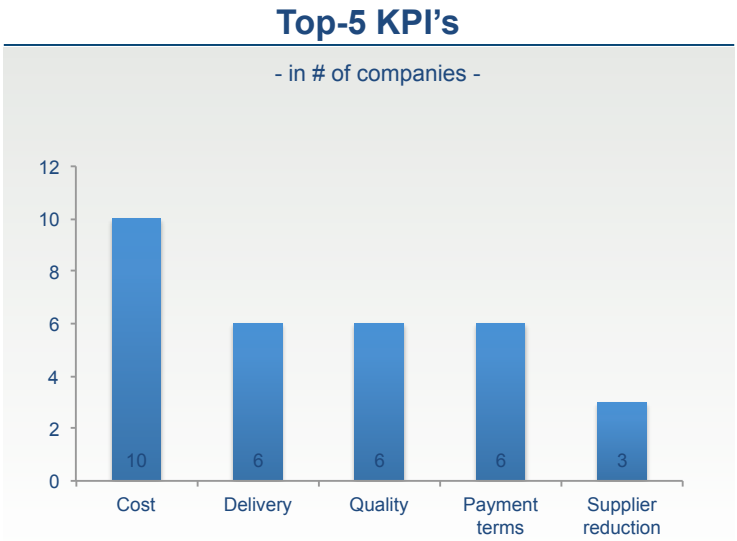


Figure 20 Most used key performance indicators

Case company 6 measured three main KPIs and used a number of additional maturity measures to track the development of the category management organization and benchmark category teams. The three main KPIs was percentage spend form emerging markets, cost reduction, and delivery performance, which had individual targets for all categories. The maturity metrics are formulated as a set of questions that the category manger must fill out every year, and includes questions as if there is a preferred supplier list in place; if the category manager is authorized to make sourcing decisions, which he only is after taking a certain certificate; and if there are a review board appointed to assess the performance of the team (See **Appendix 9** for benchmarking and tracking of maturity measures).

6. Discussion of empirical findings in light of prior research

The chapter includes a discussion of the main findings in the report and relates these findings to the theoretical perspectives outlined in the literature review. In addition, possible practical and theoretical contributions are discussed as well. In general, the value of the findings stems mainly from the increased detail in the empirical material presented in the findings and the many case examples.

6.1 Organization

6.1.1 Purchasing structure

The purchasing structures implemented by the companies in the study were ranging form companies with a rather high level of centralization to what could be described as a decentralized hybrid structure (van Weele, 2012). No company was completely decentralized in the sense that the there was no centralized purchasing resource. The companies with most decentralized structure indeed had business units with responsibility for their own financial results, but all companies hade some coordinating responsibility on the central level in the purchasing structure. The pattern that the organization and the position of the category depend on the category characteristics turned out to be true for the companies in the study. Decentralized organizations in the study do indeed utilize local, regional, country and global categories depending on the characteristics of the category. The main characteristic they use to decide on what level the category should be sourced is based on what level the category is needed. Companies with centralized purchasing structures usually had the entire core team at the same location, independently of category characteristics, but the extended team members', locations and expertise varied with category-specific requirements. The findings in this report provide additional detail on how the responsibilities between the category team and operational purchasing might be operationalized in a number of different ways depending on the level of purchasing centralization in the organization.

While the facilitating role of a sponsor was not as prevalent in the companies included in this study, the use of purchasing councils was frequently used and appears to have a facilitating role. In fact, in several organizations the real decision power was moved from the category teams to the purchasing council by

lowering the monetary value that required a purchasing council decision. In some organizations this seemed to be a way of controlling the work of the category team and hence lower its authority. It has also been highlighted in the study that purchasing councils are taking a variety of different forms in category management settings that differ form the presentation in the literature review, in which a CPO and business unit executives were typically involved. The purchasing councils here used a set of different structures with regards to leadership, members, and main responsibilities.

6.1.2 Category team composition

The present study certainly add to the previous state of research in terms of category team composition and the different type of teams that are utilized in industry. While the current research recognize the part-time character of category members, the findings have highlighted a variety of different team compositions and workload set-ups. It appears that decentralized organizations are having part-time members to a larger extent. This might be because a category team in these organizations typically has representatives from each business unit in the team. This means that the team members have other jobs as strategic purchasers at the business unit level. Based on the discussion with category managers in these companies, the atmosphere can sometimes become slightly competitive in these set-up, where the team member feel that their role is to defend the needs of their own business units, rather than taking a group perspective. The companies with centralized organizations sometimes had a core team where all members were full-time central resources. One striking finding among the case companies was the lack of cross-functionality in the category teams. Rather than being actual core members of the category teams, other functions where integrated either through virtual structures or extended team with very limited workload. The added value by the study could be that it seems that in order to truly understand the fundamental characteristics of team composition in category management, it is not sufficient to just analyze if teams are cross-functional or part-time, but the level and the character of the team must be included in the analysis.

6.1.3 Team responsibility

The findings showed that the responsibility of category teams differ substantially between the companies in the study. It appears that more centralized companies

are generally having more responsibilities allocated to the category teams than companies with decentralized structures. It also appears that it is more difficult for decentralized organizations to take on more responsibility. The reason might be that these teams tend to use part-time members to a greater extent, and as a result, they don not have time to take on more responsibility. As the current state of literature was fairly limited in the area of category team responsibility, the findings certainly add to the current empirical base by highlighting the variety in responsibilities for category teams.

6.1.4 Category team rewards and compensation

Compensation and rewards for category managers and team members in the case companies differed from the picture given by the current stage of research. No category team members had variable compensation based on the performance of the teamwork. One explanation could be that Swedish companies might be less likely to give performance-based compensation in general. Although some category managers received bonus based on reaching target KPI-levels, the bonus was frequently a very small part of their total compensation and they did not feel that it was important. According to the literature, this could potentially create a lacking motivation in the team, because the responsibility for reaching cost-saving objectives are usually shared, but only the category manager will be rewarded. The findings on virtual team structures and the importance of a formal leader in general complied with the outline in the literature review.

6.1.5 Resource availability

Availability of key organizational resources seemed to be very important for the case companies in this study. The fact that the top challenges of the case companies closely resembled the key organizational resources presented in the literature, only enforced the importance of putting key resources such as budgetary support and time availability on top of the agenda. Getting support from other functions was particularly important for almost all companies. This problem might likely be especially important because of the lack of cross-functionality in the formal teams. As a result, companies must establish informal integration mechanisms to compensate for absence of formal channels of communication. The findings highlight a possible authority problem in category teams, as many companies are using purchasing councils to make the vast

majority of the important decisions for the category teams. It may present a possible imbalance as category teams are supposed to take on larger responsibilities, e.g. from regional to global responsibility for a category, but their authority remains the same. Category managers frequently have the same authority as a strategic purchaser because they might be at the same hierarchical level organizationally.

6.2 Categorization

The findings support the external view in category selection, where companies typically closely assess individual marketplaces when selecting what to include in the category. This is in line with prior research at a fundamental level, but the findings provide additional proof for the importance of looking outside the company in order to create effective categories. Additionally, the study describes how companies carry out this analysis practically. One surprising finding was the lack of supportive tools and standards used in both category identification and category selection. The prevailing method in all companies was that the category managers and his team used their experience to assess potential for cost saving in the relevant supply markets, and resource allocation decisions on that subjective assessment. Tools as the Purchasing Prioritization Matrix (Figure 1) was not currently used in nay one the companies. Some companies had used it and other methods when initially implementing category management, but then stopped as the category organization matured. However, even though the priority of categories might be clear cut at the main category level, there might still be potential to use the tools are sub-category level. For instance, as predicted by Trautmann et al. (2009b), the case companies tend to look more at economies of scale and overlooking economies of learning and economies of process when assessing potential. A proper opportunity analysis-tool could integrate more aspects of potential and probably improve sourcing performance.

Although data quality and availability was considered a critical enabler for the case companies, as predicted by the literature, is appear that the companies in the case study had slightly better data quality in comparison with findings in other research. As we have seen, most companies can aggregate data with sufficient quality at the relevant levels. Data availability is still a problem, but it seems that some companies now have higher expectations on data. The problem has gone from 'I don't have comparable data on what we purchase on group level and must ask suppliers' to 'I don't have everything I need at my finger tips, and there is a one-month lag before I get my data'. This could be a result of

improvements in IT over time or that Swedish companies are comparably good at IT.

The study provides more detail on how companies might target and manage their categorized spend than previously presented in the current research. One important contribution is the added detail on the different layers of categorization presented in the findings. The different layers presented in the literature review: un-addressable spend, rest of spend, and categories does not provide enough detail to be able to fully understand how categorization works. For instance, most case companies are aiming to categorize 100% of spend in contrast to 'realizing that some part of the spend is un-addressable'. To explain why these two seemingly contradictory statements can co-exist, there is a need a different set of terminology that can help practitioners and researchers to better understand categorization at a detailed level. The four different layers of categorization (Target, Actual, Assigned, and Active spend) introduced in this study will highlight important aspects when analyzing category-based organizations. Specifically, the study has provided evidence that both targeting 100% of spend categorized and lower targets are viable and used strategies in practice. Companies are facing a trade-off between having full control of their spend and the cost of getting there. Perhaps the categorization of the last 10 percent of spend is unnecessary as the cost of categorization will likely decrease as companies are approaching the 'tail' in the Pareto-chart. Companies have to weigh the benefits of categorize the last 5 or 10 percent against the opportunity cost of allocating the resources differently.

Organizing categories into a hierarchical structure with main and sub categories is a structure identified in all case companies included in the study. The findings support the finding by Heikkilä and Kaipia (2009) and add additional detail and empirical material to a subject with a poor academic understanding. Although the number of categories indeed seem to be one determinant of additional hierarchical levels, the organization and its resources appears to be another important determinant in the sample of this study, which also supports prior research. It appears to be important to create manageable entities and companies with centralized purchasing structures appear to be consolidating categories to a greater extent. This could be that the highest managers of the category structure in a centralized company is typically a quite high-ranking executive, and may report directly to the CPO. Therefore, it becomes necessary to limit the number of people on this level by creating, for example, portfolio managers or category directors that are responsible for many category managers.

The findings bring some further clarity of the use of the process-based view of category management presented by O'Brien (2012). Although none of the case companies applied category management as a process, some companies recognized that they might have used a similar pattern in the embryonic stages of their category management implementation. For instance, a purchasing executive who initiated category management at his company expressed it: I read the book from O'Brien a couple of years later [after they started category management] and it was basically exactly how we did it back in 2005'. However, all organizations in this study have gone beyond that stage in a way. They now have stable categories around the most important main categories, and then they might allocate resources differently among sub-categories from year to year. Thus the findings support a more static category structure in terms of the most important categories, but of course require quite dynamic processes and strategies to work successfully.

6.3 Process and tools

Findings in terms of processes and IT generally confirm the overall picture of the current state of research in terms of what is used in industry, but adds valuable insight in terms how it is used. The findings suggests that it is not that good processes and IT tool are non-existent, but rather the interface and integration between processes, tools, and IT systems that enables for successful use of these constructs. This implies that it is not so much the existence of category documentation and global sourcing processes that facilitates successful category management, as it is the way they are provided to the users. Providing integrated packages of processes with underlying tools and templates that are easily accessible from one simple page on the intranet makes category management make statements as this: 'We always kind of had all these processes and templates, but not even people who had worked for a long time knew where to find them. Now it really provides a support in my work, not he least when we hire new people'.

Performance metrics and KPIs played an important role in category team-work within the studied organizations. In addition to using metrics to measure cost reduction, delivery performance, quality and other standard metrics already identified and described in a detailed extent in the literature, the study revealed another perspective on performance measurement on category teams. The practice of establishing a set of category specific maturity metrics that is measured yearly is a valuable complement to the regular measures. This means that companies are taking a step beyond regular performance measure for

sourcing teams are cares about the development of their category teams from a maturity perspective.

Another interesting finding was that no company used standardized categories or classification systems, and the implications that have for the category work. While designing a unique 'home-made' categories might facilitate the categorization in it self, it might impede category work in the longer run. If companies were able to use the standard classification systems, they might be able to sort their spend data based on what suppliers offer, and not just what they are buying from that supplier. This could potentially provide Swedish companies with valuable information when trying to identify savings potential.

7. Conclusions

This present section aims to present the main conclusions from the work and highlight how the research questions have been answered. Possible practical and theoretical contributions as well as suggestions for future research will also be presented.

How do companies organize category management?
Companies organize category management mainly through three types of team structures with varying characteristics in terms of core and extended team members. These category teams are utilized successfully in organizations with high and low degrees of centralization but the roles and responsibilities vary. Responsibilities for category teams differ substantially among the case companies. While some category teams' single responsibility is to develop and maintain a preferred supplier list, other teams are responsible for all strategic activities for the category, including systematic performance issues by the supplier and negotiation of price and volume for the entire corporation. Though all teams are dependent on cross-functional collaboration to carry out their job, many team struggles to get sufficient input from other functions. Some organizations have no formal channels of communication between the purchasing category team and other functions, but the team members have to find ad-hoc solutions. Others have formal non-purchasing members in the teams, but some with a very limited time-commitment.

How do companies select and manage their categories?
Selection of what items to bundle, or category identification as it has been referred to throughout the thesis, has been found to be a rather informal iterative process for most companies. They typically bundle based on volume and how the supplier marketplace is organized, but no formal processes or tools appears to have been utilized and no company is using standard classification systems, such as the German Ecl@ss or UNSPSC from the US. Predominantly three types of categorization logics seem to be used in the case companies: raw material categories, system categories, and manufacturing method categories. Seven out of ten companies aims to categorize 100% of total spend, however seven companies have an actual categorization below 90%.

The failure to meet categorization targets appear mainly to come from the manual work that is required to add the categorization code, which tend to lag

the rate of acquisition in many companies. However, in order to get a sound picture of a company's efforts and maturity in terms of categorization, it has been suggested that one must analyze not only the target and actual categorization, but at four different layers of categorization: target spend, actual spend, assigned spend, and active spend. Furthermore, assigned and active spend can have different levels of priority and hence requirements for reporting. While some companies are realizing the value-generating potential of their suppliers, the chief criteria for selection of what categories to prioritize is still undisputedly cost saving potential for the year ahead.

Which processes, tools and KPIs are used in category management?
Most companies had purchasing processes and tools that could be used in category work, but the way they were available to users varied considerably across the case companies. The companies with the most sophisticated solutions had easy-to-use and clickable process maps available at the company intranet. Key purchasing processes, such as RFQ or a handshake process, were easily available and underpinned with templates, tools and flowcharts to support the specific process. Most companies could aggregate purchasing data at group level, but the data quality and the amount of manual work to retrieve it varies considerably across the case companies.

Practical or managerial contributions to the current knowledge predominantly take the form of practical examples from the different case companies involved in the study. Indeed, the current empirical base for category management practice is scare and it's hard for managers to find new ideas for improving their purchasing organizations. Theoretical contributions can mainly be derived to added detail in a number of theoretical constructs as well as contributions to increase the empirical base on category management.

In future research, it is suggested to look closer at some of the concepts identified in the present thesis. For instance, research focusing on the three type of teams identified in this study could be carried out with the objective to relate proper team type with type of organization. In what context is respective team type appropriate to use? Another interesting area for further research would be to look closer on success factors in category identification.

8. References

Bals, L., Laiho, A., Laine, J. (2011). On Evolving Procurement Organizations. *Presented at 20th Annual IPSERA Conference, Maastricht, NL.*

Bitran, G. R., Gurumurthi, S., Sam, S. L. (2007). The need for third-party coordination in supply chain governance. *MIT Sloan Management Review, 48(3), 30+-.*

Bryman, A., Bell, E. (2003). Business Research Methods, 1st ed. *Oxford: Oxford University Press, USA.*

Bryman, A., Bell, E. (2011). Business Research Methods, 3rd ed. Oxford: *Oxford University Press, USA.*

Carter, P. L., Carter, J. R., Monczka, R. M., Blascovich, J. D., Slaight, T. H., & Markham, W. J. (2007). Succeeding in a dynamic world: Supply management in the decade ahead. *Institute for Supply Management and WP Carey School of Business at Arizona State University*.

Deshpande, R., Zaltman, G. (1987). A comparison of factors affecting use of marketing information in consumer and industrial firms. *Journal of Marketing Research, 24, 114-118.*

Driedonks, B. A. (2011). Sourcing team success: team studies in a purchasing and supply management context. *Uitgeverij BOXPress, Oisterwijk.*

Driedonks, B. A., Gevers, J. M., van Weele, A. J. (2013). Success factors for sourcing teams: How to foster sourcing team effectiveness. *European Management Journal, http://dx.doi.org/10.1016/j.emj.2013.01.009 (22 November 2013).*

Driedonks, B. A., Gevers, J. M., van Weele, A. J. (2010). Managing sourcing team effectiveness: The need for a team perspective in purchasing organizations. *Journal of Purchasing and Supply Management, 16, 109-117.*

Englyst, L., Jørgensen, F., Johansen, J., Mikkelsen, O. S. (2008). Commodity team motivation and performance. *Journal of Purchasing and Supply Management, 14(1), 15-27.*

Faes, W., Matthyssens, P., Vandenbempt, K., 2000. The pursuit of global purchasing synergy. *Industrial Marketing Management 29(6), 539-553.*

Ford, D., Gadde, L. E., & Håkansson, H. (2003). Managing business relationships.

Gelderman, C. J., Semeijn, J. (2006). Managing the global supply base through purchasing portfolio management. *Journal of Purchasing and Supply Management*, *12*(4), 209-217.

George, J., & Martin, J. (1984). Effects of organizational structure of marketing planning on credibility and utilization of plan output. *JMR, Journal of Marketing Research (Pre-1986), 21, 170-183.*

Giunipero, L.C., Monczka, R.M., 1997. Organizational approaches to managing global sourcing. *International Journal of Physical Distribution & Logistics Management. 27(5/6), 321-336.*

Gunasekaran, A., Patel, C., McGaughey, R. E. (2004). A framework for supply chain performance measurement. *International journal of production economics, 87(3), 333-347.*

Heikkilä, J., Kaipia, R. (2009). Purchasing Category Management—From Analyzing Costs to a Proactive Management Practice. *Presented in 18th IPSERA Conference Supply Management–Towards an Academic, 328.*

Holland, S., Gaston, K., Gomes, J. (2000). Critical success factors for cross-functional teamwork in new product development. *International Journal of Management Reviews, 2, 231–259.*

Jack, E. P., Raturi, A. S. (2006). Lessons learned from methodological triangulation in management research. *Management Research News, 29(6), 345-357.*

Keller, R. T. (2006). Transformational leadership, initiating structure, and substitutes for leadership: A longitudinal study of research and development project team performance. *Journal of Applied Psychology, 91, 202–210.*

Monczka, R. M., Trent, R. J., Petersen, K. J. (2006). Effective Global Sourcing and Supply for Superior Results. *CAPS Research. Accessed 1.7.11.*

Murphy, D. J., Heberling, M. E. (1996). A framework for purchasing and integrated product teams. *Journal of Supply Chain Management, 32(3), 11-19.*

O'Brien, J., Books24x7 - BusinessPro (e-book collection), & Books24x7, I. (2012). Category management in purchasing: A strategic approach to maximize business profitability, second edition. *Philadelphia; London: Kogan Page.*

Peters, L. H., O'Connor, E. J. (1980). Situational constraints and work outcomes: The influences of a frequently overlooked construct. *Academy of Management Review*, *5*(3), 391-397.

Rozemeijer, F.A., 2000. How to manage corporate purchasing synergy in a decentralized company? Towards design rules for managing and organizing purchasing synergy in decentralized companies. *European Journal of Purchasing and Supply Management 6(1), 5-12.*

Rozemeijer F.A., Van Weele A., Weggeman M., 2003. Creating corporate advantage through purchasing: toward a contingency model. *Journal of Supply Chain Management. 39(1), 4-13.*

Smart, A., Dudas, A. (2007). Developing a decision-making framework for implementing purchasing synergy: a case study. *International Journal of Physical Distribution & Logistics Management, 37(1), 64-89.*

Trautmann, G., Turkulainen, V., Hartmann, E., Bals, L. (2009a). Integration in the global sourcing organization—an information processing perspective. *Journal of Supply Chain Management*, *45*(2), 57-74.

Trautmann, G., Bals, L., Hartmann, E. (2009b). Global sourcing in integrated network structures: The case of hybrid purchasing organizations. *Journal of International Management, 15(2), 194-208.*

Trent, R. J. (1998). Individual and collective team effort: a vital part of sourcing team success. *International Journal of Purchasing and Materials Management, 34(4), 46.*

Trent, R. J., Monczka, R. M. (1994). Effective cross-functional sourcing teams: Critical success factors. *Journal of Supply Chain Management, 30(4), 2-11.*

Weele, A. J. (2005). Purchasing & supply chain management: Analysis, strategy, planning and practice, 4th ed. *London: Thomson.*

Weele, A. J. (2010). Purchasing & supply chain management: Analysis, strategy, planning and practice, 5th ed. *Andover: Cengage Learning.*

9. Appendix

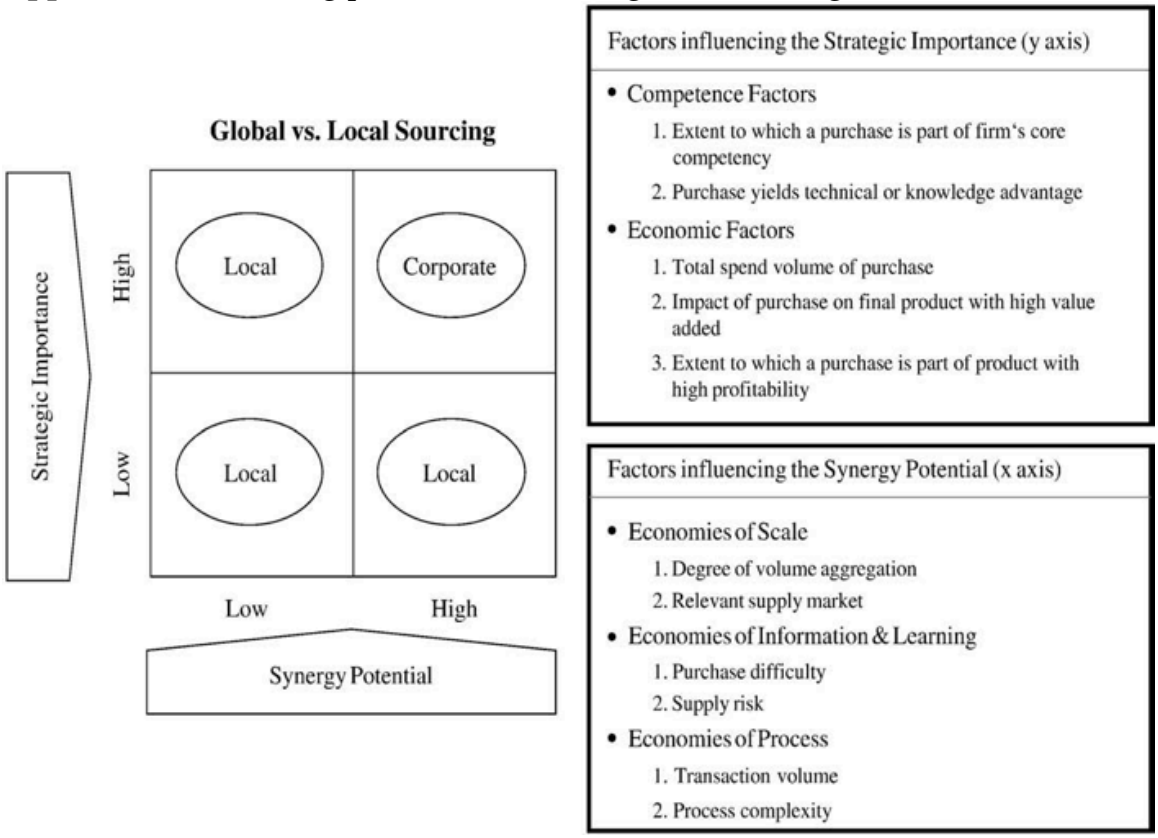
Appendix 1 Literature review and variable identification.

Variable category	Specific variable	Reference(s)
Organizational/Purchasing structure		
	Centralized when common categories across BU	van Weele 2005;
	Centralized/Decentralized/Hybrid	van Weele 2005; Trautmann et al. 2009;
	Where in the organzation are team members located and why?	Trautmann et al. 2009;
	Where are Strategic/Tactical/Operational purchasing decisions take place?	Trautmann et al. 2009;
	Does the position of the category team depend on the category?	Trautmann et al. 2009;
Stakeholders		
	Sponsors	O'Brien 2012;
	External facilitators	O'Brien 2012;
	Other stakeholders	O'Brien 2012;
Responsibility		
	Who is buying what when contracts are set	
	Local site managers are buying acording to contracts	
Purchasing council		
	CPO is heading a global council	van Weele 2010;
	Consists of purchasing exectutives for the different business units	van Weele 2010;
	Meetings monthly	van Weele 2010;
Variable category	**Specific variable**	**Reference(s)**
Corporate wide processes	Global contracting process	Monczka & Markham 2007;
	Category documentation	Monczka & Markham 2007;
	There is an established multistage process for Category Management	O'Brien 2012;
	Category management is run project based	O'Brien 2012;
Integrated IT systems		
	All spend can be aggregated across business units and geographies	O'Brien 2012;
	Data can be analyzed by means of a spend cube	O'Brien 2012; van Weele 2010;
	Data can be presented based on what suppliers offer	O'Brien 2012;
Performance metrics		
	Traditional benchmarking capabilities	Monczka & Markham 2007;
	Value-based benchmarking	Monczka & Markham 2007;

Category teams	Variable category	Specific variable	Reference(s)
	Composition	full time category manager	Heikkilä & Kaipia 2009;
		part-time members	Heikkilä & Kaipia 2009; Driedonks et al 2010;
		members work in several teams	Heikkilä & Kaipia 2009;
		functional diversity	Driedonks et al 2010;
		Both core and ad-hoc team members	
		Supplier participation	Trent & Monczka 1994; Murphy & Heberling 1996; Carr & Pearson 2002; Holland et al 2000;
		Clear roles and responsibilities	
		Optimal team size between 6-8 people	Murphy and Heberling 1996
		Cross-locational teams	Trent, Monczka & Pterson 2006;
		Fixed or project-based teams and manager	O'Brien 2012;
		Do the composition of the team depend on category characteristics?	Trautmann et al. 2009
	Responsibility and compensation	Developing sourcing strategies	
		Do not make the actual purchase	
		Tangible rewards for success	Murphy and Heberling 1996
		Collective rewards	Englyst et al 2008;
		Travel expenses and time not compensated	Englyst et al 2008;
		Individual Bus pay for travel expenses, salaries and bonuses for their employees participating in the teams	Englyst et al 2008;
		Reward structures are aligned across the corporation	Englyst et al 2008;
		Individual rewards based on team performance	Driedonks et al 2013;
		Rewards distributed evenly among members	Driedonks et al 2013;
		Formal leader can influence rewards	
		Category teams have worldwide sourcing perspective	Monczka, Trent & Petersen 2006;
	Communication	Virtual meetings	
		Frequency of meetings	Englyst et al 2008;
		Global category teams operating from a centralized location	Smart & Dudas 2007
	Leadership	Category teams has a formal leader	Trent 1996; Driedonks et al 2013; Trent & Monczka 1994; Englyst et al 2008;
		Leader uses Transformational ledership style	Driedonks et al. 2013;
		Leader uses initiating structure leadreship style	Driedonks et al. 2013;
		The team leader provides the team with external contact	Englyst et al. 2008
	Taks design	Team empowerment	Holland et al 2000
		Customer focus	Holland et al 2000
		Important and challenging tasks	Holland et al 2000
		Conflicting goals between category team and BU	Englyst et al 2008;
	Resource availability	Sufficient time to work on team assignments	Trent & Monczka 1994; Peters & O'Connor 1980;
		Sufficient budegary support for teams	Trent & Monczka 1994; Peters & O'Connor 1980;
		Team member have been trained in teamworking skills	Driedonks et al 2010
		The team can get help from others external to the team	Peters & O'Connor 1980; Trent & Monczka 1994
	Authority	Schedule team meetings and activities	Trent & Monczka 1994;
		Select new members and/or team leader to the team	Trent & Monczka 1994;
		Control internal team processes and activities	Trent & Monczka 1994; Driedonks et al 2013;
		Make sourcing decisions without the approval of others external to the team	Trent & Monczka 1994; Driedonks et al 2013
		No frequent managerial interventions	Driedonks et al 2010
		High levels of internal decision making authority	Trent & Monczka 1994;
		High levels of external decision making authority	Trent & Monczka 1994;
	Formalization	Clearly defined sourcing process available for teams	Driedonks et al 2010; Deshpande & Zaltman 1897; George and Martin 1984;

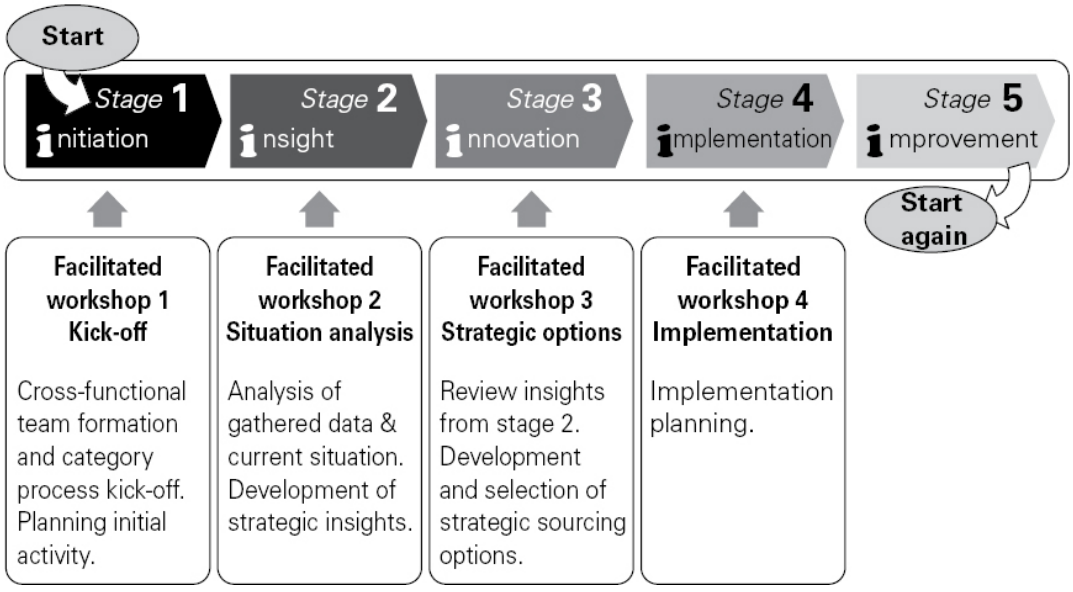
Variable category	Specific variable	Reference(s)
Category identification	Pareto principle used to identify the most important suppliers and categorization is focused on that spend	O'Brien 2012;
	Unaddressable spend	O'Brien 2012;
	Rest of spend	O'Brien 2012;
	Percentage of spend categorized	O'Brien 2012;
	Category trees are set up to identify the most important spend categories	van Weele 2010
	Use of internal spend data	O'Brien 2012;
	Use of supplier data	O'Brien 2012;
	Use of maket data	O'Brien 2012;
	Cost center	van Weele 2005;
	Size of categories	O'Brien 2012;
	Frequency of category identification	Heikkilä & Kaipia 2009;
	Use of portfolio models (e.g.'leverage' and 'non-critical' are suitable for bundling)	Gelderman 2003; Heikkilä & Kaipia 2009; Trautmann et al 2009b; Gelderman & van Weele 2002;
Selection/Focus		
	Use of Opportunity Analysis to evaluate categories	O'Brien 2012; van Weele 2010;
	Economies of scale	Trautmann et al 2009; Faes et al 2000; Rozemeijer 2000;
	Economies of information/Learning	Trautmann et al 2009; Faes et al 2000; Rozemeijer 2000;
	Economies of process	Trautmann et al 2009; Faes et al 2000; Rozemeijer 2000;
	Commmon parts across business units	Trautmann et al 2009; van Weele 2010; Heikkilä & Kaipia 2009;
	Items share suppliers	Heikkilä & Kaipia 2009;
	Items being used across BU/plants	Heikkilä & Kaipia 2009; Sverlinger; Smart & Dudas 2007
	Savings potential	Heikkilä & Kaipia 2009;
	Time horizon for category strategies are about 3 years	Monczka & Markham 2007;
	Buy-in of Bus and identifying benefits	Smart & Dudas 2007
	Costs and terms acossiated with internal sourcing	Smart & Dudas 2007
	Use of portfolio models	Smart & Dudas 2007; Heikkilä & Kaipia 2009;
	Using a purchasing prioritization matrix	van Weele 2010;
	Customized vs Standard (off-the-shelf) product	van Weele 2010;
	Looking at both current and future spend	van Weele 2010;
	Companies are distinguishing between which categories to integrate across plants are which to remain under local auhority	Trautmann et al. 2009b
	Strategic importance of the category influence if it is sourced globally or locally	Trautmann et al 2009b;
Hierarchical structure	Number of main categories	Heikkilä & Kaipia 2009;
	Number of subcategories	Heikkilä & Kaipia 2009;
	What is the role of main/sub categories	Heikkilä & Kaipia 2009;
	How often are new categories created?	
	Category structure added when reaching about 100 categories	Heikkilä & Kaipia 2009;
Category management context		
	Hierarchical structure	Heikkilä & Kaipia 2009;
	Stability of categories	Heikkilä & Kaipia 2009;
	Length of experience in Category Management	Heikkilä & Kaipia 2009;
	Motivation behind adopting category management	Heikkilä & Kaipia 2009;

Appendix 2 Purchasing portfolio model for global sourcing



Source: Trautmann et al. (2009b)

Appendix 3 Category management process with workshops



Source: O'Brien (2012)

Appendix 4 Final interview guide

1. Organization

1.1 Purchasing structure - how is category management integrated in the overall PSM organization? (15m)
- a) What is the purchasing structure (e.g. centralized, hybrid, cross-functional teams)
- b) What is the dominant and subdominant structure (e.g. category, customer, activity, geography)
- c) Where in the organization are team members located and why (what)
- d) Does the position of the category team depend on the characteristics of the category (e.g. regional/global location)
- e) Purchasing governance model? What levels? Decisions at each level? Members? (purchasing council)

1.2 Category team composition – who is included in the category team and why? (12m)
- a) Is there a full-time category manager and how many categories does he manage (leader from purchasing?)
- b) What is the workload of other members and how many category teams do they participate in
- c) How many different functions and locations are represented in category teams
- d) Are suppliers invited as formal members in some category teams
- e) How many members do the teams have
- f) Do the composition of the team depend on category characteristics (e.g. no R&D representation in cost-focused categories)

1.3 Category team responsibility (4m)
- a) What tasks in the sourcing process is carried out by the category team and what tasks are carried out by people external to the team? (e.g. strategic, tactical and operational purchasing) - At some point the responsibility will be handed over.
- b) How do they develop supplier quality?

1.4 Category team rewards and compensation (5m)
- a) Are rewards based on individual or team performance
- b) Are rewards shared equally among members
- c) Who is paying for rewards and compensation (e.g. the functional department is paying salary, bonus, travel expenses)
- d) Category leader can influence rewards
- e) Aligned goals between business units and category teams (e.g. no conflicts of interest for team members)

1.5 Category team communication (4m)
- a) Type of meetings (e.g. virtual meetings, physical meetings, also compensate if not in the purchasing structure)
- b) Frequency of meetings

1.6 Category team resource availability (5m)
- a) Is there sufficient time to achieve something meaningful (e.g. 25% of time can be spent on category work for members)
- b) Is there budgetary support for category teams (e.g.)
- c) Team members achieve appropriate training (e.g. team leader receives leadership training)
- d) The team can get help form people external to the team (e.g. get input from people that are not formal members of the team)

1.7 Category team authority – does the team have high levels of internal and external decision making authority? (5m)
- a) Schedule team meetings and activities
- b) Select new members to the team
- c) Control internal team processes
- d) Make sourcing decisions without approval form people external to the category team (e.g. up to a certain amount)

1.8 Stakeholders – are there any important stakeholders to the team and how are their expectations integrated into the team (3m)
- a) Is there an executive sponsor (i.e. a high-ranking manager that makes sure category work is prioritized)
- b) External facilitator during certain category management activities (e.g. hiring consultants to help with data extraction or workshops)

2. Categorization

2.1 Category Identification – how do companies identify categories in the first place? – Who is involved (team/individual) (15m)
- a) How much of spend do they place into categories (e.g. 80% of total spend), what is the target?
- b) What kind of data do they use (E.g. internal spend data, supplier data, market analysis)
- c) What tools/methods are used (e.g. Pareto analysis, Ecl@ss, ABC, ZYC, tailored flowcharts)
- d) How frequently are new categories created
- e) How do you determine what to include (e.g. steel or steel rods as one category)

2.2 Selection/focus – how do they select what categories to focus on (prioritization on scale/learning/process)? (15m)
- a) Do they use some kind of Opportunity Analysis/Category Prioritization Matrix (e.g. portfolio models like Kraljic) – how to evaluate?
- b) What are the main criteria for selecting what categories to work on (scale/learning/process)
- c) Looking at both current and future spend (e.g. if companies are expanding the spend is quite dynamic)
- d) What categories to integrate across sites and which to remain under local authority

2.3 Hierarchical structure – how many categories do they have at each level? (2m)
- a) Number of main and sub categories
- b) When do they add levels

2.4 Category management context (7m)
- a) Stability of categories (i.e. update frequency)
- b) Length of experience in working with category management
- c) General motivation for working with Category Management (i.e. why do they organize their purchasing organization as CM)
- d) Company-specific definition of Category Management & Role of CM in whole purchasing organization
- e) Benefits and challenges in working with CM (how does it influence other bus?)

3. Process & Tools

3.1 Corporate wide processes – what overall processes do they use that is globally established and locally followed (5m)
- a) Is there a company-wide standard sourcing approach/process, what is the effect?
- b) Is there continuous category documentation (e.g. a playbook for everyone to understand the 'why' and 'what' of the strategy)
- c) Is there an established multistage process for category management (e.g. a five-step process with a start and an end)

3.2 Integrated IT systems – are IT systems integrated at group/corporate level and are able to present good data? (5m)
- a) Can all spend be aggregated across business units and geographies, categories
- b) Can data be analyzed/presented by means of a spend cube (i.e. spend per supplier, category and internal budget holder)
- c) Can data be presented based on what products suppliers offer (i.e. in order to be able to mirror the supply market)

3.3 Performance metrics – how do they measure performance of Category Management? (5m)
- a) Traditional benchmarking only (e.g. based on cost/price reduction)
- b) Value-based benchmarking (e.g. cost of acquisition, speed of product development, perfect supplier launches, # supplier innovations)
- c) Do they benchmark in any other way? Internal or external performance benchmarking?
- d) Does the category team achieve what is intended? (i.e. are they meeting expectations?)

About the interviewee: Personal experience in purchasing (number of years), Current position, Prior positions, (3m)

Did I miss anything?

Appendix 5 Sample from coding-sheet in excel (blurred to protect sensitive information)

Appendix 6 Summary of reliability and validity criteria

Validity type	**Definition (Bryman & Bell, 2003)**	**Applied method**
Face validity	"Face validity might be established by asking other people whether the measure seems to be getting at the concept that is the focus of attention… possibly experts experts"	Received feedback on method and interview guide form two independent researchers on the topic as well as multiple feedback sessions with senior purchasing consultants.
Credability (internal validity)	Triangulation is a technique for ensuring credability in qualitative research	Triangulation has been made by asking for documentation and data in addition to interviewing multiple people at each company
Transferability (external validity)	Can be provided by giving a rich description of the sample context.	The sample selection process provides enough detail to narrow the number of possible case companies down to a small number of companies. However, the identity of the companies remains anonymous
Dependability (reliability)	This entails ensuring that complete records are kept of all phases of the research process in an accessible manner.	Providing in depth detail on problem formulation, the sample selection process and requirements are quite open, interview transcripts are available but will remain anonmous,
Internal reliability	If more than one researcher or interpretator of the data, they have to perceive the answers the same.	Same person did all interviews and interpretation

Appendix 7 Number of categories in relation to category team composition in the case companies

	Companies									
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
1 # of main categories	46	25	8	6	17	12	8	15	42	31
2 # of category managers	40	25	7	6	12	11	8	14	13	7
3 Workload of category managers	100%	100%	100%	100%	25%	70%	100%	100%	100%	100%
4 # of core team members	--	5-6	9	3-8	5	7-8	5	--	1	5-8
5 Workload of core team members	--	50%	100%	100%	200h/y	50%	100%	--	--	50%
6 # of extended team members	4-7	--	3	Proj.	--	--	Pair	--	--	--
7 Total # of team members	5-8	6-7	12	4-5	5	8-9	10	1	2	6-9

Appendix 8 Typical layout of A3-format category plan for steel

Appendix 9 Benchmarking and tracking of maturity measures

		Categoy 1	Category 2	Category 3
KPI's	% from emerging markets	55%	25%	40%
	% cost reduction	3%	5%	1%
	Delivery performance %	97%	95%	92%
Maturity measures	Is there a formally accepted CM			
	Are all team members participating in			
	Is there a review board appointed?			
	Is there a global team to coordinate with?			
	Are members trained?			
	Does your team include other functions?			
	Spend control? - KPIs, spend analysis done			
	Category strategy defined?			
	Is there a category plan?			
	Idea-tracking sheet in plance?			
	Preferred supplier list in place?			
	Is the CM empowered to approve new contracts?			
	New supplier selection is done only by the CT			