Gerhard Trautmann

Global Sourcing

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Einkauf, Logistik und Supply Chain Management

Herausgegeben von
Professor Dr. Christopher Jahns

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Global Sourcing

An Analysis of the Implications for Organization Design

With a foreword by Prof. Dr. Christopher Jahns

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With a special feeling of gratitude to my loving parents, Homa and Gerhard Trautmann sr., whose words of encouragement and push for tenacity will always ring in my ears.

Foreword

In this dissertation, Mr. Trautmann addresses the organizational design implications of global sourcing. We initiated this research project as less is known about the required organizational infrastructure to effectively implement global sourcing. For any large multinational organization, purchasing creates a central and continuing concern, as the organization has to ensure that its various business and geographical units act so as to achieve corporate-wide synergies, while still remaining responsive to local requirements. While many multinational companies have realized the impact of global sourcing for achieving competitive advantage, most are struggling with its implementation. For purchasing managers the design of a global sourcing organization can be considered one of the greatest challenges and a common cause of failure.

To address these identified gaps in research and practice, Mr. Trautmann provides interesting insights into how companies can adopt different types of organizational design features to effectively implement global sourcing. The strength of this thesis is that the research is grounded in appropriate and relevant theory and that sound, qualitative research method is appropriately pursued. In addition, it addresses a topic, which is highly relevant for practitioners, analyzing the strategy-organization fit from a variety of different angles. It consists of three essays, each providing compelling arguments that advance theoretical and managerial thinking regarding organization design for effective global sourcing

Due to the dearth of theory building efforts in this research field, Mr. Trautmann grounded his research on case studies. Thereby, he was able to provide rich data concerning the application of different organizational design features to implement global sourcing. The results are highly relevant to practitioners and researchers alike. While it offers practitioners a template to structure purchasing organizations, it is

appealing to many purchasing scholars as the inter-disciplinary research approach adopted is unique in the global sourcing literature. Mr. Trautmann is to be commended on his extraordinary effort and I wish him all the best for his future endeavours.

Prof. Dr. Christopher Jahns

Acknowledgments

Although writing a thesis sometimes appears to be a lonely journey, one meets and interacts with many people, whose ideas finally have significantly shaped this dissertation. I certainly would not have been able to accomplish this project without their help. I remain indebted and grateful to each and every one of them.

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My second advisor and co-author Evi Hartmann deserves many thanks. For three years she has worked tirelessly on our common papers and commented on numerous versions even in her holidays or weekends. I enjoyed the time on our research project in Darmstadt and learned much about the differences between the academic and practical world. I wish her all the best for her future academic career.

I also would like to express my gratitude towards my colleagues from the Supply Management Institute at the European Business School. I have benefited from discussions with many colleagues. Thank you all for your interest in my work and your valuable suggestions from time to time. In particular, I'd like to thank Tobias Weigl, Handik Widiarta and Martin Lockström for the fun time we had on and off work. The same appreciation goes to Stephan Schmidberger, Andreas Potzner, Edda Feisel and Lars Eiermann, who always supported me and with whom I spent a great time. I also want to thank the different doctoral students that I have met at conferences and who have provided interesting and helpful comments. I want to express my deepest

appreciation to Virpi Turkulainen, who not only co-authored the third essay, but also helped me to sharpen my thoughts and delve deep into theory. The discussions with her were extremely intense, challenging and fruitful and I can not imagine a better research partner. Additionally, I'd like to thank the doctoral students from ESADE for their warm welcome during my time as visiting scholar. Finally, I would like to thank student-assistant Jean Raoul Gruner for the work he has done for me during the last three years.

I wish to thank all my friends for talking with me about something else besides purchasing and giving me the support that I needed. In particular, I'd like to thank Adrian Renner, Christian Funke and Philipp Feldmann for their encouragement during difficult times and my Portuguese beach boys Simon Kamm, Reinaldo Almeida and Miguel Moura for great times in the summer and our regular coffee breaks to talk about anything and everything.

Finally, I thank my parents and my brother Martin for their infinite confidence and unconditional support. Without their love, support and patience I would not have been able to spend the last eight years away from home the way I did. This thesis is dedicated to them.

Last but not least, I'm especially grateful to Stephie for being the best platform to jump on beyond myself and for weathering my minor crises of confidence (and some major ones). During the last three years, she was my non-stop cheerleader, showing me that there is a life next to lectures, projects and papers. Her affection, encouragement and patience when I worked long hours and weekends gave me the necessary strength to finish this dissertation.

Dipl.-Kfm. Gerhard Trautmann

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List of Abbreviations

CPO	Chief Purchasing Officer
MNCs	Multinational Companies
MRO	Maintenance, Repair and Operations
KPIs	Key Performance Indicators
R&D	Research and Development
RFQ	Request for Quotation
OBB	Organization Buying Behaviour

I. Introduction

Ever since Malnight's (1995) seminal paper, which put forward that globalization occurs at the level of the function, scholars have increasingly set the focus on examining how companies can effectively make use of their far-flung marketing, manufacturing or research and development (R&D) activities (Carpano and Chrisman, 1995; Nobel and Birkinshaw, 1998; John, Young, and Miller, 1999; Sheth and Parvatiyar, 2001; Zou and Cavusgil, 2002; Kim, Park, and Prescott, 2003; Xu, Cavusgil, and White, 2006). Global integration represents the last phase of internationalization, as companies turn from a country-by-country towards a global orientation in strategy development and implementation (Porter, 1986; Douglas and Craig, 1989; Galbraith, 2000; Kaufmann and Panhans, 2004). This transition is critical, since in many industries competition is based on the ability of the firm to integrate its subsidiary activities across geographical locations for achieving scale, scope and learning economies (Porter, 1986; Bartlett and Ghoshal, 1989; Ohmae 1989; Yip, 1992). Thus, the current academic discussion provides compelling arguments for the strategic necessity of global functional integration for Multinational Companies (MNCs) facing global competition, suggesting that its application is positively related to firm performance (Xu et al., 2006).

In light of the increasing importance of global functional strategies, the adoption of a strategic perspective towards global supply markets has received much attention from researchers since the beginning of the 1990s (Kotabe, 1990; Monczka and Trent, 1992; Swamidass, 1993; Kotabe and Swan, 1994; Carter and Narasimhan, 1996). Although many scholars still use the terms interchangeably, global sourcing must be distinguished from international purchasing, which refers to a purchasing transaction between a buyer and supplier located in different countries. Following the definition of Monczka and Trent (1991), global sourcing refers to the integration of common items and materials,

processes, designs, technologies, and suppliers across worldwide purchasing locations. Empirical evidence indicates a clear trend towards the adoption of global sourcing by MNCs (Trent and Monczka, 2003; 2005) and purchasing scholars increasingly emphasize its relevance for achieving competitive advantage (Carter and Narasimhan, 1996; Samli, Browning, and Busbiam, 1998). In particular, it has been argued that global sourcing is based on two sources of competitive advantage: location-specific advantages, such as access to attractive supply markets or highly educated workforce and company-specific competencies, which are developed through the exploitation of global purchasing synergies (Arnold, 1997; Faes, Matthyssens, and Vandenbempt, 2000; Petersen, Frayer, and Scannel, 2000; Kotabe and Murray, 2004).

To capture the strategic benefits related to global sourcing, literature has pointed out the criticality of aligning global sourcing strategy with organization design (Trent and Monczka, 2003; Trent, 2004; Quintens, Pauwels, and Matthyssens, 2006a). Due to far reaching organizational changes required to implement a global strategy, such as global sourcing, designing the global organization can be considered as one of the greatest managerial challenges (Hedlund and Rolander, 1990; Nohria and Ghoshal, 1997) and a common cause for failure in international operations (Bartlett and Ghoshal, 1989). In the same vein, scholars increasingly reported that many companies were struggling to implement global sourcing and limiting themselves to international sourcing (Samli et hal., 1998; Kaufmann and Hedderich, 2004). These findings have lead researchers to conclude, that *how* to source globally has become the critical challenge for purchasing managers (Trent and Monczka, 2002, 2005; Kotabe, 2004; Gelderman and Semeijn, 2006).

Despite the importance of this topic, the academic discussion has failed to deliver satisfying results concerning the organizational design implications of global sourcing

(Trent and Monczka, 2002, 2003, 2005; Trent 2004; Quintens, Matthyssens, and Faes, 2005). Based on their literature review, Gelderman and Semeijn (2006, p. 210) conclude: “Despite an increased focus on global sourcing and global supply base management, little is known about the actual integration and coordination of procurement across worldwide business units.” The majority of prior research has taken a strategic perspective to global sourcing, giving only minor emphasis to organizational design topics (Trent and Monczka 2003; Quintens et al., 2005).

Comparing purchasing configurations with a pendulum swinging between full centralization and decentralization, most scholars (Corey, 1978; Bellizzi and Belonax, 1982; Paliwoda and Bonaccorsi, 1994; Giunipero and Monczka, [1990] 1997; Arnold, 1999) have focused on the two ends of the dichotomy. Only recently, academics have provided intriguing arguments for the importance of hybrid (mixed) organizational forms for implementing global sourcing (Faes et al., 2000; Rozemeijer, van Weele, and Weggeman, 2003; Johnsons and Leenders, 2006). Balancing the forces for global integration and local responsiveness, hybrid purchasing organizations enable companies to reap the full strategic benefits related to global sourcing. In addition, much empirical evidence has proven the dominance (more than 70 percent) of hybrid organizations for large MNCs (Fearon, 1988; Leenders and Johnson, 2000; Johnson and Leenders, 2004) showing that the theoretical proposed importance has translated into practice.

However, the current academic discussion on organizational design implications of global sourcing is limited. Extant literature has provided hardly any insights on how companies can implement global sourcing by means of a hybrid purchasing organization. While it has been argued that different types of hybrid purchasing organizations are prevalent (e.g. Johnson, Leenders, and Klaasens (2002) differentiate between centrally-coordinated, coordinated and decentrally-coordinated hybrid models),

an in-depth discussion of the characteristics and differences can hardly be found in the literature. As a result, it has been argued that our understanding for hybrid purchasing organizations is far from being complete (Trent and Monczka, 2003; Quintens et al., 2005; Johnson and Leenders, 2006).

It is the *aim* of this thesis to provide further insights on the implications of global sourcing for the design of effective hybrid purchasing organizations. Three objectives form the basis of our research.

Objective 1: Examine how MNCs make use of a number of different integration mechanisms to achieve effective global integration of purchasing activities

As companies grow and spread their activities across different geographical locations with subsidiaries possessing critical knowledge and capabilities that are vital for the organization, control[1] of the worldwide activities towards a common goal becomes more complex and requires the application of multiple integration mechanisms (Cray, 1984; Martinez and Jarillo, 1989; Harzing, 1999; Galbraith, 2000). Extant research has either only focused on the concept of centralization (e.g. Giunipero and Monczka, [1990] 1997; Arnold, 1999) or on enumerating a multitude of mechanisms without putting them into a systematic framework, not recognizing that different mechanisms impose different costs and contribute in different ways towards the overall degree of integration (e.g. Rozemeijer, 2000; Trent and Monczka, 2003; Trent, Monczka, and Petersen, 2006). In this thesis a comprehensive framework for the analysis of

[1] The terms „control“, „integration“, and „coordination“ will be used synonymously in this thesis.. First, this is in line with the approach of most scholars (e.g. Gupta and Govindarajan, 1991; Kim et al, 2003). Second, considering that the concepts are so interrelated, a conceptual separation is very difficult and can be misleading (Björkman, 2007). Since all three terms relate to the final goal of achieving unity of effort among organizational sub-units (March and Simon, 1958) we did not to draw a conscious choice in favour of any of them. As this thesis, is strongly grounded in information processing theory, we followed the original work of Galbraith (1973), who uses the term integration mechanism (Introduction and Essay 3). However, due to the preference of the reviewers, the first essay explicitly uses the term control mechanism, following the framework of Harzing (1999).

integration mechanisms in hybrid purchasing organizations is put forward and empirical evidence for their application in MNCs will be provided. Thereby, it is illustrated how purchasing managers achieve effective integration of their globally dispersed purchasing activities.

Objective 2: Provide detailed insights into the implications of global sourcing for organization design at the category level

A key organizational design challenge in hybrid purchasing organizations is to distinguish between different types of categories, determining *whether* and *how* they should be integrated globally across sites. While literature (Davis, 1974; Narasimhan and Carter, 1989; Matthyssens and Faes, 1997) has acknowledged that category characteristics are a major factor influencing organization design, contributions focusing on global integration at the category level are scarce. Little is known on the factors influencing, whether a category should be integrated globally or remain decentralized, nor on how integration is actually achieved for different types of categories. Setting the focus of analysis at the category level, this thesis will provide empirical evidence on the relevant category characteristics driving global integration. Moreover, it will be illuminated that different types of categories pose varying requirements for global integration and therefore need to be integrated with different types of integration mechanisms.

Objective 3: Incorporate theoretical frameworks from other disciplines to the global sourcing context to enhance the general understanding for empirical phenomena

A third major gap in the current global sourcing literature is the serious lack of theory and theoretical frameworks, which also represents a major problem in general purchasing literature (Das and Handfield, 1997a). Our literature review yields that most of the empirical research on organizational design implications of global sourcing is

highly explorative in nature and lacks solid theoretical underpinnings. Hence, our understanding for the critical contingencies affecting the choice of particular organizational settings in the global sourcing context is limited (Matthyssens and Faes, 1997; Rozemeijer, 2000; Quintens et al., 2005). Following the plea for a cross-disciplinary approach to the field of global sourcing research (Quintens, Pauwels, Matthyssens, 2006b; Wynstra, 2006), this thesis will use contingency theory as the major theoretical lens to view organizations (Donaldson, 2001) and more specifically ground the discussion on information processing arguments (Galbraith 1970, 1973, 1977; Tushman and Nadler 1978; Egelhoff 1982, 1988; Nadler and Tushman 1997). Thereby, our understanding for the relationship between important contingencies and the application of particular organizational design features will be improved. In addition, insights from international business literature (Bartlett and Ghoshal, 1989; Nohria and Ghoshal, 1997; Harzing, 1999), organization buying behaviour research (OBB) (Robinson, Farris, and Wind, 1967; Cardozo, 1980) and transaction cost economics (Williamson, 1975) will be incorporated to provide convincing explanations for organizational design problems in the realm of global sourcing.

This thesis is comprised of three essays, each contributing to the extant literature by addressing one or more of the named research objectives. All essays draw on empirical data gathered from case studies at large MNCs. While the first essay sets the focus of analysis at the corporate level, the second and third essay, investigate organizational design challenges at the category level. Although quite different in individual focus and approach, all essays contribute to the research aim of this thesis by developing a better understanding for the relationship between global sourcing strategy and organization design.

The first essay ("Organizational design implications of global sourcing: A multiple case study analysis on the application of control mechanisms") examines the implications of global sourcing for effective organization design of large MNCs. The goal of the paper is to shed light on how companies use different integration mechanisms[2] *jointly* to implement global sourcing by means of a hybrid purchasing organization. Combining international business literature with the information processing variant of contingency theory, a comprehensive framework for the empirical analysis is developed. The findings from case studies at eight MNCs suggest that variations in integration mechanisms across companies can be explained by two contingencies: (1) corporate organizational structure and (2) purchasing maturity of subsidiaries. The contribution of the paper to the current literature is twofold. First, it provides a structured overview of the most important integration mechanisms and illustrates for which purpose and how purchasing managers should apply them to effectively integrate their global sourcing activities in hybrid purchasing organizations (addressing the first research objective). Second, by elaborating the information processing theory, explanations for differences in the application of integration mechanisms across companies are provided (addressing the third research objective).

The second essay ("Implementing global sourcing through purchasing portfolio management") shifts the focus of analysis to the category level. As companies implement global sourcing by means of a hybrid purchasing organization, a critical challenge is to distinguish between categories that should be either integrated across sites or remain under local authority. The aim of this paper is to present a purchasing portfolio approach that guides managers through this challenging selection process.

[2] As indicated, due to reviewer preferences, this essay will use the term „control mechanism", although by using this term a conceptual difference to the word "integration mechanism" is not implied.

While prior research has only put forward category selection criteria for volume bundling, this essay adopts a broader view on the relevant global synergy dimensions driving global integration. Based on a substantial literature review, incorporating ideas from information processing theory, organizational buying behavior literature and transaction cost economics, an academically grounded purchasing portfolio model is developed (addressing the third research objective). Testing the portfolio model for practical validity, its application is exemplified based on one in-depth case study. Our findings indicate that the portfolio approach seems to be a valuable tool for supporting companies in their efforts towards implementing global sourcing. Besides addressing an important managerial topic, the essay also complements the current literature by not only addressing category selection criteria for exploiting economies of scale, but also for economies of information and learning and economies of process. As a result, our understanding for global integration in hybrid purchasing organizations is broadened, as our findings suggest that differences in category characteristics trigger global integration for varying reasons (addressing the second research objective).

This finding triggered the research design of the third essay ("Elaborating the information processing perspective in the global sourcing context"). The objective of this paper is to analyze *how* global integration is carried out for different types of categories and provide explanations for the findings by elaborating the information processing theory (Galbraith, 1973). Based on a multiple case study analysis, twelve different types of categories at three companies are studied, analyzing the application of integration mechanisms across the different cases (addressing the first and second research objective). The findings show clear differences in the use of integration mechanisms for different types of categories. Grounding the discussion on information processing theory and on OBB literature, explanations for the identified differences are

provided (addressing the third research objective). It seems that three key contingencies affect global integration in hybrid purchasing organizations at the category level: (1) category characteristics, (2) supply environment, and (3) interdependence among purchasing units. The results suggest that when purchasing managers design hybrid global sourcing organizations[3], a category-based approach needs to be followed: different categories require different ways of integration even within the same firm.

Collectively, the three essays offer a rich set of findings and raise a number of important theoretical and empirical questions for future research. By addressing the three research objectives, this thesis contributes to a deeper understanding for the organizational design implications of global sourcing.

[3] In this thesis, the term "global sourcing organization" refers to the purchasing organization of companies that adopt a global sourcing strategy.

II. Organizational Design Implications of Global Sourcing: A Multiple Case Study Analysis on the application of Control Mechanisms[4]

Abstract

Global sourcing has become an intended practice for many multinational corporations (MNCs). Organizational design implications of global sourcing are rarely considered, although being one of the main facets of a global sourcing strategy. By elaborating on the information processing perspective of contingency theory we derive explanations for the application of different control mechanisms in the global sourcing context. Our findings from case studies at eight MNCs suggest that variations in control mechanisms can be explained by two contingencies: (1) corporate organizational structure and (2) purchasing maturity of subsidiaries. We summarize our findings through ten research propositions.

Keywords: *Global sourcing, international management, purchasing organization, control mechanisms, case studies*

[4] This essay has been submitted to the Journal of Purchasing and Supply Management.

1. Introduction

The globalization of industries and the accompanying changes in the structure of competition have forced many MNCs to adopt a global sourcing strategy (Monczka and Trent, 1991; Trent & Monczka, 2005). Much research has highlighted the benefits of global sourcing (Birou and Fawcett, 1993; Alguire, Frear, and Metcalf, 1994; Trent and Monczka, 2003) and it has been argued that for companies facing global competition, the adoption of a global sourcing strategy is mandatory, as it is highly relevant for achieving competitive advantage (Carter and Narasimhan, 1996). Two conflicting pressures shape purchasing strategies of companies. Globalization, standardization and efficiency pressures stimulate centralization, whereas customization and responsiveness promote the decentralization and dispersion of activities across borders (Faes, Matthyssen, and Vandenbempt, 2000). Implementing a global sourcing strategy, therefore, forces companies not only to integrate and coordinate their global purchasing requirements across sites (Trent and Monczka, 2003), but also to remain responsive to local supply markets, local government demands and country differences in cost and skills (Petersen et al., 2000; Kaufmann and Hedderich, 2004; Kotabe and Murray, 2004).

For purchasing leaders in MNCs, one of the major challenges has become the design of an organization that is able to cope with both strategic requirements, in order to implement global sourcing effectively. Designing the global organization can be considered as one of the greatest managerial challenges and a common cause of failure in international operations (Bartlett and Ghoshal, 1989). With subsidiaries embedded in different cultural, political and legal systems across geographical distances, establishing

and maintaining a control system to steer the diverse activities towards a common goal becomes a strategic imperative (Cray, 1984; March and Simon, [1958] 1993). *How* to source globally has become a critical competence for many MNCs (Kotabe and Murray, 2004; Geldermann and Semeijn, 2006).

With this paper, several important limitations in the current global sourcing literature are addressed. First, much of the prior work on global sourcing organizations has focused on the concept of centralization as the main control mechanism to explore how companies implement global sourcing. While in much of this research the importance of hybrid structures has increasingly been pointed out, our understanding of how integration is achieved in these structures is still very limited (Johnson and Leenders, 2006; Quintens et al., 2005). Second, most of the studies that have addressed this topic are highly explorative and do not base their work on a substantial theoretical foundation, highlighting the general lack of theory in sourcing literature (Das and Handfield, 1997a; Mol and Wynstra, 2003). As a result, there remains a substantial lack in knowledge on *why* particular organizational settings are chosen (Arnold, 1999; Rozemeijer, 2000; Quintens et al., 2005).

In this paper, we analyze the implications of a global sourcing strategy on the control mechanisms applied by MNCs to integrate their purchasing activities across country borders. Thereby, we address the first limitation in current literature by examining how MNCs use control mechanisms *jointly* to implement global sourcing by means of a hybrid purchasing organization. Second, we try to provide explanations for organizational design implications of global sourcing, by drawing upon contingency theory (Lawrence and Lorch [1967], 1986; Donaldson, 2001) and information-processing arguments (Galbraith, 1973, 1977), addressing the plea for a cross-disciplinary approach in this research field (Wynstra, 2006).

Two questions form the basis of our research. (1) How do MNCs use different types of control mechanisms to implement global sourcing in hybrid purchasing organizations? (2) How can differences in the application of control mechanisms be explained?

The remainder of this paper is organized as follows. After a brief review of the relevant literature, we present our methodological approach in section three. The main findings of our case analysis are presented in section four. A discussion of the findings and interpretation in light of existing literature will be conducted in the fifth step, materializing in a set of research propositions. The main conclusions and avenues for further research are presented in the last section.

2. Conceptual background

2.1. Organizational design implications of global sourcing

The first study that anticipated organizational design implications from global sourcing was the original Kotabe and Omura study (1989). These scholars predicted a shift from a polycentric to a more internationally coordinated geocentric organization. While many of the subsequent studies pointed out that global sourcing requires significant organizational change, most of the research has primarily set the focus on analyzing its effect on the decision autonomy of corporate headquarters vis-à-vis divisions and subsidiaries (Narasimhan and Carter, 1989; Giunipero and Monczka, [1990] 1997; Arnold, 1999; Quintens et al., 2006). Similar to the prominent centralization-decentralization debate in purchasing (Corey, 1978; Hensel, 1980; Van Weele, 1994; Dobler and Burt, 1996; Lysons, 1996) scholars have identified different degrees of centralization.

For example, Narasimhan and Carter (1989) found decentralized, matrix and centralized international purchasing structures. In a similar study, Giunipero and Monczka ([1990]

1997) added one more type of centralization in international purchasing, namely the use of functional international purchasing groups. Arnold (1999) proposed differing optimal degrees of centralization, depending on the internationalization and centralization at the firm level.

A few studies have adopted a broader perspective towards their research and analyzed other organizational design features used by MNCs to implement global sourcing. Trent and Monczka (2003) examined that companies engaged in global sourcing, use a variety of specific organizational design features, significantly more often, than firms only engaged in international sourcing. Organizational design features embrace regular strategy reviews and coordination sessions with worldwide procurement managers, access to international purchasing offices, or a formalized global sourcing process. These findings were supported by very recent studies, identifying a trend towards centrally-led global sourcing organizations with commodity-led team structures and many other cross-locational and cross-functional design features (Trent, 2004; Monczka et al., 2006).

However, explanations for the application of the different organizational design features studied have been rather scarce. In particular, the literature review illuminated that the empirical research on global sourcing organizations has to date been highly explorative in nature, lacking conceptual and theoretical work done in other management fields (Quintens et al., 2006b). While some studies refer to contingency arguments, we found that most of them lack to strongly tie their arguments with the respective theory.[5] In addition, insights from international business literature concerning the implications of

[5] The lack of theoretical rigidity also gets more obvious, when considering that some authors called different integration mechanisms as "synergy measures" and didn't relate them to Galbraith's well known classification (1973). Rather than stimulating synergy, these mechanisms in their core function are concerned with achieving unity of effort between e.g. interdependent units to accomplish the organization's task (Child, 1977).

different international strategic orientations for organizational design have also not been transferred to the purchasing context. To address these identified gaps, we have expanded our literature review to incorporate key ideas from organization design and international business research into this paper. Thereby, a solid conceptual basis for the empirical analysis is being established.

2.2. International strategy typologies and control mechanisms

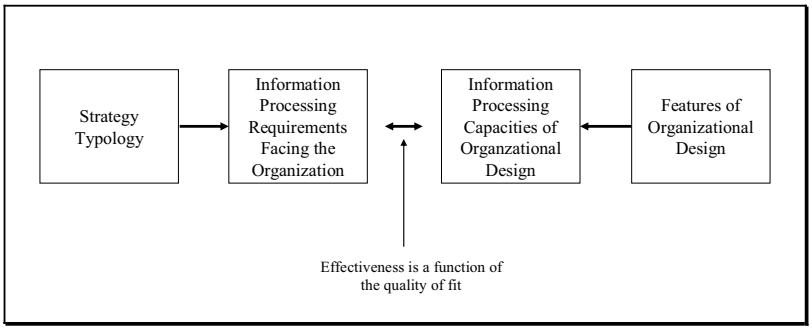
A basic goal of organization design research has been to discover what kinds of organizational designs will be most effective in specific situations. Following Galbraith's (1973, 1977) well known statements that "there is no best way to organize" and "any way of organizing is not equally effective" the argument of contingency scholars has been that organizational effectiveness results from fitting characteristics of the organization to its idiosyncratic context (Burns and Stalker, 1968; Child, 1975; Lawrence and Lorch, [1967] 1986; Donaldson, 2001). Adopting this perspective, the key underlying idea of information processing scholars is that organizations should be perceived as information processing systems faced by several sources of uncertainty. The critical task for the organizational designer is the facilitation and collection of information by implementing appropriate organizational design features, in order to achieve a fit between information processing capacity and information processing requirements faced by the organization (Galbraith, 1973; Tushman and Nadler, 1978).

In an extension of the classical information processing arguments, Daft and Lengel (1984) have proposed equivocality reduction as a second reason for information processing. The key idea is that managers within an organization can interpret the same information in different and conflicting ways due to different backgrounds and frames of references. Therefore, increasing the *amount* of information might reduce uncertainty but not necessarily equivocality. Instead, the use of rich communication media, such as

committees and task forces, reduces equivocality, as managers can exchange existing views and resolve conflicts through an enactment of a shared interpretation (Daft and Lengel, 1984; 1986). We believe that the incorporation of this second variable is highly relevant in the global sourcing context, as the fact that subsidiaries operate in different environments is likely to result in different perspectives and backgrounds.

Within the international business literature, a variety of studies have used information processing arguments to explain organizational design implications stemming from different international strategic orientations (Egelhoff, 1991; Roth, Schweiger, and Morrison, 1991; Jarvenpaa and Ives, 1993; Macharzina, 1993). Figure 1-1 depicts this relationship, which also represents the key theoretical underpinning of this research. In the following, we will briefly review some of the key contributions that have analyzed this idea, focusing first on the information processing requirements of different strategy typologies (left part of figure 1-1) and in a second step on the different control mechanisms that determine an organization's information processing capacity (right part of figure 1-1).

Figure 1-1.: Information processing perspective to international strategy typologies



Source: Modified from Egelhoff (1991)

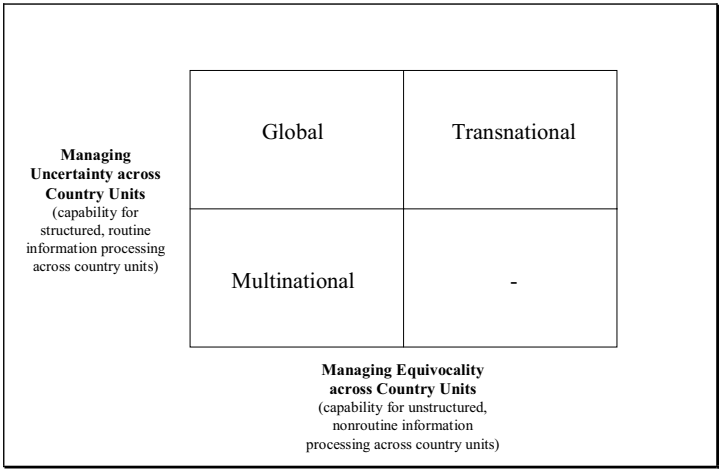
2.2.1. International strategy typologies

Since the publications of Bartlett (1986) and Doz and Prahalad (1987), most authors implicitly or explicitly refer to a continuum of integration/coordination advantages versus differentiation/responsiveness advantages in describing international strategy (Harzing, 2000). Based on these two dimensions, three types of international strategies can be distinguished: multidomestic strategy (combining low integration and high responsiveness), global strategy (combining high integration with low responsiveness) and transnational strategy (combining high integration with high responsiveness) (Bartlett and Ghoshal, 1989, 1995). In the following the information processing implications for each strategy type will be analyzed. In particular, it will be indicated that information processing requirements will be highest, when interdependencies among organizational units get more complex, with the degree of complexity increasing from pooled to sequential and finally reciprocal interdependence (Thompson, [1967] 2003).

While for *multidomestic* firms the need to process information across countries is very low (pooled interdependence) (Jarvenpaa and Ives, 1993; Macharzina, 1993; Harzing, 2000), it increases strongly for g*lobal* firms operating like a hub-and-spoke model (Bartlett and Ghoshal, 1989). This strategy aims to transfer well established routines, products and systems from headquarters to subsidiaries, resulting in sequential interdependencies and thereby increasing the amount of information that must be processed across country units (Roth et al., 1991; Nohria and Ghoshal, 1997). However, as this strategy ignores environmental diversity across locations, it has been argued that most of the information is structured and routine, flowing unilaterally from headquarters to subsidiaries (Jarvenpaa and Ives, 1993).

Transnational companies combine three strategic advantages, namely global competitiveness, multinational flexibility and the ability to exploit worldwide know-how. In contrast to the global strategy, the transnational emphasizes the importance of location-specific advantages (Bartlett and Ghoshal, 1989; Galbraith, 2000). As a result, transnationals are described as integrated network of equals, with business activities dispersed across countries, leading to reciprocal interdependencies between subsidiaries and headquarters and among subsidiaries. It has been argued that the need to integrate activities along highly differentiated and interdependent departments will require much greater and more unstructured and non-routine information flows across country units (Hedlund, 1986; Bartlett and Ghoshal, 1989; Egelhoff, 1993; Jarvenpaa and Ives, 1993). Figure 1-2 summarizes the different information processing requirements for the analyzed strategies.

Figure 1-2.: Information processing requirements of different strategy typologies



Source: Modified from Jarvenpaa and Ives (1993)

As information processing requirements are growing, it has been argued that a structural solution alone is inadequate to provide the necessary information processing capacities

required to integrate operations across national boundaries (Hedlund, 1986; Doz and Prahalad, 1987; Bartlett and Ghoshal, 1989; White and Poynter, 1990). Other important organizational design features, that enable processes such as cross-country integration and dissemination of best practices worldwide, need to be taken into consideration. These organizational features will be object of scrutiny of the next section.

2.2.2. Control mechanisms

A review on international business and organizational theory literature points out a number of control mechanisms that can be used for achieving effective integration among units (Galbraith, 1973; Lawrence and Lorch, [1967] 1986; Martinez and Jarillo, 1989; March and Simon, [1958] 1993; Nohria and Ghoshal, 1997; Kim et al., 2003). The following classification of control mechanisms builds on a typology submitted by Harzing (1999). Differentiating between personal/impersonal and direct/indirect control, results in a classification scheme embracing four categories. Table 1-1 summarizes the four categories and the corresponding labels.

Table 1-1.: Four categories of control mechanisms

	Personal/Cultural (founded on social interaction)	Impersonal/Bureaucratic/Technocratic (founded on instrumental artefacts)
Direct/Explicit	Category 1: Personal centralized control	Category 2: Bureaucratic formalised control
Indirect/Implicit	Category 4: Control by socialization and networks	Category 3: Output control

Source: Adapted from Harzing (1999)

It is important to note that the different control mechanisms are complementing rather than substituting each other. As notified at the beginning of this chapter, the overall

level of control will vary across firms and depends on the particular information processing requirements. Since control mechanisms differ according to their relative information-processing capacity, scholars considered the application of mechanisms as cumulative, with the more complex mechanisms (the fourth category in the presented framework) to be used only in environments that impose high information processing requirements on organizations.[6]

Category 1: Personal centralized control

Centralization of decision-making refers to the level where the locus of decision making authority is (Child, 1972; Mintzberg, 1979; Egelhoff, 1988). In the context of MNCs centralization means that decision-making authority remains within headquarters, where a better overview on the activities of the dispersed units is available (Kim et al., 2003).

Category 2: Bureaucratic formalised control

Formalization refers to the use of policies, rules, and standardized work procedures that are written at headquarters and subsequently distributed to subsidiaries as guidelines for their activities (Pugh et al., 1968; Nohria and Ghoshal, 1997; Birkinshaw and Nobel, 1998). The effectiveness of this mechanism will increase the more activities can be codified into rules and procedures, without leading to low flexibility and rigidity.

An *information system* is an important part of the organizational infrastructure and the importance of control through information systems has already been pointed out in the 1970s (Galbraith 1973, 1977). It has been argued that this mode becomes most effective

[6] This is because different integration mechanisms also pose different costs (managerial time and overhead) to the organization. Thus, first low cost mechanisms, such as centralization, will be used before relying on the more complex and expensive ones, such as socialization.

when large volumes of information need to be analyzed and interpreted without extensive face-to-face communication (Doz and Prahalad, 1981; Kim et al., 2003).

Category 3: Output control

Planning is considered as a central mechanism for coordinating activities of organizational units. The plan, as the basis of measure, serves as an instrument to coordinate the activities of different organizational actors (March and Simon, [1958] 1993; Thompson, [1967] 2003).

Output control relies on assessing performance by measuring desired performance targets or quality of output, thereby providing subordinates with discretion over the means by which they accomplish their targets. This means of control becomes most effective, when appropriate output measures can be defined for the tasks to be monitored (Ouchi, 1977; Baliga and Jaeger, 1984).

Category 4: Control by socialization and networks

Coordination through socialization refers to processes by which members of an organization internalize organizational behaviours, rules and norms. In the context of MNCs, socialization processes are aiming to align the values and norms of subsidiary managers with those of the parent company (Gupta and Govindarajan, 1991; Nohria and Ghoshal, 1994; Nobel and Birkinshaw, 1998).

3. Research methodology

We began our research without formulating precise propositions as the underlying research stream on purchasing internationalization is still in its exploratory stage, partly due to the dearth of theory building efforts (Trent and Monczka, 2003; Quintens et al., 2005). We studied the control mechanisms applied by German MNCs to implement their global sourcing strategy, by means of a multiple case study design that follows

"replication logic". Thereby, a set of cases is treated as a series of experiments, each serving to confirm or disconfirm a set of observations (Yin, 2003). The present research might best be described as *theory elaboration* (Vaughan, 1992; Lee, 1999; Gilbert, 2005; Zott and Huy, 2007), as we interpret our findings in light of the information processing perspective of contingency theory (Galbraith, 1973, 1977; Tushman and Nadler, 1978; Egelhoff, 1993). The research propositions derived from our findings do not represent new theory, but rather elaboration of an existing one (Ketokivi, 2006).

3.1. Theoretical sampling

Due to practical reasons, we focused our research on German companies. As we only wanted to include companies following a global sourcing strategy, we focused on MNCs, as especially these larger companies are more likely to be engaged in global sourcing (Bozarth, Handfield and Das, 1998) and thus control plays a major role to make the most of their far-flung and diverse activities (Martinez and Jarillo, 1989). A MNC was defined as any enterprise operating in more than one country that substantially owns overseas assets and manages these assets actively under a system of coherent decision making policy (Bartlett and Goshal, 1992; Dunning, 1993). Second, we concentrated only on companies that were neither fully centralizing nor decentralizing their global purchasing activities.

In our pursuit to achieve a theoretical sample, following aspects were taken into consideration. We included companies from different *industries* (Bartlett and Ghoshal, 1989; Kobrin, 1994) with different *sizes* (Hedlund, 1981; Gencturk and Aulakh, 1995), varying degrees of *global sourcing experience* (Zou and Cavusgil, 2002), different degrees of *multinationality* (Egelhoff, 1988; Wolf, 1994), and varying *types of category portfolios* (Narasimhan and Carter, 1989) into this research.

As a result, the sample consists of eight comparative case studies, representing a rich diversity of global sourcing contexts. Thus, we followed Eisenhardt's (1989) recommendation for a theoretical sampling approach that involves between four and ten cases in which the phenomenon of interest is "transparently observable". Because of the sensitivity of the data, the names of the organizations included in the study are disguised. Table 1-2 provides a description of the eight companies studied.

Table 1-2.: Description of the sample

Company	Industry	Company Size[a]	Purchasing Size[a]	Extent of Multinationality	Global Sourcing Experience	Global Sourcing Ratio	Global Sourcing Categories
Yellow	Logistics	500000	550	60% foreign spend	4 years	50%	Mainly services & capex
Blue	Gas-Industry	17500	300	70% foreign spend	7 years	80%	All kind of direct & indirect spend
Green	Pharmaceuticals	2100	54	25% foreign spend	5 years	25%	Mainly services & IT
Red	Pharmaceuticals	37000	370	75% foreign spend	6 years	40-50%	All kind of direct & indirect spend
White	Utilities	81000	65	96% foreign spend	3 years	30%	All kind of direct & indirect spend
Black	Banking	69000	90	70% foreign spend	3 years	70%	Mainly services & capex
Brown	Automotive	361000	720	20% foreign spend	6 years	70%	Mainly services & capex
Orange	Chemicals	4500	75	97% foreign spend	4 years	40%	All kind of direct & indirect spend

[a] Size was measured by the number of employees

Source: Own illustration

3.2. Data collection

Primary data were collected from July 2006 until June 2007 using multiple ways of inquiry. As the aim of this paper is theory elaboration, theory dictates the data gathering process and plays a major role from the very beginning (Vaughan, 1992; Ketokivi, 2006). Data collection involved three sources: semi-structured interviews, a questionnaire and archival documents, enabling solid triangulation of the data (Yin, 2003).

In total, we conducted 22 *interviews* (at least two for each site) in two phases and used a third phase to corroborate our findings and increase data accuracy. Table 1-3 summarizes the number of interviews, the key subjects discussed and the respective

respondents for each phase. First, 30-60 minutes entry interviews with the Chief Purchasing Officer (CPO) of each respective organization were conducted. In the second phase, in-depth one- to two-hour telephone interviews with informants (senior purchasing managers at headquarters) nominated by the CPO (Bagozzi, Yi, and Phillips, 1991) were carried out. The second phase was finalized by preparing detailed case write-ups (within 24 hours), and circulating them both among key participants to verify overall data accuracy (Yin, 2003). In the last phase, where necessary and possible, we scheduled one-hour interviews with the CPOs of our case companies to discuss the case write-ups, solving any remaining misunderstandings or questions.

Table 1-3.: Overview of interviews for the companies studied

	Phase I	**Phase II**		**Phase III**	**Total**
Respondents	CPO	Informant I	Informant II	CPO	
Subjects	(1) Int.strategic orientation (2) Strategic role of purchasing (3) Key organizational challenges	(1) Major roles and responsibilities (2) Global sourcing process along different categories (3) Different control mechanisms implemented		(1) Corroborate information (2) Clarify questions/open issues	
Yellow	1	1	1	x	**3**
Blue	1	1	1	x	**3**
Green	1	1		x	**2**
Red	1	1	1	x	**3**
White	1	1	1	x	**3**
Black	1	1	1	x	**3**
Brown	1	1	1	x	**3**
Orange	1	1		x	**2**

Source: Own Illustration

All interviews along the case companies were conducted by the same two investigators, with one primarily responsible for the interview and the other for taking notes. The main motivation for this approach was to gain complementary insights and to be able to cross-check facts, enhancing the objectivity and robustness of the analysis and leading to an improved understanding of the material. On the other side, interviewing multiple

managers allowed for reliability checks and permitted cross referencing thereby mitigating respondent bias (Eisenhardt, 1989; Eisenhardt and Graebner, 2007).

In addition, we also collected quantitative data (5-point Likert scale), by means of a *questionnaire* that was introduced and discussed during the interviews in the second phase. Based on our literature review, relevant constructs and appropriate measures had been specified a-priori. For each construct (for example centralization), next to a variety of open questions, quantitative data helped us to develop a firmer empirical grounding, exploiting the full heuristic potential of the issue at hand (Jick, 1979; Eisenhardt and Bourgeois, 1988; Eisenhardt and Graebner, 2007).

We relied on *archival documents* (purchasing handbooks, presentations, process descriptions, and websites) to prepare for interviews, as well as for supplementing and corroborating information collected through the interviews.

3.3. Research process

Based on the collected qualitative and quantitative data from each firm, each interviewer analyzed the data sets independently. The clear definition of constructs a-priori supported us in converging data from different sources to measure the constructs in each case. In a subsequent step, we developed individual profiles for the different global sourcing organization of each company to get more familiar with each case as a single entity (Eisenhardt, 1989). We then exchanged analyses for each company profile and compared them, discussing any disagreements. In a next step, we searched for patterns in the data, by taking pairs of firms and noting similarities and differences across the different dimensions analyzed. To analyze the data, we followed techniques for cross-case analysis and tabular displays (Miles and Huberman, 1984; Eisenhardt and Graebner, 2007). From the initial comparisons, we tried to identify tentative

relationships between constructs. We then reviewed each case again, to analyze whether the proposed relationship could be identified and to develop a deeper understanding for its underlying dynamics. Finally, we reviewed the relevant literature to sharpen and find explanations for our insights, materializing in a set of relevant research propositions (Eisenhardt, 1989).

4. Data analysis

4.1. International strategy typologies

We analyzed the different global sourcing strategies according to the international strategy typologies presented in section 2.2. Our field analysis illuminated that while all case companies adopted a transnational strategy, differences concerning the organizational configuration and pattern of interdependence could be identified. The results of our data analysis are presented in table 1-4.

Table 1-4.: International strategy typologies in the purchasing context

		Yellow	*Blue*	*Green*	*Red*	*Brown*	*White*	*Black*	*Orange*
International Strategy									
	Global Competition	X	X	X	X	X	X	X	X
	Economies of Scale	X	X	X	X	X	X	X	X
	Local Responsiveness	X	X	X	X	X	X	X	X
Organizational Configuration									
	Dominant HQ Role	X	X	X	X	X			
	Network Structure						X	X	X
	Centers of Excellence						X	X	X
Interdependence									
	HQ Interdependence	X	X	X	X	X			
	Subsidiary Interdependence						X	X	X

Source: Own illustration

Our data indicates that all companies emphasized the importance of actively balancing global integration with local responsiveness advantages in purchasing. For example, the CPO of Black described their global sourcing strategy as follows:" Think global, act

local lies at the core of our global activities. A global sourcing strategy, although global from its reach, must still address our local peculiarities in each market, in order to be accepted and lived by everyone in the organization." In the same vein, the CPO of Blue stated:" The major challenge we are facing today, is to combine our global strategies with the regional requirements of our internal business partners." Thus, it can be concluded that all companies tried to take advantage both sources of competitive advantage related to global sourcing.

Nevertheless, our results indicate that companies adopted two different types of organizational configurations for implementing global sourcing. The first one (adopted by Yellow, Blue, Green, Red and Brown) resembles much of the ideas of the global organization and the classical hub-and-spokes model. However, in contrast to the classical global model, subsidiaries were being actively involved in the strategy development process for global categories, in order to address regional particularities.

The second type of organizational model adopted (White, Black, Orange) resembles more Bartlett and Ghoshal's descriptions of the transnational organization. These companies agreed to the conceptualization of their companies as an integrated purchasing network of equals. Purchasing headquarters does not play a dominant role a-priori, but rather its main challenge is to hold the distributed network together. For example, headquarters at Orange consists of only ten people. These ten people are not directly involved in any sourcing processes for a category but rather for developing the necessary underpinnings for subsidiaries' purchasing activities. The subsidiary with the greatest location-specific advantage (for example the most experienced or with most attractive supply market) assumes the global lead for a particular category, bundling the full category knowledge at one site. Thereby, the different competencies in subsidiaries

are treated as new sources of competitive advantage, leading to the establishment of centers of excellence for specific categories within the organization.

Our findings revealed fundamental differences in how the sample companies implemented their global sourcing strategies. To address these differences, we will refer in the rest of this paper to companies of the first group as “global” and those of the second as “transnational” companies, thereby using the original labels of the Bartlett and Ghoshal typology. To develop a deeper understanding for the differences in the adopted organizational configurations, let us elaborate upon two influencing factors that became apparent during the interviews: (1) corporate organizational configuration and (2) purchasing maturity of subsidiaries.

The characteristics of the organizational configuration of the business seemed to have an important effect on the configuration of purchasing activities. For the companies that have been labelled as “global”, our interviews yielded that one of the primary reasons for locating most of the purchasing activities at headquarters, was the necessity to maintain proximity to the main internal customers for business alignment. As indicated by the CPO of Blue: ”Our purchasing organization needs to mirror the corporate organization of our business units”. Accordingly, in transnational companies important business activities were not only managed from headquarters but also steered from foreign locations. For example, at Black category managers have been located in London and New York, as major business activities were being steered from these financial metropolises.

The purchasing maturity of subsidiaries has been suggested to be a second major reason for headquarter dominance in global companies. Along all interviews, it was stated that decision-making authority should be given to the unit with the highest expertise for sourcing a particular category. For example, a purchasing manager at Brown explained

that many of the purchasing offices at local sites consisted of two to three buyers, who were responsible for purchasing a multitude of different categories, thereby focussing primarily on the reliable supply of the required items. In contrast, at transnational companies, it has been indicated that as spend volumes are highly dispersed across the organization, purchasing experts had developed for particular categories also at local sites. In our interviews, the CPO of White consistently highlighted that his purchasing organization builds on the capacity and skills of the decentralized local purchasing departments.

The divergence in organizational configurations also explains the observed differences in the dominant pattern of interdependence. Companies of the first group primarily reported high levels of interdependence between headquarters and subsidiaries and rather low levels among subsidiaries. In the second group of companies, interdependencies among subsidiaries participating in the global networks were observed to be the dominant pattern.

Based on the presented findings, our focus in the next section will be on analyzing, whether the presented differences have implications for the pattern of control along both types of companies.

4.2. Category 1: Personal centralized control

We next examined how the different strategic orientations affected the level of centralization at each field site. The data indicates that global companies show higher levels of centralization than transnational companies. Table 1-5 describes the level of centralization along three dimensions for the companies studied.

Table 1-5.: Level of centralization across sample

Firm	Global Sourcing Strategy	Organizational Level	Activity Level
Yellow	Global	Centralized-hybrid	Center-led approach
Blue	Global	Centralized-hybrid	Centralized approach
Green	Global	Centralized-hybrid	Center-led approach
Red	Global	Centralized-hybrid	Centralized approach
Brown	Global	Centralized-hybrid	Centralized approach
White	Transnational	Decentralized-hybrid	Subsidiary-led approach
Black	Transnational	Decentralized-hybrid	Subsidiary-led approach
Orange	Transnational	Decentralized-hybrid	Subsidiary-led approach

Source: Own illustration

Global companies (Yellow, Blue, Green, Red and Brown) were strongly relying on centralization as a means to integrate global sourcing activities. Following either a centralized (Blue, Red and Brown) or a center-led approach (Yellow and Green), reflecting subsidiary involvement, category managers at headquarters assumed responsibility for the strategic purchasing process for most of the important purchasing categories on a global scale. Operational purchasing activities, such as issuing orders, remained within the scope of authority of local sites, to maintain proximity to internal clients and supply markets.

In contrast, transnational companies (White, Black, Orange) follow a more decentralized approach. Decision-making authority for important categories is spread across the MNC and the unit with the highest capability assumes responsibility for strategic purchasing, while operational purchasing remains in the scope of authority of each local site.

4.3. Category 2: Bureaucratic formalized control

4.3.1. Formalization

Our findings yield no significant differences concerning the formalization of activities across the companies studied. The results support the notion that purchasing executives at headquarters considered formalization as an indispensable requirement for global sourcing. At the same time, they still expressed their discomfort towards too high degrees of formalization, because of deteriorating motivation of subsidiary managers and growing rigidity in the organization. We identified three key areas, where our respondents emphasized the importance of formalization for global sourcing: (1) governance and policies, (2) processes and (3) controlling.

The first section related to the establishment of manuals including general rules, codes of conduct and the description of different roles and their respective competences. Concerning the second area, it was indicated that the establishment of a global sourcing process, with clearly defined roles and responsibilities helped to overcome differences among purchasing managers from headquarters, subsidiaries and internal clients. The third area relates to the establishment of common performance measurement methods or

unified reporting templates to be able to monitor and compare subsidiary performance efficiently along a multitude of different criteria.

4.3.2. Information systems

Concerning the application of information systems, our results showed no significant differences across the companies studied. All companies emphasized that information technology (IT) was a crucial enabler for implementing global sourcing. As indicated by a leading purchasing manager at Yellow: ”Information management is key in our globally and regionally diversified organization. It builds the backbone for all our global purchasing activities.” We categorized the most important IT features for integrating global sourcing into three categories: (1) common standards, (2) global databases and (3) global software applications.

First, the establishment of common IT standards allows for gathering spend data from different systems, harmonize it according to the common standards and upload it into a global database, where it becomes accessible for purchasing managers across all sites. Second, all companies indicated that they had established global spend databases, that enable purchasing managers to retrieve information available at other sites, such as prevailing contract structures, preferred suppliers and current prices and volumes. Global software applications were manifold and for example supported purchasing managers to analyze specific patterns in the sourced spend volume.

4.4. Category 3: Output control

4.4.1. Planning

Our findings indicate that transnational companies involve subsidiaries more actively in the strategic planning process than global companies. The results are depicted in Table

1-6, elucidating differences along the planning systems implemented by the sample firms.

Table 1-6.: Different planning systems across sample

Firm	Global Sourcing Strategy	Planning System		
		Planning Approach	*Process Direction*	*Co-option*[a]
Yellow	Global	Goals set in strategy coordination meeting	Bottom-Up	No
Blue	Global	Headquarters detetermines goals for categories and regions	Top-Down	No
Green	Global	Headquarters detetermines goals for categories and regions	Top-Down	No
Red	Global	Headquarters detetermines goals for categories and regions	Top-Down	No
Brown	Global	Goals set in strategy coordination meeting	Bottom-up	No
White	Transnational	Purchasing committee sets targets for categories and regions	Top-Down	Yes
Black	Transnational	Headquarters detetermines goals for categories and regions	Top-Down	Yes
Orange	Transnational	Purchasing committee sets targets for categories and regions	Top-Down	Yes

[a]Co-option was operationalized in terms of membership of subsidiary purchasing managers in the purchasing management boards situated at headquarters.

Source: Own illustration

Along the global companies, subsidiary involvement into the strategic planning process was very limited. While in three global companies (Blue, Green, Red) inclusion into the strategic planning process only included the submission of their planned capital and operational expenditures for the upcoming period, the other two (Yellow, Brown) relied on a more participatory approach, inviting all subsidiaries to a yearly strategy coordination meeting. However, in these meetings the goal was rather to gain subsidiaries' commitment than enabling them to actively participate in the strategic goal setting process.

In contrast, transnational companies followed a very participatory approach. Purchasing committees had been established, consisting of purchasing heads from the most important sites and senior managers at headquarters, jointly deciding on the strategic course of the purchasing function. The CPO of White stated the following: “Our purchasing steering committee unites strategic with operational goals. We gain a better understanding for local market requirements and our subsidiary executives develop a broader view for purchasing activities outside their home markets.”

4.4.2. Output control

Our results indicate that across all companies, high levels of output control could be observed. Within the strategic control process, all of the companies translated their yearly strategic objectives into multiple key performance indicators (KPIs). These KPIs were monitored in different frequencies, depending on their perceived importance for the company. For example, savings targets were at least tracked once a month by each company, while targets such as frame contract compliance were controlled after half a year. The corresponding KPIs monitored from subsidiaries included savings targets and the sites’ contributions towards the global platform, such as the extent to which harmonized processes and systems have been implemented, but also measures related to local customer satisfaction.

4.5. Category 4: Control by socialization and networks

Concerning the application of socialization mechanisms, our findings indicate that both types of companies make use of a high level of socialization mechanisms to integrate purchasing activities globally. However, it could also be observed that global companies primarily relied on fostering personal interaction between headquarters and subsidiary managers, while transnational companies also strongly aimed to foster informal

networks between subsidiaries. To develop an understanding for socialization processes in the companies, we analyzed the usage pattern for formalized lateral relations (Galbraith, 1973; Edström and Galbraith, 1978; Harzing, 1999; Galbraith, 2002). The results of our analysis are described in table 1-7.

Table 1-7.: Socialization mechanisms across sample

Firm	Global Sourcing Strategy	Task Forces [a]	Committees/Teams [a]	Managerial Linking Role [a]
Yellow	Global	Sourcing committee for high-volume projects	Cross-locational teams, global leadership team, regional meetings	Category manager, regional manager
Blue	Global		Global and regional meetings	Category manager, regional manager
Green	Global		Cross-locational teams, global annual meeting	Category manager
Red	Global		Purchasing council, across-category teams, global annual meeting	Category manager
Brown	Global	Sourcing committee for high-volume projects	Cross-locational teams, global and regional meetings, global leadership team	Category manager, regional manager
White	Transnational		Cross-locational teams, purchasing council, annual meetings	Category manager
Black	Transnational	Sourcing committee for high-volume projects	Cross-locational teams, global and regional meetings	Category manager, regional manager
Orange	Transnational		Cross-locational teams, purchasing council, annual meetings	Category manager

[a] Classification based on Galbraith (1973)

Source: Own illustration

A typical example for formalized lateral relationships in global companies are cross-locational teams. These teams, consisting of subsidiary managers and global category managers meet to plan joint projects for promising categories. This includes gaining transparency on spend requirements and specifications, estimate potential savings and develop implementation plans. As a result, subsidiaries are actively involved in the strategy development process, informal networks are fostered and knowledge and

information exchange is actively triggered. Similarly, transnational companies have established committees for sites with homogenous demand structures. These platforms enable subsidiary managers to exchange knowledge, develop a broader understanding for particularities of other sites and participate in joint decision-making.

5. Discussion

In the introduction to this article, we noted that current literature offers limited insights into *why* organizations make use of different sets of control mechanisms to implement global sourcing. This will be explicitly addressed in our discussion section, which consists of three parts. First, we will provide explanations for our findings concerning the different global sourcing typologies. Second, we will comment upon the application of different control mechanisms and explain their variations in light of information processing arguments. Third, we combine the different derived theoretical propositions to present a modified information processing model for the global sourcing context.

5.1. Global sourcing typologies

Our results indicate a less deterministic relationship between strategy and structural configuration of companies, than suggested by the classical strategy typologies. We identified two different global sourcing typologies, that we have labelled “global” and “transnational” companies. Thus, it seems that next to the global sourcing strategy, the corporate organizational configuration and the purchasing maturity of subsidiaries influence the organizational configuration of purchasing activities and thereby also the interdependence pattern among geographically dispersed units.

These indications are supported by empirical findings from prior studies in the purchasing literature. For example, Arnold (1999) provides evidence for the intra-structure fit between purchasing and corporate organizational structure and Rozemeijer

et al., (2003) have argued that purchasing maturity is a key contextual factor that determines the organizational approach chosen by a company. In addition, our findings are in line with classical contingency studies, which have proven the importance of internal contextual factors for organization design, such as for strategy (Chandler, 1962; Miller, 1981), size (Blau and Schoenherr, 1971; Child, 1972; Hall, 1996) and technology (Woodward, 1965). Based on the presented discussion, we derive the following research propositions:

Proposition 1a: The organizational configuration of international purchasing organizations is influenced by the corporate organizational configuration.

Proposition 1b: The organizational configuration of international purchasing organizations is influenced by the purchasing maturity of subsidiaries.

5.2. Control mechanisms

Our findings demonstrate higher levels of *centralization* for global than for transnational companies. In line with the arguments presented in section 5.1, decision-making authority for important categories is centralized at headquarters for global and spread across all organizational units for transnational firms. However, when setting the focus on the global sourcing process, it could be examined, that both types of companies relied strongly on centralization to integrate their global purchasing activities. At first sight, this result is unexpected, as it seems to contradict classical contingency theory and therefore merits further discussion.

As companies purchase a category across locations, reciprocal interdependencies between units emerge, thereby increasing task uncertainty. Classical contingency theory postulates that with increasing task uncertainty, greater amount of information must be processed and therefore decisions must be decentralized, as otherwise the hierarchy

becomes easily overloaded (Galbraith, 1973; Tushman and Nadler, 1978). However, our findings indicate that strategic activities are being centralized at one site to achieve integration. Thus, formal power is not transferred upwards the hierarchy, but rather horizontally to one of the units affected by uncertainty.[7] An explanation for this finding can be provided by drawing on the classification of lateral mechanisms put forward by Galbraith (1973). Differentiating between different types of lateral mechanisms, he argues that as information processing requirements increase due to rising interdependencies among highly differentiated units, informal communication is not sufficient, but rather decision-making must be aggregated at one unit (named the integrator), which then assumes formal authority for achieving effective integration of joint activities and thereby processing the necessary amount of information. Based on the presented discussion, we derive the following propositions:

Research proposition 2a: Global companies rely on higher levels of centralization than transnational companies to implement global sourcing.

Research proposition 2b: Global and transnational companies rely on horizontal centralization of strategic purchasing activities to implement global sourcing.

Concerning the usage of *formalized bureaucratic instruments* our findings indicate no differences in the application of formalization and information systems across the case companies. In the following, it will be explained that some degree of formalization is indispensable to process information on activities which can be anticipated in advance.

First, let us explain the finding that many companies made use of handbooks with description of rules, roles and guidelines. These documents are fundamental to provide stability to the organization's global operations as they prescribe the required

[7] This is in line with Mintzberg (1983), who claims that it is important to differentiate between horizontal and vertical centralization.

organizational behaviour to achieve the anticipated state of integration. Thereby, much of the uncertainty related to predictable situations and tasks can be reduced (Galbraith, 1973). Second, the importance ascribed to a standardized global sourcing process can be explained by the fact, that it reduces much of the role ambiguity and increases predictability of outcomes, as the different reciprocal interdependent units integrate their activities (Roth et al., 1991). However, considering that headquarters can not anticipate all exiting interdependencies (Doz and Prahalad, 1991), the dysfunctionalities associated with high levels of formalization (bureaucracy) and the fact that it cannot process rich information, limit its applicability in an environment of high uncertainty (Galbraith, 1973; Daft and Lengel, 1986).

In the same vein, we can explain the high importance attached to global information systems. To integrate activities across sites it has been observed that a high amount of routine and structured information needs to be processed along organizational units. Considering that this kind of information can most efficiently be processed through information systems, explains why this control mechanism plays a major role along the companies studied. Based on these arguments and the presented findings, the following research propositions are derived:

Research Proposition 3a: Transnational and global companies rely on medium levels of formalization to implement global sourcing.

Research Proposition 3b: Transnational and global companies rely on high levels of information-based integration to implement global sourcing.

Our findings on *output control* illustrated different degrees of participation of subsidiaries in the strategic planning process. The key reason for the limited involvement in global companies is that the strategic knowledge is concentrated at headquarters and thereby it is assumed that a total business perspective and the

identification of strategic potentials is restricted to senior managers at the center (Bartlett and Ghoshal, 1989). Information required from subsidiaries is mainly routine and structured and can be processed very efficiently through information systems.

In contrast, in transnational companies strategic knowledge is dispersed across foreign subsidiaries, impeding the development of an accurate business perspective at headquarters. Therefore, it has been indicated that it becomes very crucial to flexibly combine information from different locations and gain the commitment of all organizational units towards common strategic goals (Hedlund and Rolander, 1990). To enforce such a common perspective, information processing must not only involve new information but in particular the exchange of unstructured and non-routine information, such as opinions, perceptions and judgments among managers. Based on these arguments, the application of purchasing steering committees can be explained, as they allow purchasing managers from subsidiaries to meet face-to-face with managers from headquarters, thereby providing the necessary capacity to reduce equivocality (Galbraith, 1973; Daft and Lengel, 1984, 1986). Based on the presented discussion, we deduce the following proposition:

Research Proposition 4a: Transnational companies involve their subsidiaries more actively into the strategic planning process, than global companies to implement global sourcing.

Our findings also revealed that both types of companies relied strongly on output control to integrate global sourcing. In order to ensure, that subsidiaries are acting in line with the defined objectives, the individual contributions of each subsidiary to corporate goals need to be monitored continuously and compared to targets. As a variety of appropriate output measures could be defined, the high amount of routine and

structured information required to reduce uncertainty can easily be transferred from subsidiaries to headquarters through integrated performance management systems.

Following the presented arguments leads to the following research proposition:

Research Proposition 4b: Transnational and global companies rely on high levels of output control to implement global sourcing.

Finally, our results indicated that *socialization mechanisms* played a major role along all companies studied. We can explain the application of these mechanisms by the fact that they are particularly crucial for the integration of the highly differentiated and interdependent units. For example, when involved in a common sourcing project, information about local volumes, suppliers and specifications need to be processed among organizational units to reduce uncertainty, while at the same time opinions about the best applicable purchasing strategy need to be exchanged to reduce equivocality. To cope with these requirements, the identified lateral relations have been established, as they are able to process the required amount of routine and non-routine information (Galbraith, 1973; Daft and Lengel, 1986; Egelhoff, 1991). The observed difference concerning the direction of integration (either between headquarters and subsidiaries or among subsidiaries) along global and transnational companies can be explained by the differences in the pattern of interdependence. Based on the presented line of argumentation, we derive the following research propositions:

Research Proposition 5a: Global companies rely on high levels of socialization between headquarters and subsidiaries to implement global sourcing.

Research Proposition 5b: Transnational companies rely on high levels of socialization between headquarters and subsidiaries and particularly among subsidiaries to implement global sourcing.

5.3. Towards an information processing model for global sourcing

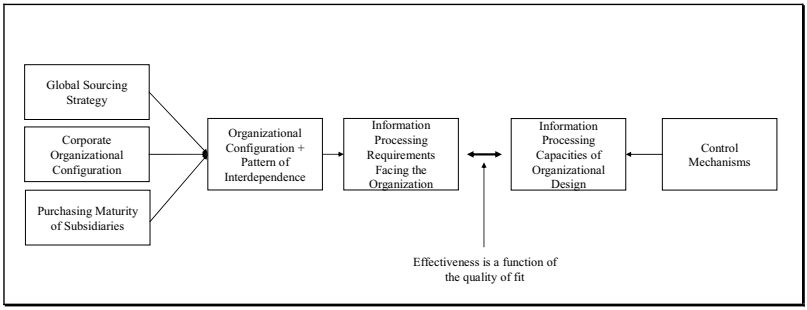
The presented discussion illustrated that with information processing theory, explanations for the application of different control mechanisms in the global sourcing context can be proposed. We elaborated both the sources of integration needs and the use of control mechanisms through empirical case studies and discussed the observations in light of information processing perspective of contingency theory. Our research propositions indicate that differences in the application of control mechanisms for implementing global sourcing can be explained by two contingencies: (1) corporate organizational structure and (2) purchasing maturity of subsidiaries. They explain the identification of two different types of global sourcing typologies with varying information processing requirements.

Our findings have illustrated that global companies are more headquarter-oriented and showed higher levels of centralization than transnational ones to implement global sourcing. In line with the arguments of Galbraith (1973), we have examined that both types of companies relied on centralizing strategic activities at one site to integrate interdependent purchasing units across borders. Our research propositions also indicate that the use of most of the impersonal control mechanisms didn't vary along the global sourcing typologies. We relate this finding to the fact, that these mechanisms represent the backbone of any global sourcing organization, as they enable the processing of a large amount of structured and routine information across country-borders, which is a basic but crucial requirement when operating on a global scale. Differences in the application of socialization mechanisms along the two typologies have been explained by the diverging pattern of interdependence. However, the great application of different socialization mechanisms along both types of companies clearly illustrates, that the basic and also cheaper (Galbraith, 1973) control mechanisms alone are not able to

provide the full information processing capacity for implementing global sourcing. Instead, as already indicated by prior research (Martinez and Jarillo, 1989; Galbraith, 2000) large MNCs need to implement a variety of lateral mechanisms to enable the required cross-country integration of activities.

Thus, we can conclude that purchasing managers need to implement a multitude of different control mechanisms jointly to develop the required amount of information processing capacity in their organizations to implement global sourcing. In this paper, we have provided an overview of the most important mechanisms and illustrated for which purposes and how purchasing managers should apply them to effectively integrate their global sourcing activities by means of a hybrid purchasing organization. Figure 1-3 summarizes the findings of our research.

Figure 1-3.: Information processing perspective to global sourcing



Source: Own illustration

6. Limitations and suggestions for further research

There are two main limitations to the present study. First, as in any case research, our findings are limited to the specific context of the eight companies studied. Further research should therefore also analyze whether similar findings can be for example also observed across other countries and cultures. Second, our analysis addressed global

sourcing from a headquarter perspective. Further research should therefore also analyze contextual factors at the subsidiary level to enhance our understanding of global sourcing organization design. Increasingly, the importance of different *subsidiary roles* for explaining potential differences in the application of control mechanisms has been proposed in international business studies (Bartlett and Ghoshal, 1986; Gupta and Govindarajan, 1991; Birkinshaw and Nobel, 1998). Finally, we believe that future research should also analyze, which combination of control mechanisms are more effective than others, to implement global sourcing in a particular context. These insights would be highly interesting for purchasing practitioners and also increase the attention from other researchers on this still underdeveloped field in purchasing research.

III. Implementing Global Sourcing Through Purchasing Portfolio Management[8]

Abstract

Competing globally, an issue for companies is to adapt their organizational structures and governance in increasingly complex organizations. At the functional level of purchasing, companies turn to hybrid purchasing organizations in order to leverage global sourcing benefits. One of the key challenges in this context is to distinguish between categories to be integrated across sites and those remaining under the authority of each purchasing location in order to maximize purchasing synergies. The aim of the paper is to present a purchasing portfolio model that provides a comprehensive view of relevant global synergy dimensions. Based on a literature review, a theoretically-grounded purchasing portfolio model for global sourcing is developed, going beyond the well-established Kraljic matrix for classifying purchasing categories. The validity of the model is explored by means of a single in-depth case study. Complementing the extant literature, the theoretical contribution of the paper lies in not only addressing category selection criteria for exploiting economies of scale, but also for economies of information & learning and economies of process.

Keywords: *Global sourcing, purchasing synergy, organization design, portfolio mode, Case study*

[8] This essay has been submitted to the Journal of International Management.

1. Introduction

Multinational companies can no longer compete as a collection of nationally independent subsidiaries, since competition is based on the ability of the firm to integrate its subsidiary activities across geographical locations (Porter, 1986; Ohmae 1989; Bartlett and Ghoshal, 1989; Nohria and Ghoshal, 1997; Kotabe and Murray, 2004). Since the seminal paper of Malnight (1995), which put forward that globalization occurs at the level of the function, international business research has increasingly set the focus on analyzing how global integration is attained for functions, such as R&D, marketing or manufacturing (Nobel and Birkinshaw, 1998; Sheth and Parvatiyar, 2001; Kim et al., 2003; Xu et al., 2006). To our best knowledge, international business scholars have not put the centre of attention on purchasing.

Looking at research on internationalization in the purchasing context, interest from practice and academia in global sourcing, defined as the integration of purchasing requirements across worldwide locations (Monczka and Trent, 1991), has been rising constantly during the last years. While some scholars argue that global sourcing is critical for achieving competitive advantage (Alguire et al., 1994; Carter and Narasimhan, 1996; Quintens et al., 2006b), studies have also identified that global sourcing is gaining a more prominent role on the agenda of an increasing number of firms (Samli et al., 1998; Trent and Monczka, 2003).

The rationale to engage in global sourcing is based on two sources of competitive advantage: location-specific advantages, such as access to local supply and labour markets or new technologies and company-specific competencies, which are developed through the exploitation of global synergies, such as pooling of common requirements across sites (Arnold, 1997; Faes et al., 2000; Kotabe and Murray, 2004). Increasingly,

questions arise what the antecedents for reaping these benefits are and how to address them (Birou and Fawcett, 1993; Petersen et al., 2000; Gelderman and Semeijn, 2006; Quintens et al., 2006b).

As an important prerequisite for implementing global sourcing, scholars have pointed out the criticality of aligning global sourcing strategy with organizational design (Trent and Monczka, 2003; Trent, 2004; Quintens et al., 2006a). In particular, the importance of balancing the forces of global integration and local responsiveness by means of a hybrid purchasing structure has been emphasized (Russil, 1997; Faes, et al., 2000; Leenders and Johnson, 2002; Johnson and Leenders, 2004; Quintens, et al. 2006a). One of the key challenges in these structures is to manage for differentiation and integration, distinguishing between categories that should be integrated across sites and those remaining under the authority of each purchasing location (Matthyssens and Faes, 1997; Faes et al., 2000). Acknowledging this trade-off, we follow Faes et al. (2000, p. 541), who state: “The important decision is thus not the coordination decision itself, but the identification of the right cases in which to do it.”

While literature (Davis, 1974; Corey, 1978; Smith, 1999; Boutellier, 2001; Smart and Dudas, 2007) has acknowledged that category characteristics are a major factor influencing global integration, there remain some major shortcomings in the current academic discussion: (1) insufficient research on factors driving global integration of categories and (2) missing implementation guidance by appropriate frameworks.

Regarding the first issue, there exist basic dimensions for synergies, but no fully developed criteria in order to determine them are known. Prior literature (Arnold, 1997; Faes et al., 2000; Rozemeijer, 2000) elaborates that economies of information and learning and economies of process are key benefits related to global sourcing. Nevertheless, little is known about the factors influencing category selection for these

drivers. Most models have primarily discussed the exploitation of economies of scale by pooling purchasing power (Matthyssens and Faes, 1997; Smart and Dudas, 2007).

Regarding the second issue, there does not yet exist a coherent and structured framework for analyzing global synergy opportunities at the category level. Although, purchasing portfolio models are widely used in the purchasing field, less is known about their application in an international environment and how to address global purchasing synergies (Gelderman and Semeijn, 2006). As decisions concerning hybrid purchasing organization design are done at the category-level[i], the major implication of these shortcomings is that our understanding for these organizational forms remains limited (Johnson and Leenders, 2006).

In this paper, our objective is to address these shortcomings in the current literature by developing a purchasing portfolio model for hybrid purchasing organization design. In particular, the model intends to provide a balanced view of relevant synergy dimensions at the category level, thereby providing a framework for differentiating among categories either to be integrated across sites or to be remained under local authority.

The paper is structured as follows. First, we present the conceptual underpinnings and further highlight the research gaps addressed. In section three, the portfolio model for global sourcing is developed. Afterwards, section four shows the results of a case study, exemplifying the application of the portfolio model based on three different categories of purchased goods and services. In the fifth section follows a discussion. Section six closes with a summary of our key findings and suggestions for further research.

2. Conceptual background

2.1. Global purchasing synergy

Rozemeijer (2000, p. 7) defines purchasing synergies as: "the value that is added when two or more business units (or purchasing departments) join their forces (e.g. combined buying) and/or share resources, information, and/or knowledge in the area of purchasing." Following this definition, scholars (Arnold, 1997; Faes et al., 2000; Rozemeijer, 2000) have divided global purchasing synergies into three main categories: (1) economies of scale, (2) economies of information and learning, and (3) economies of process. Economies of scale refer to attaining lower unit costs by increasing market power through volume bundling and standardization of categories. Economies of information and learning relate to sharing information and knowledge across different sites and locations, such as knowledge on suppliers, new technologies, applications, specification requirements but also on best practices and experiences. Finally, economies of process relate to benefits derived from establishing a common way of working and exchanging best-practice purchasing procedures across the company.

In particular, the realization of economies of scale through bundling and pooled purchasing power has received much attention from prior literature (Vizjak, 1994; Goold and Campbell, 1999, 2000; Boutellier, 2001) and has been named as a major reason for a more centralized purchasing approach (Corey, 1978; Bozarth et al., 1998; Arnold, 1999). In this context, the importance of category characteristics for bundling decisions has been pointed out. For example, Davis (1974) argues that raw materials are more appropriate for bundling initiatives, while specialized components should be rather sourced locally. Matthyssens and Faes (1997) conclude that different types of categories require different approaches towards integration and indicate that

standardized categories and non-production goods are particularly feasible for cross-national integration, as they can be bundled. This is in line with arguments of other scholars, stating that standardized categories with similar specifications across sites, low risk and subject to few design changes are feasible and preferred for pooling purchasing power (Kraljic, 1983; Arnold, 1997; Smith, 1999; Porter, 1999; Boutellier, 2001).

The discussion illuminates that extant literature has adopted a rather one-sided focus, neglecting that there is more to purchasing synergies than bundling. Thus, it is important to point out that companies only take full advantage of global sourcing, when realizing all three types of synergy potentials. Evaluating categories along the three dimensions increases decision-making complexity, as more evaluation criteria need be taken into account. Considering that purchasing portfolios enable to break down complex problems into their most critical dimensions and have been labelled as the "most important single diagnostic and prescriptive tool available to purchasing and supply management" (Syson, 1992) makes them an attractive candidate for further analysis.

2.2. Purchasing portfolio management

Portfolio models have been used in various research fields with the most prominent examples (BCG growth/share matrix) originating from strategic planning. The significance and usefulness of portfolio models for practice has been pointed out by Turnbull (1990), who suggests that the wide scope of application, the flexibility and different levels of sophistication make it a powerful management tool. In the purchasing context, it has been argued that purchasing portfolio models support companies to systematically analyze their expenditures (Cox, 1997), provide a framework for designing effective supply strategies (Hadeler and Evans, 1994) and contribute towards increasing the maturity of the purchasing function (Elliot-Shircore and Steele, 1985). As

a consequence, Nellore and Söderquist (2000) point out that many purchasing managers implement portfolio models directly in their purchasing strategies and it is even claimed that portfolio usage is a sign of purchasing sophistication (Geldermann and Van Weele, 2005).

Since the seminal paper of Kraljic (1983), who introduced the first purchasing portfolio approach, the interest from academia in portfolio models has grown strongly in the domain of purchasing. Based on the ideas of Kraljic, many authors have put forward similar models (Elliot-Shircore and Steele, 1985; Olsen and Ellram, 1997; Bensaou, 1999; Van Weele, 2002, Wagner and Johnson, 2004) with the core idea being the analysis and the development of recommendations for the management of different types of supplier relationships. Complementing these ideas, scholars have analyzed the role of specifications (Nellore and Söderquist, 2000) or power and dependence (Caniels and Gelderman, 2005) in buyer-supplier relationships. Additionally, portfolio models have been identified for other areas and purposes in purchasing, such as supplier involvement in new product development (Wynstra and Pierick, 2000) and e-purchasing of materials (Croom, 2000; Bartezzahi and Ronchi, 2004).

Portfolio models have also been developed in the realm of purchasing synergy. Most of the reported approaches rely on the original Kraljic matrix, stating that categories classified as “leverage” or “non-critical” are suitable for bundling (Boutellier and Zagler, 2000; Geldermann and Van Weele, 2002). A different model is presented in the study of Smart and Dudas (2007). Based on the product and market affinity model from Vizjak (1994), the scholars develop a decision-making framework that supports companies in the selection of items for bundling. Finally, adopting a global perspective, Gelderman and Semeijn (2006) have provided evidence for how MNC headquarters can

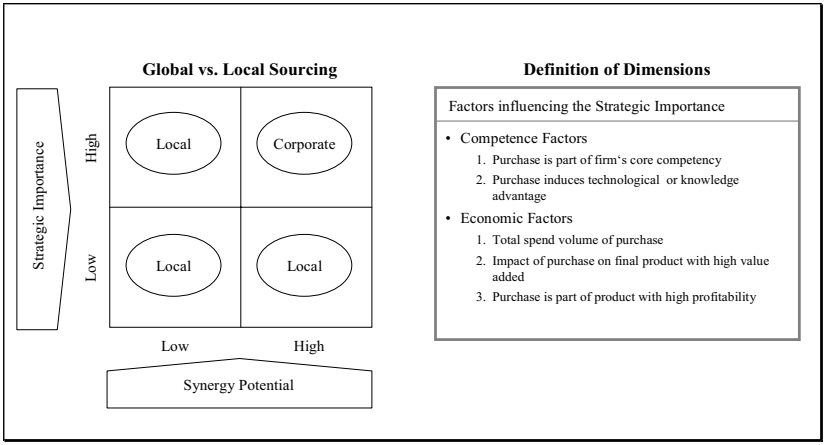
take advantage of the portfolio approach to support their local sites in developing differentiated purchasing strategies.

Regardless of this strong trend towards applying portfolio models, we identified very few studies that report the usage of portfolio models in the context of global sourcing. In addition, the extant frameworks focusing on synergy exploitation are limited. First, most of the studies report the use of the original Kraljic matrix to determine categories suitable for volume bundling. Considering that the original purpose of the matrix (identification of strategic items and ensuring their safe delivery) differs significantly from the challenges imposed by global sourcing, illustrates that such an approach is limited. Second, most portfolio models have set their focus on category selection for realizing economies of scale, thereby neglecting the other two synergy dimensions to be addressed by global sourcing. These findings encouraged us to develop a purchasing portfolio model that addresses these limitations, directed at providing guidance for effective global sourcing organization design. The aim of the approach is to specifically provide support for differentiating among categories that should be integrated globally across locations and those remaining under local authority of each site.

3. A purchasing portfolio approach for global sourcing

Based on a literature review, a two step approach is developed in the following that is meant to guide decision-makers along the selection process. Building on the work from Kraljic (1983) and Olsen and Ellram (1997), a portfolio model with the following two dimensions is presented: (1) Strategic importance of the purchase, (2) Synergy potential of the purchase. Figure 2-1 presents the corresponding portfolio model with the positioning of categories along each dimension representing the two steps to be followed when using the portfolio.

Figure 2-1.: Portfolio model for global sourcing



Source: Own Illustration

As indicated by the matrix, categories that are characterized by high strategic importance and high synergy potential are particular candidates for global integration across sites. Categories falling into any of the other three cells are more suitable to be remained under the authority of local purchasing managers. Positioning the categories along the portfolio is based on an evaluation of each dimension. While the evaluation of the first dimension is based on the work of Kraljic and his successors, the second stems from the prior discussion and the conviction that categories should only be integrated globally when benefits are realized by exploiting interrelationships between sites. Extending the prior literature and evaluating the synergy potential on a broader scale, in a second step the global synergy potential dimension is further analyzed in detail with three sub portfolios.

3.1. Step 1: Analysis of strategic importance

Strategic importance of the purchase classifies categories according to their criticality for the business. This can embrace a variety of factors, as depicted in figure 2-1 (y axis).

The presented list is not completely exhaustive and might vary across firms. Following the approach of Olsen and Ellram (1997), two key factors can be differentiated: (1) competence factor and (2) economic factor.

The competence factor relates to the degree that a particular purchase has an impact on the core competencies of a company. Thus, if a purchase, for example, has an impact on the technological advantage or critical knowledge base of a company, it is of greater strategic importance for the overall business. Due to their higher criticality, these categories will receive greater attention from corporate purchasing.

Second, the economic factor embraces aspects that describe the impact of the purchase on the company's profits. For example, categories with high spend volumes are more suitable for a global approach, as they have the potential to set off costs related to global integration. Causes for such costs are currency fluctuations, transportation costs but also the required time and effort from several purchasing managers and stakeholders involved in coordinating activities across sites. For these categories, it is probable that the estimated savings would at least set off the concomitant costs of integration.

Based on an evaluation of the presented factors, decision-makers can position categories along the first dimension in the portfolio model.

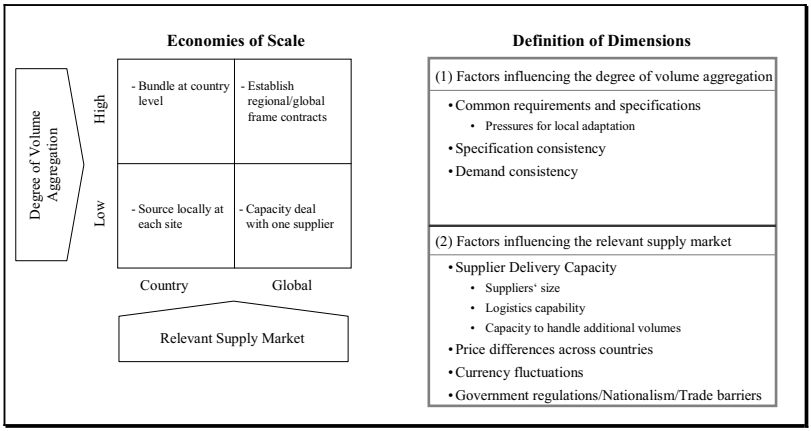
3.2. Step 2: Analysis of synergy potential

Following the findings of the previous section, the synergy potential of a category is specified along the following three dimensions: (1) economies of scale, (2) economies of information and learning and (3) economies of process. For each dimension, a separate portfolio is drafted and elaborated on in the following sub sections to address the relevant factors influencing the particular synergy potential.

Economies of scale

As indicated by our literature review, a lot of research has focused on the exploitation of economies of scale. In an effort to synthesize the multitude of different criteria brought forward, two dimensions seem to encapsulate the key ideas related to the volume bundling potential of a category: (1) Degree of volume aggregation, (2) Geographical scope of the relevant supply market. This is summarized in figure 2-2.

Figure 2-2.: Portfolio model determining economies of scale



Source: Own Illustration

On the one hand, many factors relate to the possibility to "add up" common requirements to improve the negotiation position in the respective supply market (Davis, 1974; Matthyssens and Faes, 1997; Smart and Dudas, 2007). Therefore, the first dimension of the portfolio model relates to the "degree of volume aggregation" attained for a particular category. A list naming some of the key factors influencing this dimension is provided in figure 3. The most cited factor is the extent to which common requirements and harmonized specifications are available across sites (Arnold and Essig, 1997; Corey, 1978; Trent and Monczka, 2002; Vizjak, 1994). For example, high local pressure for product adaptation (Corey, 1978; Fraering and Sameer, 1999; Smith,

1999) can force sites to adopt different specifications, thereby preventing their participation in volume agreements and lowering the bundling potential, respectively.

The second theme that emerged is strongly related to factors that determine the geographical scope of the "relevant supply market" (Das and Handfield, 1997; Fraering and Sameer, 1999; Smart and Dudas, 2007; Smith, 1999). A tentative list of factors influencing this dimension is also presented in figure 2-2. In particular, factors related to the supplier delivery capacity seem to play a major role. For example, it has been argued that global suppliers with sites across different countries can deliver cost-effectively to the different locations of their customers, have more capacity and thereby enable the exploitation of significant economies of scale. In contrast, when the supplier base is highly fragmented and local, transportations costs and the increasing risk that products get damaged can become a major issue and thereby countervail the benefits related to bundling (Fraering and Sameer, 1999; Smart, 1999; Smart and Dudas, 2007).

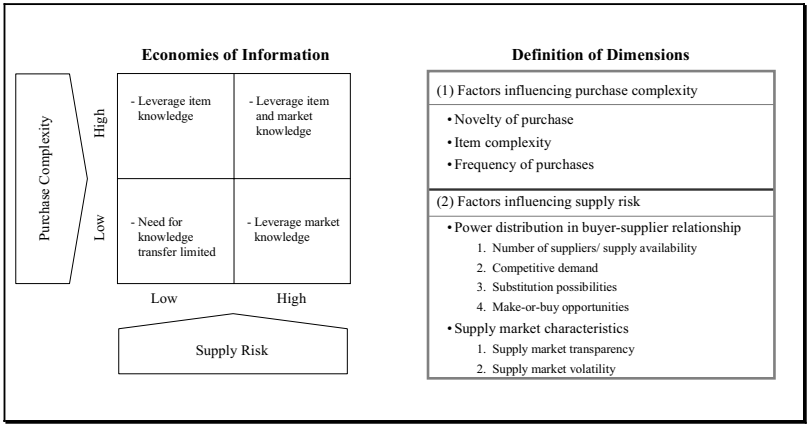
Based on these two dimensions, categories can be classified into four clusters of purchases with varying strategic recommendations. For categories scoring high on both axes, benefits related to volume bundling are very high and associated costs rather low. Here, frame contracts can be established, in order to increase negotiation power and attain lower unit prices. In contrast, when a category scores low on both dimensions, sourcing locally tends to be more beneficial. Then, a joint approach towards global supply markets can hardly be implemented without incurring additional costs.

Economies of information and learning

Economies of information and learning represent the second synergy form exploitable through a global sourcing approach. The key idea is to specify purchase situations in which the need to leverage information and knowledge across sites is particularly crucial. Building on organizational buying behavior (OBB) literature (Cardozo, 1980;

Hill, 1972; McQuiston, 1989; Robinson et al., 1967; Xideas and Moschuris, 1997), we analyzed factors that increase the uncertainty for a purchase. The underlying rationale is based on information processing theory (Galbraith, 1973; Tushman and Nadler, 1978) suggesting that when decision-makers are faced with uncertainty they seek to reduce it through the gathering of additional information. This can also include information and knowledge from other sites and represents one of the key benefits of large MNCs (Adenfelt and Lagerström, 2006; Bartlett and Ghoshal, 1989; Hedlund and Rolander, 1990). Figure 2-3 illustrates the resulting portfolio and relevant dimensions. In addition, examples for some of the most important factors influencing the respective dimensions are provided.

Figure 2-3.: Portfolio model determining economies of information/learning



Source: Own Illustration

The first dimension of "purchase complexity" describes the difficulty and uncertainty related to the category being purchased. High levels of complexity require careful analysis, additional information and extra effort to manage the situation (McQuiston, 1989; Robinson et al., 1967; Sheth, 1973; Webster and Wind, 1972). For example, if the

category is new to the organization, more category-specific information will be sought in order to handle the purchase. This compensates for the uncertainty resulting from lack of experience of purchasing managers (Bunn, 1993; McQuiston, 1989; Robinson et al., 1967). A further critical aspect put forward is category complexity. If a product scores high on product complexity, it is highly customized (specification complexity), related to many other parts of a system (functional complexity) and involves more complicated commercial arrangements (commercial complexity). This leads to higher uncertainty that the final product might not perform properly or that delivery schedules are postponed. Thus, decision-makers gather additional information and knowledge concerning product specifications, technical capacity of suppliers and contract structures in order to ensure that the final product is compatible with the needs of internal customers (Cardozo, 1980; Gronhaug, 1976; McQuiston, 1989).

While these factors are all primarily related to category characteristics, literature points out that uncertainty can also be induced by factors external to the company, stemming from the supply environment (Cardozo, 1980; Noordewier et al., 1990; Xideas and Moschuris, 1997). Therefore, based on the original Kraljic (1983) matrix the second dimension has been labeled “supply risk”. In situations, where the number of suppliers is low, substitution possibilities are not prevalent, prices are fluctuating strongly and the supply market is lacking transparency, companies are faced with high levels of uncertainty. This induces the need to gather more detailed supply market information as companies are faced with a situation where they might not able to source products of desired quality, in desired demand quantities, for the desired price and from the most appropriate supplier (Cardozo, 1980; Noordewier et al., 1990).

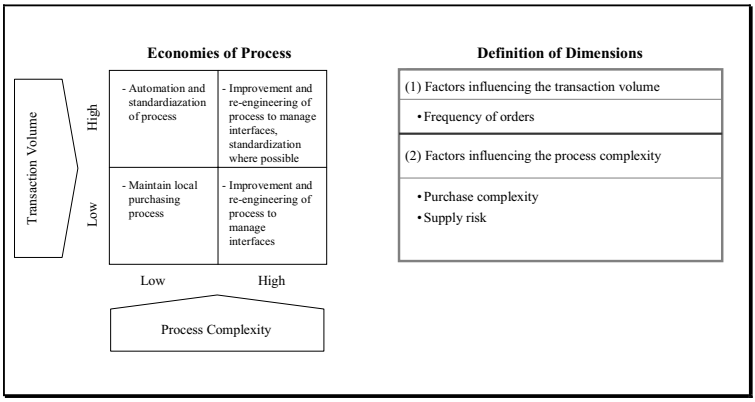
Filling the portfolio along the two presented dimensions, enables companies to determine situations that are characterized by higher and lower levels of uncertainty.

This gives an indication where the value for exchanging knowledge and information related to the category and the supplier is highest. For example, when purchase complexity and supply risk are both high, sites can benefit by exchanging a lot of category and market information. In contrast, in situations where a category scores low along both dimensions, uncertainty is rather low, so that each purchasing site is able to perform the purchasing transaction independently.

Economies of process

The third synergy form that companies can exploit through global sourcing is economies of process. The underlying rationale is to determine situations, where sites can benefit from adopting a common way of working or establishing best-practice purchasing processes across the organization. Based on transaction cost economics (Williamson, 1975, 1979) considerations of frequency and specificity for identifying most efficient arrangements are incorporated. The resulting portfolio for category assessment has the dimensions of "transaction volume" and "process complexity". Figure 2-4 shows the portfolio and factors influencing the respective dimensions.

Figure 2-4.: Portfolio model determining economies of process



Source: Own Illustration

The first dimension labeled “transaction volume” refers to the number of purchasing transactions for a specific category. As order frequency increases, in particular for low value items, significant transaction costs can accrue and even overcome the purchase cost itself. Thus, in these situations the need for streamlined purchasing processes that increase order efficiency is particularly high. Corporate wide standardization of best-practice processes and the implementation of electronic procurement solutions are means to reduce transaction costs (Bartezzahi and Ronchi, 2004; Croom, 2000).

Apart from the frequency of transactions, coordination costs along the purchasing process are considered the second major dimension determining the potential of economies of process. The axis labeled “process complexity” represents the amount of information that must be processed along the purchase situation. Therefore, it is influenced by the two dimensions that have been presented above for the classification of economies of information. The underlying rationale is that as companies face uncertainty, they seek for more information, which incurs additional search and coordination costs (Williamson, 1975; Malone et al., 1989). Minimizing these costs by improving the underlying purchasing process can hold significant benefits. For example, when a category is novel and complex and only a few suppliers can deliver a product, the need for closer collaboration with suppliers and internal customers at a technical and commercial level increases (Smith, 1999). As discussed above, in these situations, technical uncertainty related to the purchase is high, requiring special investigation, additional testing and information to ensure that the internal customer receives a product fulfilling his/her needs (Cardozo, 1980). Transaction cost economics suggests that, in these situations, companies enter into strategic partnerships with suppliers to safeguard against opportunism from market transactions (Heide and John, 1988).

This requires the management of complex interfaces and interdependencies with suppliers and internal customers. There are feedback loops, constant data exchanges and monitoring of activities. Therefore, reducing the concomitant transaction costs by simplifying and optimizing the purchasing process can hold considerable benefits. In this respect, it has been argued that the adoption of electronic collaboration, e.g. regarding demand management, production planning and new product development, supports companies to manage their interaction with suppliers more efficiently (Bartezzaghi and Ronchi, 2004; Borders et al., 2001), thereby lowering transaction costs.

Combining these two dimensions enables purchasing managers to determine situations, in which the re-engineering or establishment of best-practice processes is particularly beneficial. Specifically, electronic solutions in purchasing have been named as major driver to reduce transaction costs (Car, 2000; Jap, 2000). Thus, for categories characterized by high transaction volumes and process complexity, the establishment of an efficient purchasing process across sites holds particular benefits. In contrast, when the transaction volume and process complexity are low, each purchasing site can maintain its own local process, as transactions costs are rather insignificant.

Estimating overall synergy potential

Summarizing the findings of individual synergy considerations, companies can combine the results of the different portfolios and come to an estimate for the overall synergy potential of a particular category. Although a category might not show a high potential for realizing economies of scale or information and learning, a high level of economies of process can still be a decisive reason for global integration.

The second step of the portfolio analysis is completed when all categories have been classified according to their respective synergy potential. Based on this final evaluation,

companies can classify their categories and position them in the matrix presented in figure 2-1. When a category is positioned in the upper right cell and shows a high strategic importance and high synergy potential it shows particular suitability for global sourcing.

Considering that the here presented portfolio approach is more detailed at the dimension-level than prior approaches, it is important to identify whether the complexity of the dimensions used to categorize elements is valid. As a result, the next section presents the application of the portfolio at one company that was implementing global sourcing.

4. Research methodology

The empirical research consists of a single case study that exemplifies the use of the presented portfolio for global sourcing. Considering the scarcity of research in this area, a single case study approach is considered appropriate as it is likely to reveal new critical insights on the phenomenon. Second, a case study approach is selected to investigate “how” and “why” aspects (Yin, 2003).

4.1. The case company

The company under analysis in this paper is Chemical (a pseudonym), which is a German MNC in the chemical industry. There were two major reasons for selecting Chemical for the empirical research. First, we searched for a MNC that was currently implementing global sourcing, as this would give us the opportunity to test the validity of the developed portfolio. Second, we decided to select an industry that was moving toward a global structure (Ghoshal and Nohria, 1993; Harzing, 1999). Our choice fell on Chemical, as this MNC was just about to begin its transition from a decentralized towards a globally integrated purchasing function. So it was directly confronted with the

decision to define how individual categories should be handled in the new hybrid organization.

Chemical has annual sales exceeding EUR 3 billion and has expanded through a variety of strategic acquisitions and global partnerships during the last years, having operations on all continents. Prior to turning towards global sourcing, every subsidiary had its own purchasing department, satisfying the needs of its local internal customers. The heritage of a decentralized purchasing organization had led to a variety of problems. As few suppliers were international, in that they delivered categories to different units across countries, the supplier base was huge and highly fragmented. Material code classifications, specifications for the same category, systems and processes were differing across sites and leading to a very complex organization. Finally, knowledge (e.g. regarding suppliers) that was available at one site was not actively being transferred and exchanged. So each location had to "reinvent the wheel" for similar purchasing challenges.

Purchasing management at headquarters expected that the integration of purchasing sites into a coherent global sourcing organization would lead to the realization of tremendous group-wide advantages, such as the promotion of a common corporate culture, common systems and processes, the exchange of knowledge and expertise and increasing purchasing power by bundling volumes.

Into this context, the portfolio model developed in the previous section was brought in, in order to discuss its applicability as a diagnostic tool to be used during the transition process. The rationale was to see if the portfolio model's dimensions and criteria corresponded to the factors decisive in evaluating whether and how categories should be integrated globally in a real life project setting.

4.2. Data collection

The research was carried out over a period of 18 months, starting in January 2006 until June 2007. This represents the time from the official project kick-off meeting until the global rollout of the first wave of categories. During this time span, data were collected from three main sources to enable triangulation (Yin, 2003): Direct observations, open-ended interviews and archival documents.

Over the whole project period, from the decision to design a hybrid organization until its actual implementation, at least two researchers from our team (three people in total) visited the company's headquarters on a weekly basis. We recorded meetings among leading purchasing executives of the company (named the leadership circle), attended planning meetings of the core project team and were present at workshops concerning the envisaged organizational concept. Finally, we had the chance to participate and observe discussions concerning the classification of categories among purchasing managers.

Complementary to first-hand observations in the context of an ongoing research project concerning the overall purchasing organization, we conducted 15 semi-structured interviews with purchasing professionals in the company. These interviews were conducted in phases. At the beginning of the project interviews with the Chief Purchasing Officer (CPO) and three purchasing directors responsible for key categories: (1) Raw materials, (2) technical purchasing and (3) services were conducted. Each first round interview lasted between 30 and 90 minutes. As they represented the key individuals leading and monitoring the transition process, this target group was expected to be a rich source of information. Interviews aimed to develop a broader understanding for the key benefits and challenges perceived by each of the managers related to the implementation of global sourcing, and if these corresponded to the three

types of synergies identified from a conceptual point of view. Some exemplifying questions are: “What do you expect from global sourcing?”; “What are the key drivers for implementing global sourcing in your area?”; “What do you perceive are key success factors?”; “What could be major barriers along the implementation process?”

Follow up interviews were conducted one year later with the same respondents. In this second phase, the new organizational design concept had already been developed and the key question turned specifically towards identifying feasible categories for global sourcing. These interviews lasted between one to two hours. In these meetings, our main interest was to understand to which extent purchasing managers actually perceived the portfolio approach to be useful and whether they believed that it supported them to address the benefits of global sourcing stated in the initial interviews. Some of the main questions of this phase included: “Can all categories under your responsibility be evaluated effectively by this approach”; “Can you think of other relevant reasons for global integration”; “Please comment on the applicability of the model. Will it be accepted by your employees and colleagues?”

In the third phase, pilot projects had been started and each of the purchasing directors nominated one strategic category manager within his team, who gave us feedback on the application of the portfolio model for the respective category under his or her responsibility. This included questions such as: “Which are the main synergies you expect in the category under your responsibility and why?”; “How did the portfolio model support you in the development of action plans to reap theses synergies?” The first question, for example, included detailed discussion of the dimensions considered and the criteria taken into account.

An overview on the number of interviews conducted, respondents, key subjects and interviewers along the three phases is provided by table 2-1.

Table 2-1.: Overview of interviews along the three phases

	Phase I (project kickoff)	**Phase II** (follow-up 1 year later)	**Phase III** (after pilot projects)
Number of Interviews	4	3	3
Respondents	Chief purchasing officer and purchasing directors	Purchasing directors	Category managers
Key Subjects	- Global sourcing expectations - Drivers of global sourcing - Success factors/Barriers	- Relevance of portfolio model for global sourcing - Feasibility of approach for evaluating categories	- Feedback on application of portfolio model - Problems/Challenges related to its application
Interviewer	3/3	3/3	2/3

Source: Own Illustration

To enhance the objectivity and robustness of the findings, all interviews followed strictly a case study protocol and were then transcribed and circulated among respondents. In addition, interviews were cross-checked against archival documents. Also, all interviews were conducted by at least two researchers, thereby ensuring instant clarification of arising questions and allowing to control for retrospective bias (Eisenhardt and Graebner, 2007; Yin, 2003). As the last part of data collection, archival document analysis was used, mainly to supplement the information collected through the interviews. Sources of information included various internal reports and presentations concerning the actual status of the project, protocols from meetings, planning documents and spend overviews. These documents moreover offered a means to cross-check facts, thereby substantiating the robustness of our results.

5. Application of the purchasing portfolio model

The case study indicates that the dimensions and criteria of the purchasing portfolio model proved to be helpful from the practitioners' point of view. It corresponded to

what they considered important to evaluate categories concerning their suitability for global sourcing.

In the following we will elaborate on how the company reported on the use of the portfolio model to determine whether items would be positioned in the upper right cell depicted in figure 2-1. For practical feedback, three different types of purchasing categories were plotted into the portfolio model and the respective sub portfolios: (1) industrial pigments, (2) agency services (e.g. creative development of campaigns) and (3) printing materials (e.g. paper and brochures). Thereby, the practical validity of the portfolio was tested across a variety of different situations.

5.1. Measurement and use

For each category, local purchasing managers from the five most important (highest expenditure) sites were invited to participate in meetings at headquarters. In addition, internal clients situated at headquarters were joining the roundtable as well.

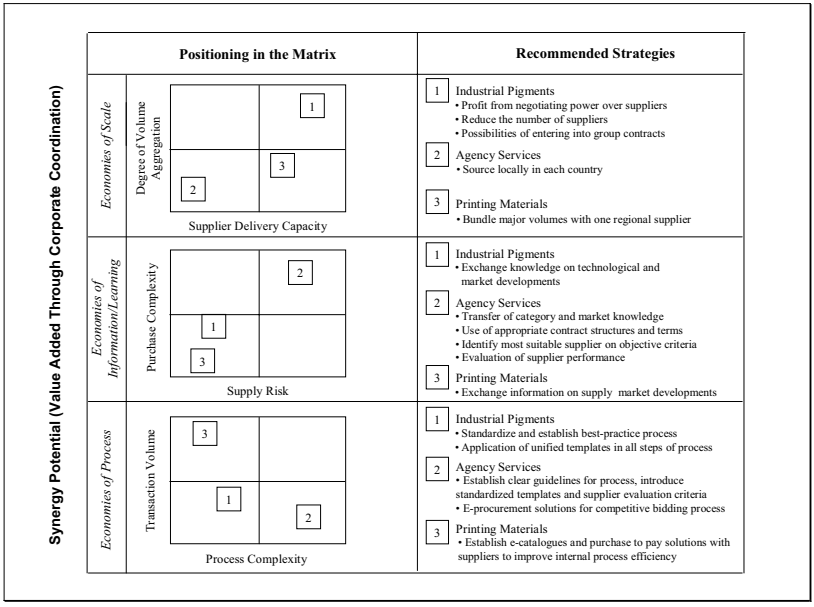
Along these discussions, categories were positioned in the matrix and many times re-positioned until a final decision was made in consensus. In a next step, the team reflected on the result of the classification and defined concrete action plans. There were no calculating rules to weight particular factors or decide whether a category should be positioned above or below a certain demarcation line. Our interviews yielded that this approach was perceived to be highly valuable by all participants, as it triggered intense discussion along the different criteria and a common understanding for the issue at hand.

5.2. Classification of categories

Since adding the economies of process and information & learning synergy types to a research discussion dominated by the rather established category of economies of scale

is a unique aspect of this paper, we regarded it to be of high interest if these two types bring new insights from a practical view as well. From the positioning of the three category examples, it can be observed that the other two types complement the synergy assessment. Figure 2-5 summarizes the results of these discussions, illustrating the evaluation and positioning of the three different types of categories in the portfolios and the respectively derived strategic recommendations. It is important to point out that in the following we only present the main results of the discussions, pointing out some of the key arguments for the final position of the categories. The conceptually developed criteria were clearly reflected in these discussions, providing initial support that they are valid.

Figure 2-5.: Overview of category evaluation across portfolios



Source: Chemical

Economies of scale

The first portfolio shows how the categories vary concerning their bundling potential. Regarding the criteria for "degree of volume aggregation", for most industrial pigments, there exist global standards resulting in similar specifications across sites. Regarding the "relevant supply market" it was stated that the supplier market for industrial pigments is characterized by a competitive global supplier base with many suppliers from emerging economies entering the market, thereby increasing the pressure on the price. Therefore, for this category, the project team decided to bundle volumes to increase market power and establish frame contracts on a regional scale to attain lower unit prices.

In contrast, as specifications for agency services are customized to the particular needs of each site and the demand level varies strongly, aggregating volumes for this category was considered infeasible. Although global suppliers with a wide service portfolio are prevalent and an aggregation of the different projects across sites could increase market power, prices across countries for agency services differed strongly, also within one agency. Therefore, the team decided that bundling at one supplier would result for many countries in less favorable deals, than when negotiating local contracts.

Finally, for printing materials the generally high level of standardization allows to some extent the aggregation of volumes. However, for some categories usage patterns and preferences still differ across sites, leading to heterogeneous requirements and limiting the bundling potential. The supply market is characterized by very few global suppliers and a highly fragmented local supply base. As a result, the team decided that the most beneficial strategy would be to standardize categories as much as possible and subsequently enter into regional frame contracts with one supplier to attain lower unit prices.

Economies of information and learning

The second portfolio shows that industrial pigments and printing materials have both been positioned at the lower left cell of the matrix concerning their "purchase complexity". For both categories, specifications are standardized involving mainly the re-buy of the same category. However, it still was argued that for industrial pigments the required technical knowledge is clearly higher, as the development of strategies or supplier selection and auditing involved close interaction with quality engineers and thus a high category expertise. Finally, an evaluation of the "supply risk" dimension illuminated that for both categories the supplier base is extremely broad, competition among suppliers is very high and substitution possibilities are available, materializing in low risk. Therefore, it was concluded that the exchange of category related information and knowledge is more important for industrial pigments than for printing materials.

In contrast, for agency services, the benefit related to leveraging information and knowledge across sites is crucial. The "purchase complexity" was considered high due to multiple reasons. First, as demand for these services is volatile, in-depth knowledge and expertise can hardly be developed at one particular site. Second, purchasing these services imposes high requirements on the capability of purchasing managers. Defining specifications is very difficult, as often the exact need is not clearly determined by the internal client. Therefore, the development of service level agreements in the contracting phase requires a lot of interaction with the internal client and the service provider. Chemical's purchasing managers concluded that most sites faced the problem that they had not enough experience with this category, so that they were not involved into the purchasing process by internal customers (e.g. marketing departments). This imposes high requirements on the expertise of the buyer to "earn a seat at the table", making the exchange of category specific knowledge particularly important. The

"supply risk" was evaluated as high, due to limited transparency on supply markets. It was considered very difficult to analyze which supplier would be the most suitable to provide the service for the underlying demand. Additionally, it was stated that often suppliers are selected due to personal relationships with internal clients. Therefore, it was critical that purchasing managers were able to develop more objective criteria for supplier selection. In the same vein, evaluating the performance of agencies was considered very difficult, as often their contributions become only visible after some time. Therefore, "supply risk" was regarded as a major issue and gaining more transparency by leveraging knowledge related to suppliers and supply markets a key objective.

Economies of process

In the last portfolio, categories were classified concerning their potential for exploiting economies of process along the dimensions of "transaction volume" and "process complexity". For industrial pigments, the establishment of a uniform best-practice purchasing process with clear definition of roles and responsibilities across sites was decided to be beneficial. Thereby, the critical interface with quality engineers can be addressed more efficiently, reducing transaction frequency as each party gains a clearer understanding for its activities reducing the need for constant interaction. As demand for these categories is regular, it was concluded that transaction costs can be reduced by implementing e-procurement solutions, increasing the level of automation of the payment process and re-orders.

In the case of agency services, it was stated that the key objective would be to reduce the "process complexity", stemming from the strong involvement of internal clients but also from the service provider along the purchasing process. Since at most of the sites a process for purchasing agency services was not even defined and purchasing managers

not involved, establishing a process with clear accountabilities was considered a first step towards reducing transaction costs. Clear guidelines for the process flow and standardized templates were thought appropriate measures in order to come to more efficient transaction handling. Also, by means of more standardized evaluation criteria to be used for all agencies, the company sees potential to reduce process inefficiencies visible in a considerable number of reworks and excessive feedback loops in general. In addition, the introduction of electronic platforms where offers from different service providers can be uploaded and evaluated based on pre-specified criteria was a further means considered to reduce transaction costs.

Finally, for printing materials, it was argued that the key objective is to reduce transaction costs resulting from the high order frequency of these categories. Due to the low "purchasing complexity", the key objective is to remove manual, paper-based and administrative work that is binding purchasing capacity by implementing systems solutions, which allow internal customers to directly order from a preferred supplier. Thereby, transaction costs can be minimized and transferred to the internal customer.

Estimating overall synergy potential

In a last step, a final evaluation of the categories was conducted and the aggregated synergy potential determined. Based on this discussion, it was decided whether categories would be positioned in the upper-right cell of figure 2-1 and thereby fall under corporate authority. In the presented examples, all three categories were selected for global integration. In the case of industrial pigments, the key motive was the high potential to exploit economies of scale through bundling volumes across sites. For agency services, the high benefit related to sharing information and knowledge and to improve the process were considered important drivers for global integration. Finally,

printing materials showed some potential for bundling, but in particular high benefits related to the implementation of e-procurement solutions across sites.

6. Summary and Conclusions

Our contribution to the current global sourcing research stream is twofold. We sought to address two gaps identified in the literature: (1) insufficient research on factors driving global integration of categories and (2) missing implementation guidance by help of appropriate frameworks.

First, the portfolio approach presented in this paper addressed the gaps identified in the literature by presenting a systematic and coherent framework that captures relevant category selection criteria for making decisions in a global sourcing context. In particular, complementing prior literature, we have illustrated that companies engage in global sourcing for a variety of reasons, not only to achieve economies of scale. Such further considerations are sharing knowledge and information or implementing best-practice processes, as key motives for global integration. By elaborating on the portfolio model's application in one company, we found support for its validity. Also, the paper provides insights for research on hybrid purchasing structures and the organizational design implications from global sourcing. Whether a company is more globally integrated or acts more decentralized is dependent on the forces for global integration and local responsiveness at the category level.

The here studied functional context of hybrid purchasing organizations also provided an example of interest to general research in international business, since it illustrates how an integrated network configuration (e.g. Bartlett et al., 2004) can be coordinated, if there is a structured management approach. Therefore, it also serves as an illustration

how the general goals of MNCs to optimize global efficiency, national responsiveness and worldwide learning can be reaped on a functional level.

6.1. Limitations

Although throughout the paper we have highlighted the benefits related to the use of portfolio models, one should be aware that they have been subject to criticism. Thus, it is important that readers can read the conclusions of this paper in light of these limitations.

One major criticism of portfolio models is related to the selection and measurement of dimensions (Day, 1986). In particular, due to a lacking theoretical foundation, it is often argued that the selection and operationalization of dimensions remains rather nebulous based on arbitrary choice (Ramsay, 1996). Thus, it has been stated that there is a risk that the used variables are only approximate estimations of the dimensions to be measured (Nellore and Söderquist, 2000). This issue was addressed in the paper by grounding the dimensions as profoundly as possible in extant literature.

We believe that particularly in the global sourcing context the flexibility inherent in the dimensions of the approach developed has particular benefits. First, the importance attached to a specific variable might differ across categories. The flexibility of the approach allows decision-makers to decide which factors are more important in a specific situation. Second, our findings illustrate that the *process* of discussing inconsistencies and coming to an agreement concerning the position of the categories is in itself a strategic thinking process (Wind and Mahajan, 1981), possibly even more important than the actual classification (Olsen and Ellram, 1997). In this respect, the portfolio model especially could serve as a tool to facilitate communication and exchange of opinions and perspectives in decision-making. Considering that the

commitment of local purchasing managers is a major success factor for implementing global sourcing (Faes et al., 2000), illustrates that the flexible and communication-provoking nature of the approach can indeed be understood as a major strength.

Second, it has been argued that portfolio models fail to provide sufficient strategic recommendations once a classification has been accomplished (Derkinderen and Crum, 1994). While the strategic recommendations derived from the approach can be criticized for being too simplistic, we were able to observe that concrete action plans actually emerged during the analysis of categories as a result of in-depth discussions among participants. Thus, based on our findings, we agree with Nellore and Söderquist (2000, p. 263), who responded to this criticism as follows: "The classification is not an end in itself, but a means to aid in the development of appropriate action plans".

Therefore, we believe that the portfolio model presented here provides detailed information how to address the issue at hand, while at the same time allowing the presentation of results in a rather simple manner (as for example shown in figure 5). While the portfolio has been used to illustrate the specific situation of Chemical, we contend that it can be applied across a variety of different contexts.

6.2. Suggestions for further research

Turning towards directions for further research, we see one clear opportunity in further validation of our findings by case study replication. This should enable a more detailed assessment regarding the general applicability of the portfolio model. Another issue which deserves further attention is a broader analysis of category specifics. In order to identify general characteristics among certain categories and their configurations along the three synergy dimensions, a broader, possibly survey-based approach could be helpful. Here, it can be imagined that these configurations could vary along industries,

and insights regarding such relationships would be of particular managerial relevance as well.

Moreover, the portfolio model analysis started by identifying those categories scoring high on strategic importance and synergy potential in the first step, in order to identify appropriate strategies for global sourcing. Nevertheless, the other two quadrants excluded from further analysis in this paper, scoring high on strategic importance (but low on synergy potential) as well as scoring high on synergy potential (but low on strategic importance) could be scrutinized for other possible strategies applicable to them.

Finally, further research could analyze how companies integrate activities at the category level to exploit purchasing synergies in further detail. It would be interesting to observe if the application of integration mechanisms differs among categories. This would also improve our understanding of global hybrid purchasing organizations.

6.3. Managerial Implications

The case illustrates that portfolio models can become an important instrument to support practitioners when confronted with the challenging task to implement global sourcing with hybrid purchasing organizations.

The purchasing portfolio model developed has potential to support companies in integrating activities across sites, by providing a framework, which enables purchasing managers to evaluate categories concerning their suitability for global integration. In particular, it could be observed that the use of the portfolio model promotes and enforces cross-locational and cross-functional coordination, which is particularly critical for gaining the commitment of local sites.

Echoing arguments of contingency and international business scholars (Lawrence and Lorch, 1967; Nohria and Ghoshal, 1997) our results indicate that purchasing managers need to understand that the internal structure of their organization is not homogenous, but rather differentiated to fit the relevant context at the category level.

IV. Elaborating the Information Processing Perspective in the Global Sourcing Context[9]

Abstract

In this paper we study integration in the global sourcing organization at the category level, looking at ways of achieving integration across purchasing units and factors affecting integration needs. The aim of the paper is to complement prior research on global sourcing organizations, which is both few in numbers and explorative in nature. We build on the information-processing perspective of organizations developed by Galbraith (1973) and Tushman and Nadler (1978). Based on the results of 12 case studies in 3 multinational corporations, we elaborate the information processing perspective in the global sourcing context. We propose that integration needs in the global sourcing context arise from three contingencies: category characteristics, supply environment characteristics and interdependence of the purchasing units, emphasizing simultaneously the category level of observation in global sourcing organizations.

Keywords: Global sourcing, organization design, case studies

[9] This essay has been submitted to the Journal of Supply Chain Management.

1. Introduction

The area of purchasing has faced two fundamental changes over the recent years. First, purchasing has gained significant importance among managers. Rather than being an operative business activity it is nowadays considered as a strategic function with significant potential in gaining competitive advantage (Keough, 1993; Ellram and Carr, 1994; Carter and Narasimhan, 1996; Quintens et al., 2006b). Second, due to the growing challenges of globalization there has been a clear trend from local or international sourcing towards global sourcing strategy by Multinational Corporations. A study of Trent and Monczka (2003) point out that even 70% of firms estimate to have a global sourcing strategy today.

Despite a major attention to global sourcing paid by MNCs, the implementation of it has posed severe challenges (Kaufmann and Hedderich, 2004; Kotabe and Murray, 2004). Especially organizational design issues have been critical in order to gain strategic advantage from global sourcing (Trent and Monczka, 2003; Trent, 2004; Quintens, Pauwels, and Matthyssens, 2006a). The design of organizations includes two fundamental and opposing tasks (Child, 1977; Mintzberg, 1983): (1) the division of tasks of each unit and the subsequent (2) integration of activities. Rather than merely looking for cost savings by centralization and harmonization of activities (Arnold, 1997; Faes et al., 2000), coordination and integration are mainly concerned with the extent to which the purchasing activities of the worldwide units are mutually supportive and unity of effort is achieved in order to accomplish the organization's overall goal (Lawrence and Lorsch, [1967] 1986; March and Simon, [1958] 1993).

The majority of the prior research on global sourcing has taken a strategic perspective assessing, for example, the pros and cons of global sourcing strategy giving minor

emphasis to organization design (Trent and Monczka, 2003; Quintens et al., 2005). In contrast, international business literature has paid considerable attention to the global integration of business activities, both at the firm (Martinez and Jarillo, 1989; Gupta and Govindarjan, 1991; Nohria and Ghoshal, 1997) and at the functional level (Mascarenhas, 1984; Nobel and Birkinshaw, 1998; Kim et al., 2000; Xu et al., 2006), but to our knowledge, the purchasing function has not been the object of scrutiny.

The current research on global sourcing organizations in general needs further elaboration due to three reasons. First, majority of the research has focused on the centralization-decentralization debate (Narasimhan and Carter, 1989; Guinipero and Monczka, 1990; Arnold, 1999) excluding other ways of achieving integration. Second, while the dominance of hybrid structures in practice has been pointed out in many studies (Fearon, 1988; Johnson and Leenders, 2004) the current understanding of how global sourcing is implemented in these structures is very limited. In particular, we relate this to the lack of research that has analyzed integration at the category level, although category characteristics are suggested to have a significant influence on global integration (Davis, 1974; Matthyssens and Faes, 1997; Smith, 1999). And finally, empirical research on integration in global sourcing organizations has been highly explorative in nature (e.g. Rozemeijer, 2000; Trent and Monczka, 2003) and, hence, our understanding for the critical contingencies and how these affect organization design is limited (Arnold, 1999; Rozemeijer et al., 2003; Quintens et al., 2005).

In this paper we focus on integration in the hybrid global sourcing organization at the category level. We analyze how integration is carried out in different types of categories and provide explanations for the findings by elaborating the information processing theory (Galbraith, 1973). Thereby, in addition to tackling a gap in the extant knowledge on global sourcing organizations, we also address the plea for a cross-disciplinary

outlook on global sourcing (Quintens et al., 2006b; Wynstra, 2006) by incorporating ideas from organization design literature into the global sourcing context.

The rest of the paper is organized as follows. In the second section, we present the conceptual underpinnings of this research and gaps in the extant knowledge and in the third section, we explain the research approach that we take in order to address the identified research gaps. In the fourth section, we present the main findings from our case analysis and in the subsequent discussion these findings are interpreted in light of information processing perspective (fifth section). Finally, the last section concludes the paper.

2. Conceptual background

2.1. Global sourcing organization

Research on organizational design implications of global sourcing strategy is somewhat fragmented. Numerous authors have contributed to the field with different backgrounds and foci. In the following we provide an overview of prior research. We divide the extant literature into three research streams: (1) general purchasing organizational design research, (2) purchasing synergy research, and (3) global sourcing organization research.

General purchasing organizational design research discusses organizational design features encountered in purchasing organizations. Because majority of the research focuses on large MNCs and thereby uses the global organization as the unit of analysis, these contributions indirectly provide insights on organizational design implications of global sourcing. In a highly relevant paper, Corey (1978) provides a variety of arguments for the increasing shift towards centralization by studying purchasing organizations of large MNCs. Setting the focus at the category level, Matthyssens and

Faes (1997) explore the concept of purchasing coordination. Their findings at 15 large MNCs is remarkable, as it represent one of the very few contributions, indicating that integration of purchasing activities varies according to the category sourced. In a paper on the future organizational design features in purchasing organizations, Trent (2004) suggests, based on a large empirical survey covering many MNCs, that many of the design features that show expected growth are related to cross-locational and cross-functional coordination of purchasing activities.

Research on purchasing synergy has focused on analyzing how companies integrate their purchasing activities to attain purchasing synergy across business units and purchasing locations (Arnold and Essig, 1997; Faes et al., 2000; Rozemeijer, 2000; Rozemeijer et al., 2003). Considering that the realization of global purchasing synergies plays a major role in global sourcing, these contributions are of relevance for the issue at hand. The authors perceive organizational design features as synergy measures. One of the main issues explored is how companies can strive for economies of scale, information/learning and process without loosing the benefits of decentralized purchasing. For example, Rozemeijer (2000) assesses how decentralized companies make use of different organizational design mechanisms, networks of people and an adequate information and communication infrastructure to realize purchasing synergies. Faes et al. (2000), on the other hand, point out the importance of socialization mechanisms for lowering internal resistance within the firm when striving towards global purchasing synergies.

Finally, some scholars have focused explicitly on the *implications of global sourcing strategy on organizational design*. Arguing that sourcing globally can require dramatic organizational changes in purchasing, Narasimhan and Carter (1989) discuss the global sourcing organizations of large MNCs. They identify centralized, decentralized and

matrix structures and relate differences in the structures to the characteristics of the product portfolio of companies. In contrast, Arnold (1999) proposes that the degree of centralization in the purchasing function is directly related to the degree of centralization and internationalization at the corporate level. Finally, in a highly influential paper providing a broader perspective to purchasing organizations, Trent and Monczka (2003) present that global sourcing firms use a variety of specific organizational design features, such as harmonized IT infrastructures, strategy review meetings and cross-functional teams, significantly more often than firms engaged in international sourcing. An overview of the different research streams, example references, unit of observation, underlying research approach, as well as organization design issues studied is provided in Table 3-1.

Table 3-1.: Overview of contributions along the three research streams

Research Stream	Authors	Research Methodology	Unit of Analysis	Research Approach	Organization Design Issues Studied
General Purchasing Organization Research	Corey (1978)	3 case studies	Purchasing organization	Explorative	Centralization/Decentralization
	Matthyssens and Faes (1997)	Multiple interviews	Category	Explorative	Centralization, category coordinator, regional purchasing groups, internal market
	Johnson and Leenders (2004)	Survey of 284 companies (CAPS)	Purchasing organization	Explorative	Central, hybrid and decentral models
	Trent (2004)	Explorative survey with 173 companies	Purchasing organization	Explorative	Centrally coordinated teams, lead buyers, strategy review and coordination meetings, cross-functional/locational teams
Purchasing Synergy Research	Arnold and Essig (1997)	4 case studies	Purchasing organization	Explorative based on new institutional economics	Centralization and lateral mechanisms (material group teams, category managers)
	Rozemeijer (2000)	3 case studies	Purchasing organization	Explorative	Network of people, organizational design mechanisms, communication infrastructure
	Rozemeijer, van Weele, and Weggeman (2003)	Survey with 46 companies	Purchasing organization	Explorative based on contingency theory	Centralized, center-led, decentralized, federal purchasing, coordinated purchasing

TABLE 3-1. (continued):

Research Stream	Authors	Research Methodology	Unit of Analysis	Research Approach	Organization Design Issues Studied
Global Sourcing Organization Research	Narasimhan and Carter (1989)	Multiple interviews	Purchasing organization	Explorative based on contingency theory	Centralized, matrix, and decentralized structures; IT systems, category managers and strategic councils
	Giunipero and Monzcka ([1990] 1997)	Interviews with 24 large MNCs	Purchasing organization	Explorative	Centralized, international purchasing groups, decentralized but co-ordinated, fully decentralized
	Arnold (1999)	Short descriptive case studies with 9 MNCs	Purchasing organization	Explorative based on contingency theory	Centralized, coordinated and decentralized purchasing
	Trent and Monczka (2003)	Explorative survey with 162 companies	Purchasing organization	Explorative	Multitude of mechanisms, such as centralization, IT-infrastructure, cross-functional teams, committees
	Quintens, Matthyssens, and Faes (2006)	12 case studies	Purchasing organization	Explorative	Centralized, hybrid and decentralized organizational structures
	Monczka, Trent, and Petersen (2006)	Survey with 167 companies and 16 case studies (CAPS)	Purchasing organization	Explorative	Number of mechanisms, including centralization, commodity teams, lead-buyers, review boards

Source: Own Illustration

Table 3-1 highlights that the literature analyzing organizational design implications of global sourcing is dominated by the classical centralization – decentralization debate in purchasing. Additionally, very few studies focus at the category level even though they acknowledge that different categories might have different implications for organizational design. In particular, the review illustrates a need for more theoretical discussion: majority of the research has been empirical and explorative providing very few explanations for why to structure global sourcing organizations in different ways. While a few contributions based their research on contingency theory, there remains a clear need to tie empirical data stronger with the respective theory to provide convincing explanations for the findings.

In this paper, we suggest that the information processing framework developed on the arguments of structural contingency theory has significant implications for increasing the understanding of global sourcing organizations. Contingency theory is the major theoretical lens to view organizations (Donaldson, 2001) and, even more importantly to the research at hand, addresses the issue of when to emphasize different structural arrangements (March and Simon, [1958] 1993; Lawrence and Lorsch, [1967] 1986; Thompson, [1967] 2003). The information processing argument of contingency theory has been widely applied in many different research fields (e.g. Egelhoff, 1991; Jarvenpaa and Ives, 1993; Nobel and Birkinshaw, 1998) but to our best knowledge not yet in purchasing organizational design research, especially not in global sourcing context.

2.2. An information processing perspective

The idea of structural contingency theory is that organizational effectiveness results from fitting characteristics of the organization to the context in which it operates (Burns and Stalker, [1961] 1967; Lawrence and Lorsch, [1967] 1986; Donaldson, 2001).

Information-processing scholars (Galbraith, 1970, 1973, 1977; Tushman and Nadler, 1978; Egelhoff, 1982, 1988; Nadler and Tushman, 1997) develop the argument related to the concept of fit further. They perceive organizations as information-processing systems and suggest that in effective organizations there is a fit between the information-processing requirements faced by the organization and information-processing capacity of the organization.

The key assumption of information-processing scholars is that companies face several sources of uncertainty arising from characteristics of the external and internal environment of the organization. The problem with uncertainty is that it infers the attainment of organizational goals and, hence, the critical task of the organizational designer then is to design the organization so that sufficient information can be processed to minimize uncertainty (Thompson, [1967] 2003). Different organizational design features facilitate information-processing in organizations to different degrees. The key mechanisms are presented in order of their information processing capacity and costs (managerial time and overhead): (1) centralization, (2) formalization, (3) vertical information systems, and (4) lateral relations (Galbraith, 1973, 1977, 2000).

We suggest that research on global sourcing organizations can benefit from information processing arguments due to the following two reasons. First, as pointed out in the previous section, different contributions have proposed contingencies that are suggested to impact the design of global sourcing organizations, including the level of corporate internationalization, purchasing maturity, and the international purchasing strategy adopted (Arnold, 1999; Rozemeijer et al., 2003; Trent and Monczka, 2003). However, the arguments have been only empirical findings without further elaboration of the underlying explanation: how and why are contingencies related to purchasing organization design. The information processing perspective increases the

understanding of this relationship. Second, prior research (e.g. Rozemeijer, 2000; Trent and Monczka, 2003; Trent, 2004) has highlighted a multitude of different integration mechanisms but has ignored the concomitant costs associated with their implementation. Information processing theory provides us a systematic framework for analyzing integration in purchasing organizations and provides explanations for when to use particular mechanisms. As a result, the information processing framework represents the theoretical framework of this paper, and we elaborate it in order to provide insights for the relationship between contextual factors and integration mechanisms used at the category level.

3. Research methodology

3.1 Research approach

This research can best be described as theory elaboration type (Vaughan, 1992; Lee, 1999; Gilbert, 2005). Rather than testing an existing theory (Popper 1959) or developing a totally new theory (Glaser and Strauss, [1967] 1999), elaboration refers to refining a theory through empirical analysis in order to specify the circumstances in which it does or does not offer potential explanations (Walker and Cohen, 1985; Voss, Tsikriktsis, and Frohlich, 2002). In this paper we will interpret our empirical findings with the information-processing perspective.

Discussing information processing arguments in the global sourcing context, the paper aims towards developing middle range theory (Merton, 1968; Bourgeois, 1979; Layder, 1993), which refers to attempts to generalize beyond a particular case but within a particular context or setting (Woodside, 2003; Ketokivi, 2006). We find middle range theories especially useful in the global sourcing context because they are likely to remain relevant for managerial decision-making (Ketokivi, 2006). Despite the emphasis

on theoretical explanations, our goal is to engage in applied research addressing topical managerial problems. Therefore, our derived research propositions, which encapsulate our key findings, are grounded in information processing theory and are only relevant for the global sourcing context.

We collected qualitative data by a multiple case study design that supports replication logic (Yin, 2003). Each case is treated as an experiment, serving to confirm or disconfirm a set of observations (Yin, 2003). There are several reasons for selecting case research design. First, our research aim is to understand *how* and *why* particular circumstances and contextual factors lead to differences in integration at the category level (Meredith, 1998; Yin, 2003). Second, research on global sourcing organizations in general is still in its exploratory stage and extant knowledge on the contingencies at the category level is scarce (Voss et al., 2002; Yin, 2003; Quintens et al., 2005). Third, we simultaneously respond to the call for more case studies in the global sourcing field (Trent, 2004). It has just recently been suggested that the field of purchasing and supply management would benefit from "…constructing, adapting, extending and refining theories, tasks for which the case study is particularly well-suited (Dubois and Araujo, 2007, p. 177)."

3.2. Case selection

The initial focus of the case selection was set on MNCs because they are more likely to be engaged in global sourcing (Bozarth et al., 1998). Due to practical reasons, we looked for MNCs based in Germany. To gain a deeper understanding for the study's key concepts and assess contingent factors, two key aspects were taken into consideration when selecting the sample. First, we selected three MNCs from different industries with varying sizes: Pharma, Auto, Gas (pseudonyms). We controlled for global sourcing experience by including only companies that had implemented global sourcing for more

than three years into the sample. Second, within each company, we selected different types of purchasing categories for analysis, that were being sourced globally: (1) raw materials, (2) capital expenditures (Capex), (3) services; (4) maintenance, repair & operations (MRO) (Cardozo, 1980; Xideas and Moschuris, 1997; Monczka et al., 2006). This case design led altogether to twelve case studies along the three companies providing us with a chance to study the research problem across a rich diversity of category context, thus enhancing the robustness and analytical generalizability of results (Miles and Huberman, 1994; Yin, 2003). Table 3-2 provides a description of the 12 cases.

Table 3-2.: Overview and description of case studies

Company	Product Type	Category	Description
Pharmaceutical	Raw Materials	Liquid crystals	Substances having characteristics of liquids and of crystals.
Pharmaceutical	Capital Expenditure	Innovative analytical instruments	Special instruments that are necessary for daily use in laboratories
Pharmaceutical	Services	Market research services	Market data, such as e.g. market share of competitors, market volumes, growth rates
Pharmaceutical	MRO	Wear parts	Components that need to be replaced regularly during production
Automotive	Raw Materials	Steel	Critical commodity required for many parts of the car
Automotive	Capital Expenditure	Robots	Industrial robots required for many production steps, such as e.g. welding
Automotive	Services	Agency services	Creative services provided by agencies for marketing and branding purposes
Automotive	MRO	IT consumables	All kind of supplementary material for IT hardware (e.g. mouse, batteries, disks)
Gas Provider	Raw Materials	Gas	A variety of gases required for production but also for trading purposes
Gas Provider	Capital Expenditure	IT hardware	Primarily personal computers and laptops
Gas Provider	Services	Management consulting	Consulting services for strategic management projects
Gas Provider	MRO	Office supplies	All kind of materials required for daily use in offices (e.g. pens, paper, coffee)

Source: Own Illustration

3.3. Data collection

The primary data were collected between July 2006 and June 2007 using semi-structured interviews and archival documents to enable triangulation (Yin, 2003). As the aim of the paper is to develop middle-range theory, the theoretical framework (information processing theory) dictates the form of the data to be collected and plays a major role from the beginning of the research (Layder, 1993).

In total we conducted 15 interviews in two phases. First, each of the senior purchasing managers being responsible for a particular purchasing area (for example raw materials) at headquarters was interviewed. Due to their overall perspective on the firm as a whole, purchasing managers were expected to be the richest source of information. Interviews lasted between one and two hours. The topics covered in the interviews include the role of purchasing and the global sourcing strategy, motivation/driving factor for global sourcing, approach towards implementing global sourcing (usage of the different integration mechanisms), and characteristics of the particular category and why/ how these fit to the described motive and approach. Some of the questions that we asked our respondents included: “Why do you source the particular category globally and what were the key drivers?“; “How do you source the category globally? Can you name some of the key people involved, their roles and responsibilities?”; “What are the key challenges related to this approach?” and “Why do you rely upon this approach for sourcing this particular category globally?” Second, we organized a final meeting with each purchasing manager and his team, involving strategic purchasing managers of the key material groups, in order to gain further insights and ensure reliability of the data (Eisenhart and Graebner, 2007). To ensure the accuracy of the information, detailed interview write-ups were prepared after the final meeting and circulated among all the participants (Eisenhardt, 1989; Yin, 2003).

Archival document analysis was used mainly to supplement the information collected through the interviews and meetings allowing cross-check of facts. Sources of information included various internal reports, process documentations and presentations. Table 3-3 summarizes how we addressed the validity and reliability of our research approach.

Table 3-3.: Overview of tactics to address validity and reliability

Test	Tactic Implemented in Research Approach
Construct Validity Credibility	• Gathered multiple documents • Use of multiple informants with differing perspectives • Key informants and other members of the organization reviewed the write up • Constant comparison of empirical data with literature findings
Internal Validity Integrity	• Investigated patterns across the case studies • Made extensive use of theory to provide convincing explanations for the relationship between findings
External Validity Transferability	• Conducted 12 case studies across highly different contexts • Application of replication logic
Reliability Dependability	• Use of well drafted protocol across all firms • Created a case study database.

Source: Modified from Voss et al. (2002); Yin (2003)

3.4. Analysis process

As a first step, within-case analysis was conducted (Eisenhardt, 1989). We went through each case and analyzed issues related to the motivation for global sourcing, category characteristics and the applied integration mechanisms. Our investigation on the different motives for global sourcing was guided by prior literature (Arnold, 1997; Faes et al., 2000), proposing three key driving factors for global sourcing: economies of

scale, economies of information/learning and economies of process. We grouped interview and archival data into these three categories. For example, when an interviewer stated that "we could achieve high cost savings for all sites by pooling demand" we grouped this under the category economies of scale. Similarly, we used Galbraith's (1973) classification of integration mechanisms when analyzing integration within each case. Finally, based on the classification of category characteristics developed in the organizational buying behavior literature (Robinson et al., 1967; Webster and Wind, 1972; McQuiston, 1989; Laios and Moschuris, 2001; Lewin and Donthu, 2005), we identified six contingencies that seemed to be of relevance for global integration and analyzed categories according to them: (1) purchase novelty, (2) category complexity, (3) purchase importance, (4) demand volatility, (5) category commonality and (6) supply market characteristics. The different constructs were sharpened in an iterative process, involving the constant comparison of literature with the empirical data gathered from multiple sources (Eisenhardt, 1989).

As a second step, we conducted cross-case analysis looking for patterns (Eisenhardt, 1989; Yin, 2003) between the contingencies and the use of integration mechanisms. We compared each construct along the different cases. We then grouped together cases that looked similar along the constructs and analyzed them more closely, trying to understand the underlying dynamics for these similarities. We then went back to each individual case and examined, whether the proposed tentative relationship could be confirmed. Finally, we compared these relationships with extant literature, reviewing in particular information processing arguments but also other relevant literature to strengthen the theoretical scope and internal validity of our results.

4. Data analysis

Following our theoretical framework, the data analysis consists of two parts. First, we will present our findings on the different category characteristics and the corresponding motives for global sourcing. In a second step, we will report upon the integration mechanisms used to achieve effective global integration across the different categories.

4.1. Category characteristics and motives for global sourcing

The findings regarding category characteristics and motivation for global sourcing are summarized in Table 3-4 below. While for each category, more than one global sourcing driver is extant, the following discussion will only focus on the key motive for global sourcing.

Table 3-4.: Overview of category characteristics and motives for global sourcing

Motive	Cases	Purchase Novelty	Purchase Importance	Category Complexity	Demand Volatility	Category Commonality	Supply Market
Economies of scale	Liquid crystals, gas, steel	Straight rebuy	High volume, high criticality	Standardized item	Regular and recurring demand	High	Competitive supplier base, stable market, high transparency, low delivery risk
Economies of scale	Market research services	Straight rebuy	Medium volume, high criticality	Specifications set by supplier	Regular and recurring demand	High	Competitive supplier base, stable market, high transparency, low delivery risk
Economies of scale	IT-Hardware	Straight rebuy	Medium volume, high criticality	Standardized item	Regular and recurring demand	High	Competitive supplier base, dynamic market, high transparency, low delivery risk
Economies of information/ learning	Innovative analytical instruments	New buy	High volume, low criticality	Highly customized	Irregular and infrequent demand	Low	Few global suppliers, stable market, low transparency, high delivery risk
Economies of information/ learning	Robots	Modified rebuy	High volume, high criticality	Specifications set by supplier	Irregular and infrequent demand	Low	Few global suppliers, stable market, limited transparency, medium delivery risk
Economies of information/ learning	Consulting, agency services	New buy	High volume, high criticality	Highly customized	Irregular demand	Low	Few global suppliers, dynamic market, low transparency, high delivery risk
Economies of process	Wear parts, Working clothes, office suppliers	Straight rebuy	Low volume, low criticality	Standardized item	Irregular demand, high quantity of orders	Medium	Competitive supplier base, stable market, high transparency, low delivery risk

Source: Own Illustration

Economies of scale

Our results indicate that there are five categories (liquid crystals, gas, steel, market research, and IT-hardware) for which the key motive for global sourcing is the pooling of volumes to increase market power and attain lower prices. In order to qualify for bundling, these categories are characterized by consistent specification (rare major

design changes) from one purchase to the next, high level of standardization, continuous demand and homogeneous requirements across sites. For most of the categories, a global and highly competitive supply base, stable market conditions and high transparency ensure high supply availability and that products can be delivered cost effectively across more than one site. As most of the categories are purchased on a regular basis, the purchasing department is familiar with the relevant suppliers and therefore the risk, that products are not delivered on time and in the desired quality, is rather low.

Economies of information and learning

In contrast, the findings indicate that for four cases (analytical instruments, robots, consulting and agency services) the key motive for global sourcing is to generate economies of information and learning. A bundling strategy is not feasible due to high degree of customization of categories to the requirements of local sites and the highly volatile demand pattern. As these purchases always are to some extent new to the organization and highly customized, local purchasing managers have to be able to interact closely with suppliers and internal customers to determine specifications and ensure that the final product matches the requirements of internal clients. Thus, a lot of category-related expertise is required to “earn a seat at the table” and manage internal and external interfaces. However, as specifications for these categories vary from one purchase to the next and demand is irregular, local sites hardly are able to develop a learning curve and, hence, are not accepted by internal clients and not involved early or at all in the purchasing process. This is aggravated by the fact that often only few suppliers are capable of providing the unique and customized product or service and that the identification of the most feasible supplier is difficult, as offers can vary strongly. As a result, knowledge transfer and information sharing across locations

become a strategic necessity to ensure that purchasing managers at each site are able to manage these highly complex purchases.

Economies of process

For three cases (wear parts, IT consumables and office supplies) the exploitation of economies of process is the major motive for global sourcing. Although bundling of these categories at one regional supplier is possible, the benefits related to it are limited as the value of these items is rather low. In addition, while some categories with similar specifications are required across sites, there are still substantial variations in preferences within the huge product assortment, leading to heterogeneous usage patterns across locations. As these categories are highly standardized and the supply availability is high, category and market knowledge exchange is not as critical as for the prior group of categories. However, demand planning for these items is very difficulty, leading to a high order frequency and as a consequence to the problem that local purchasing managers often spend 80 percent of their time on purchases that represent less than 20 percent of their spend volume. Thus, it has been argued, that establishing best-practices across the organization on how to source these categories more efficiently, such as through systems contracting, is the main benefit to be addressed through global sourcing.

Based on the presented findings, our focus in the next section is on analyzing whether and how the identified differences have implications for the integration pattern along the three different groups of categories.

4.2. Application of integration mechanisms for global sourcing

The application of integration mechanisms is examined along the different cases. A general finding is that cases within each motive for global sourcing show very similar

integration patterns, whereas, differences are found across the groups. An overview of the results is presented in Table 3-5.

Table 3-5.: Overview of integration mechanisms applied across cases

Motive	Cases	Centralization	Formalization	Information Systems	Lateral Mechanisms
Economies of scale	Liquid crystals, gas, steel, market research, IT-hardware	- Strategic purchasing centralized at category manager - Operational purchasing at each site	Standardized purchasing process with clear definition of roles and responsibilities	IT system to leverage information on local needs, prices, contract structures and suppliers across all sites	Category manager and cross-locational team to bundle volumes
Economies of information/ learning	Innovative analytical instruments, robots, consulting, agency services	Category manager must approve RFQ list and sourcing decision	Purchasing processes differ across sites, but comparable outputs for each major activity defined	- IT system to leverage information on best price, suppliers and contracts across sites - Knowledge database	Category manager to transfer category and market knowledge
Economies of process	Wear parts, IT Consumables, office supplies	Full purchasing authority is decentralized to sites	Manuals, guidelines and instructions with best-practice purchasing process and related tools	Global database with manuals and instructions	-

Source: Own Illustration

Economies of scale

For cases representing economies of scale as the primary motive for global sourcing (liquid crystals, gas, steel, market research and IT hardware), a variety of different integration mechanisms have been implemented. First, decision-making authority for the complete strategic purchasing process has been centralized to a category manager located at headquarters, while local sites maintain proximity to internal clients. Second, a key requirement for global bundling initiatives has been the installation of global information systems for efficient exchange and analysis of global spend data. Third, a standardized purchasing process with clear definition of roles and responsibilities has been defined by headquarters to overcome misunderstandings between the different participants involved in common projects. Fourth, global category management teams,

where senior purchasing managers from key sites meet regularly with a global category manager at headquarters, have been established in order to ensure that strategies are in line with local requirements.

Economies of information and learning

For cases characterized by economies of information and learning (analytical instruments, robots, consulting and agency services), the integration process was described as follows by a senior purchasing manager for robots: ”We have developed purchasing specialists for these categories here at headquarters. Our key idea was to use their expertise for the benefit of all sites, making their category and market knowledge accessible for the whole group.” To enable this type of cross-locational integration, differences to the first group of categories could be observed.

Decision-making authority for these cases is transferred from local sites to a global category manager situated at headquarters. The involvement of the category manager can vary strongly and depends on the strategic importance of the particular purchase for the corporation and the experience of the site purchasing the category. However, at a minimum, he needs to confirm the request for quotation (RFQ) list and the final sourcing decision, but if considered necessary (in case of a highly critical project) he also assumes responsibility for the whole purchasing process. Second, while a fully standardized purchasing process is not defined for these categories (due to the high customization of projects to the needs of each site), the category manager determines for each individual transaction, approval and decision gates with comparable outputs for major activities along the purchasing process. The goal is to ensure that the most important purchasing activities are conducted by all sites, as often, due to the dominance of internal clients and senior managers in these purchases, critical activities are overlooked or simply disregarded. Third, information systems play a crucial role to

maintain transparency over contracts, suppliers and prices including best-price comparisons across sites. Fourth, the category manager ensures that dispersed knowledge available at each site is bundled and can be accessed constantly, acting as a liaison between the different purchasing locations.

Economies of process

Finally, for cases characterized by economies of process (wear parts, IT consumables and office suppliers) integration across units is again achieved in a slightly different way. First, the decision making authority for these purchases is decentralized and remains at each site. Second, standardized purchasing processes are defined for purchasing these categories across all sites. In this context, one senior purchasing manager, responsible for MRO items, pointed out the importance of formalization: ”It is simply impossible and not value adding that we are involved in every purchasing transaction from our local sites. We rather need to ensure that they adhere to our prescribed purchasing standards. Formalized processes are critical since they accelerate learning as best practices can be incorporated into process descriptions. Since electronic procurement solutions often play a major role in re-engineering purchasing processes, we often first need to train local site purchasing managers and acquaint them with the new methods. Then, it is all about ensuring that everybody adheres to the prescribed standards to achieve a significant bottom –line effect for the whole company.” Third, global databases serve as a platform for making documents, templates, manuals and best-practice descriptions available for all sites.

5. Theoretical explanations and discussion

In this paper, we argue that the current global sourcing literature can be advanced by explaining *why* particular integration mechanisms are being used in global sourcing

organizations. The idea in this section is to address this research gap, interpreting the differences found in the use of integration mechanisms across different cases at the category level. The discussion is divided into three main parts. First, we will explain that the variations observed in integration efforts are not random. Based on information processing arguments, explanations will be provided, relating the use of integration mechanisms to work-related uncertainty created by several contingencies (Galbraith, 1973). To address the level of uncertainty involved in a purchasing situation, we ground the discussion on organization buying behavior literature (Robinson et al., 1967; Hill, 1972; Corey, 1978; Cardozo, 1980). Second, by combining our findings from the first section, we will present an adapted version of the information processing model of Tushman and Nadler (1978) for the global sourcing context. Third, we derive important managerial implications, pointing out suggestions for organization design in the global sourcing context.

5.1. Theoretical interpretation of case evidence

Economies of scale

For cases characterized by economies of scale, the findings illuminate the application of a multitude of integration mechanisms and in particular of the more costly lateral ones, indicating that work-related uncertainty and information processing requirements seem to be very high. However, echoing OBB arguments, uncertainty related to category characteristics seems low. For nearly all categories the purchasing task is a straight rebuy (Robinson et al., 1967), showing a stable demand pattern (Walker and Weber, 1984), high degree of standardization (Hill, 1972; Cardozo, 1980; McQuiston, 1989), and high category commonality. Thus, the purchasing task can be pre-planned and there is little need to gather additional information during task execution. In addition, also

uncertainty related to the supplier environment seems low, as our observations indicate for most of the cases high supply availability with a competitive supplier base and transparent markets (Cardozo, 1980; Noordewier et al., 1990). The only source of uncertainty induced by item characteristics that could be observed along the cases is high purchasing importance. As the importance of a purchase increases, more information will be sought by the decision-making units to carefully analyze the situation (McQuiston, 1989). While this might provide some first indications for the use of the different integration mechanisms, it seems that by only referring to category characteristics as sources of uncertainty, we are not able to provide convincing explanations for our findings.

In contrast, the results indicate that uncertainty in completing the purchasing task arises mainly from *interdependence*. According to Thompson ([1967] 2003), uncertainty and subsequent integration requirements are highest when the interdependence between the organizational units is more complex, with the degree of complexity increasing from pooled to sequential and finally reciprocal interdependence. For these categories, much of the uncertainty present in the purchasing task can be explained by *reciprocal* interdependence among the purchasing units. By concentrating strategic purchasing activities at one location to take advantage of scale effects, while retaining sourcing flexibility and sensitivity to host country interests, the need to exchange information among sites to manage the interdependent activities increases drastically. Thus, the initiation of common bundling projects induces reciprocal interdependence among organizational units. The necessity to integrate activities of interdependent units is also reflected in the use of integration mechanisms.

First, let us interpret our finding concerning the aggregation of decision-making power for strategic activities at one category manager by referring to information processing

arguments. It has been argued that in situations of high uncertainty, decisions are not referred upward the hierarchy for resolution, but rather must be decentralized to the units affected by uncertainty, in order to prevent top-management from being overloaded (Galbraith, 1973; Tushman and Nadler, 1978). When reciprocal interdependencies emerge between organization units, they have to process a large amount of information to coordinate their activities and reduce uncertainty. Information processing scholars argue that in these cases, a specialized role should be created that handles information processing between them (Galbraith, 1973, 1977). Galbraith (1973) argues that with increasing levels of uncertainty and the need to integrate activities across highly differentiated units (such as sites in different locations), a liaison role with *formal power* needs to be established to span these differences and achieve a coordinated outcome.

Second, our finding concerning the use of a highly formalized purchasing process can be explained as follows. With increasing interdependence among the activities of the purchasing units, a formalized purchasing process reduces much of the role ambiguity and increases predictability of outcomes as category mangers and local purchasing managers coordinate their cross-locational activities (Galbraith, 1973; Roth et al., 1991). Thus, much of the uncertainty related to predictable tasks, such as when to transfer spend requirements from sites to the category manager and in which format (template), can be reduced. Third, the need to constantly exchange routine information among interdependent purchasing units, such as spend requirements, specifications or prices, explains our finding related to the application of global information systems (Jarvenpaa and Ives, 1993). Finally, the use of lateral mechanisms, such as cross-locational teams or integrators with formal authority can be explained by the fact that not only routine information about local volumes and suppliers is required for planning

bundling initiatives, but also a common understanding for the joint project needs to be established. For example, local know-how needs to be integrated into a global sourcing strategy and opinions about the most feasible strategy for all units need to be exchanged, in order to reduce equivocality (Daft and Lengel, 1986). This requires integration mechanisms that are able to process a high amount of non-routine and particularly rich information, thereby explaining our findings concerning the use of cross-locational teams and category managers.

Based on the presented discussion, we conclude that the main contingency explaining the observed use of integration mechanisms for categories characterized by economies of scale is reciprocal interdependence among purchasing units.

Economies of information and learning

For categories characterized by economies of information, the use of complex integration mechanisms indicates a high level of uncertainty in completing the purchasing task. In contrast to the first group, the uncertainty induced by category characteristics is significant: the purchasing task is either a new buy or modified rebuy (Robinson et al., 1967; Cardozo, 1980), category importance is high (Bunn, 1993; Lewin and Donthu, 2005), shows a high level of technical complexity (Hill 1972), a volatile demand pattern (Walker and Webster, 1984, Woodside, Liukko, and Vuori, 1999) and variation in specifications across sites. Thus, as specifications become more ambiguous and contract structures more complex, additional information will be sought to handle the purchase situation and reduce the uncertainty due to lacking experience of purchasing managers (Robinson et al., 1967; Cardozo, 1980; McQuiston, 1989; Bunn, 1993). In addition, uncertainty is also induced by the supply environment. As there are only a limited number of suppliers capable of producing the category and the heterogeneity in offers is high, the need to obtain more detailed supply market

information increases to identify feasible suppliers and enable an objective comparison of their offers. In addition, as these categories are novel, purchasing managers have to deal with suppliers that they are not familiar with, thereby increasing the need to gather additional information to reduce the uncertainty that suppliers might either not perform properly or that delivery dates might be postponed (Cardozo, 1980).

As the purchasing site is faced by uncertainty, it seeks for all kinds of sources to gather information, including other departments in the global sourcing organization. The systematic and worldwide exploitation of strategic knowledge and information between units carrying out similar activities is emphasized as a unique advantage of global MNCs (Bartlett and Ghoshal, 1987; Hedlund and Rolander, 1990). The need to manage these flows of ideas and knowledge across organizational units has reinforced reciprocal interdependence in global sourcing organizations. Each unit's ability to achieve its own goals is to some extent dependent on its willingness to support other units in achieving their goals (Bartlett and Ghoshal, 1987). Interdependence thereby increases the pool of knowledge aggregated worldwide (Bhagat, Harveston, Triandis, 2002). The need to coordinate these flows of ideas across the organization explains the use of the identified integration mechanisms.

First, our empirical findings have shown that decision-making authority remains with the units faced by uncertainty and is not transferred upwards the hierarchy, but rather aggregated at one category manager. The sheer volume and the complexity of information flows limit the ability to coordinate through centralization (Galbraith, 1973; Bartlett and Ghoshal, 1987). Following the line of argument presented for the prior group of categories, decision-making authority is allocated to one unit, being responsible for the coordination of knowledge and information transfer across sites (horizontal centralization). Second, the high diversity related to the purchase of each of

these unique and novel categories makes coordination through a completely standardized purchasing process less feasible (Woodside et al., 1999). Third, routine information, such as prices, information on suppliers or project descriptions, can most effectively be transferred through global information systems. However, a lot of the required information for these categories is very knowledge intensive (e.g. setting up complex contract structures, defining service level agreements or detailed supplier evaluations). Therefore, the most effective way to transfer the non-routine and highly knowledge-related information is through lateral mechanisms that enable local purchasing managers to learn and make sense of the information (Nonaka, 1990). Following the arguments from Daft and Lengel (1986) and Galbraith (1973), we can relate the use of a category manager to the capability of this mechanism (integrator) to process more and richer information among organizational units.

Based on the presented discussion, we can conclude that category characteristics and interdependence of purchasing units represent the main contingencies explaining the application of the different integration mechanisms along the cases.

Economies of process

Finally, categories characterized by economies of process are integrated with multiple mechanisms, but in contrast to the prior groups the use of the complex, lateral mechanisms is not identified. It therefore seems that the uncertainty related to the purchasing task is lower than in the prior groups. Categories can be characterized as straight rebuys, low in importance and high in standardization, thus making the purchasing task less uncertain (Robin et al., 1967; Cardozo, 1980). Uncertainty induced by the supply environment is also low: there is a stable and transparent supply market with a large, competitive supplier base and high supply availability (Xideas and Moschuris, 1997). The only source of uncertainty identified is the volatile demand

pattern (Walker and Webster, 1984) making pre-planning of the purchasing task more difficult and thereby increasing the number of purchasing transactions. However, uncertainty *during task execution* remains low. Therefore, also in comparison with the categories presented in the previous section, it can be concluded that uncertainty induced by category characteristics is rather low.

Our findings indicate that once new purchasing processes or methods have been implemented and established across locations, each purchasing site is capable of executing the purchasing task independently. There seems to be no need to exchange and gather additional information during task execution with other sites. Thus, since each subsidiary contributes to the overall goal of the organization, it is important to monitor that each site follows the best-practice purchasing process for these categories. The interdependence characterizing these relationships is therefore pooled, referring to lower uncertainty, (Thompson, [1967] 2003) and not reciprocal as in the prior groups. As a result, the integration mechanisms used are different and less elaborated in nature.

As interdependence is pooled, each subsidiary maintains full autonomy over its purchasing activities. The high importance attached to the formalization of activities can be explained as follows. As uncertainty is low and the task can be pre-planned, a standardized purchasing process is a cost-effective way (Galbraith, 1977; Tushman and Nadler, 1978) to ensure integration, i.e. all units follow the same best-practice purchasing process. Finally, as there is a need for documents, templates and best-practice process descriptions across sites, impersonal mechanisms, such as global databases are able to convey this routine information cost-effectively across sites (Egelhoff, 1991).

Based on these arguments, we conclude that the low uncertainty induced by category characteristics and the pooled interdependence among organizational units are the key

contingencies affecting uncertainty for this group of categories and thereby explain the application of integration mechanisms.

5.2. An information processing model in the global sourcing context

Based on the model developed by Tushman and Nadler (1978) and the discussion above, it seems to be important to differentiate between category characteristics that are internal (directly related to the category) and external (supply environment) to the organization. Hence, differentiating between these two types of characteristics, we can summarize that three key contingencies affecting integration in the global sourcing organization are: (1) category characteristics, (2) supply environment, and (3) interdependence among purchasing units. These three contingencies echo those identified by Tushman and Nadler (1978) but are adapted to the global sourcing context. In the following, we shortly elaborate upon each contingency, illuminating its information processing implications.

Characteristics of the purchased category relates to what Tushman and Nadler (1978) call task characteristics: in the global sourcing context the task is the purchase of the category. Following Tushman and Nadler (1978), we consider category characteristics as those that are internal to the organization. Along the three groups of categories studied, we identified that task characteristics played a major role in explaining uncertainty. While in the groups characterized by economies of scale and process, uncertainty related to the task is rather low, the high complexity involved in purchasing capital expenditures and services in the group characterized by economies of information, explained the need to process more information during task execution. As illustrated, this is in line with findings from OBB literature.

The supply environment, on the other hand, relates to Tushman and Nadler's (1978) task environment. In the global sourcing context, the supply sub-environment (Duncan 1972) is likely to be the most significant of the environmental segments and environmental uncertainty has been considered a major variable affecting purchasing structure (Cardozo, 1980; Noordewier et al., 1990; Xideas and Moschuris, 1997). The explanation for the environment affecting the organization lies in the classic structural contingency theory, especially the open system perspective that it takes (Scott, 1998), as one of the key arguments of contingency theory is that the organization must continuously adapt to its environment (Joyce, McGee, Slocum, 1997; Baum and Rowley, 2002). This constant process of adaptation is a source of uncertainty because the environment is mainly outside the control of the organization (Thompson, [1967] 2003). Our case observations point out that for categories characterized by economies of scale and process, supply market uncertainty is rather low. In contrast, for the categories of economies of information, the constant search for alternative suppliers, the lack of transparency on supply markets and the low familiarity with suppliers, makes pre-planning difficult and requires extensive information-processing among purchasing units.

Finally, the *type of interdependence among organizational units* seems to have a significant role in creating integration needs. For Tushman and Nadler (1978), interdependence refers to interdependence of the functions, but in the global sourcing context it refers to the interdependence of the purchasing units distributed across locations. While in the categories in groups characterized by economies of scale and information we identified situations of reciprocal interdependence among purchasing units, the categories in the group characterized by economies of process was

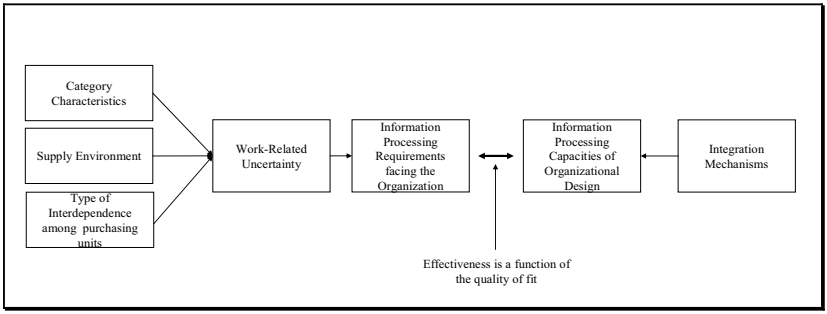
characterized by pooled interdependence. As elaborated, the more complex the type of interdependence the higher the concomitant task uncertainty (Thompson, [1967] 2003).

Based on the discussion above, it can be summarized that three contingencies influence the degree of uncertainty faced by global sourcing organizations and subsequently the information processing requirements. Effective integration of the globally dispersed units requires the establishment of different types of integration mechanisms to process the required information. The use of integration mechanisms is not random but depends on the uncertainty posed by the identified contingencies. Based on the discussion, the following research proposition can be formulated:

Research Proposition 1: In effective organizations, there is a fit between the information-processing needs induced by three contingencies of (1) characteristics of the purchased category, (2) supply environment of the purchased category, and (3) type of interdependence among the purchasing units and the information-processing capacity.

Figure 3-1 summarizes our findings on effective global sourcing organizational design in light of information processing theory and encapsulates our research proposition.

Figure 3-1.: An information processing perspective to global sourcing



Source: Own Illustration

5.3. Managerial implications

The presented findings have important practical implications for companies or purchasing managers dealing with global sourcing. First, the results suggest that as companies design hybrid global sourcing organizations they need to follow a category-based approach: different categories require different ways of integration even within the same firm. Second, the results point out that global sourcing is not only about pooling volumes to attain high cost savings. An effective implementation of global sourcing generates high value by enabling the exchange of information, knowledge and best-practices across sites. Third, our findings illustrate that for effective global sourcing, companies need to gain access and commitment of local sites. Along all three companies we could identify the criticality of applying multiple socialization mechanisms. As interdependence among organizational units increases, socialization mechanisms represent the "global glue" that enable companies to enfold the full strategic potential of a global sourcing strategy.

6. Conclusion

In this paper, we have addressed the organizational design aspects of global sourcing. The contribution of the paper is three-fold and tackles the identified research gaps pointed out in the introduction. First, we have complemented the mainly strategy-focused research on global sourcing by assessing global sourcing from organization design perspective. We have enriched the dominant centralization-decentralization debate by providing insights on how companies apply a number of different integration mechanisms to coordinate their geographically dispersed purchasing units. Second, by emphasizing the need for category-level of observation in purchasing organization design, we have improved the understanding for global integration in hybrid purchasing

organizations. To achieve effective implementation of global sourcing in hybrid purchasing organizations, purchasing managers need to consider that the internal structure of their organization is not homogenous but rather differentiated to fit the relevant context at the category level (Lawrence and Lorch, 1967 [1986); Nohria and Ghoshal, 1997). And finally, we have complemented the highly explorative and data-driven empirical work on global sourcing organizations by elaborating the information processing perspective in the global sourcing context.

There is obviously a need for more theoretical and empirical research on integration in the global sourcing context. Future research could address the viability of various configurations of integration mechanisms in order to complement a mainly data-driven research approach in the area. Scholars could also test the effect of the contingencies that we have presented in the paper on the use of integration mechanisms. The headquarter-perspective taken in this paper when collecting empirical data could be complemented with research giving more emphasis also on subsidiary perspective to point out potential differences in the cross-subsidiary integration mechanisms within a category. As a response to these calls for future research, contingency theoretical arguments and especially the information-processing variant of it have much to offer.

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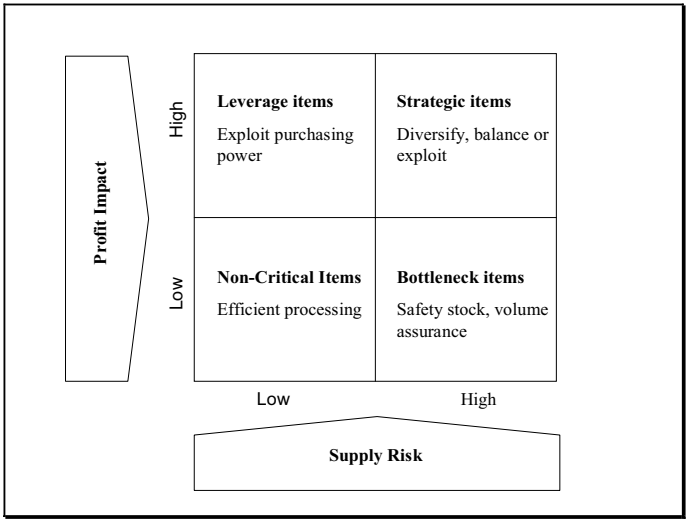
Appendix

Table 1-8.: Detailed overview of companies

Case	Business Description	Trigger for Global Sourcing	Initiator of Global Sourcing
Yellow	A large global logistic provider offering a wide range of mail, express and logistics services.	Company policy aiming for worldwide integration across business and functions	Purchasing Department/Corporate Board
Blue	One of the largest suppliers of industrial gases and related products, such as medical gases or environmental friendly hydrogen technology.	High cost pressure in oligopoly market	Purchasing Department/Corporate Board
Green	Business Unit of large pharamceutical company specialized on providing internal IT-based services	Within the course of a purchasing development program	Purchasing Department
Red	Global company producing and distributing pharmaceuticals for cancer treatment	General restructuring program for the whole organization	Corporate Board
Brown	Internal business units responsible for the global indirect spend volume of a large global automotive producer, marketing and distributing cars on a global scale	After M&A to consolidate spend volumes and achieve synergies	Purchasing Department/Corporate Board
White	One of the largest energy providers of the world with a focus on the supply of power and gas in Europe and U.S.	After M&A to consolidate spend volumes and achieve synergies	Purchasing Department/Corporate Board
Black	A global bank offering its products mainly in Europe, Asia and the U.S. with a strong focus on investment banking	General restructuring program for the whole organization	Corporate Board
Orange	Global chemical company offering pigments for automotive coatings and industrial paints as well as laboratory instruments with focus on Asia and U.S.	Within the course of a purchasing development program	Purchasing Department

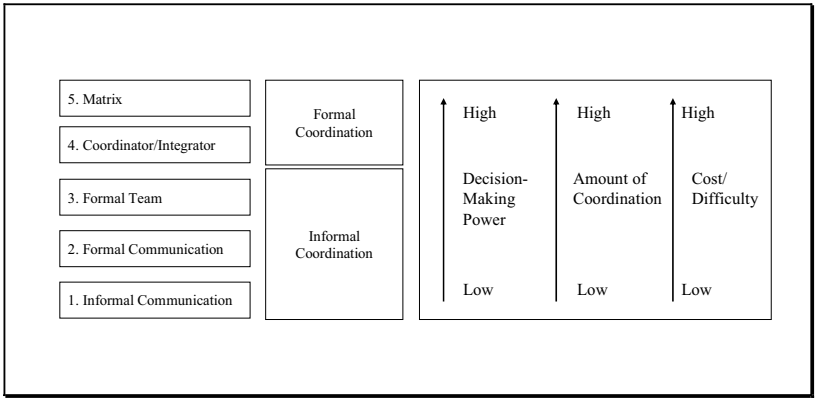
Source: Own Illustration

Figure 2-6.: The Kraljic matrix



Source: Modified from Kraljic (1983)

Figure 3-2.: Types of lateral mechanisms



Source: Adapted from Galbraith (2000)