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Archetypes of Sourcing Decision-Making: The Influence of Contextual Factors on Consensus, Argumentation and Cabal ‡

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Abstract

Purpose – This article develops a taxonomy of sourcing decision-making (SDM) archetypes and explores how different contextual factors influence these archetypes when global sourcing of complex components is considered a viable option.

Design/methodology/approach – A multiple case study approach with five in-depth cases is employed. In total, 19 interviews as well as publicly available and internal data from large buying firms headquartered in Austria and Germany were collected and analyzed.

Findings – The results reveal three different SDM archetypes which are described in detail (i.e., ‘consensus’, ‘argumentation’ and ‘cabal’). Furthermore, it is found that these archetypes are mainly influenced by three contextual factors: sourcing maturity, product complexity and leadership style. The final model comprises six propositions which illustrate how these contextual factors determine companies’ SDM archetypes.

Research limitations/implications – The study contributes to theory development at the intersection of organizational buying behavior and the (global) sourcing decision-making literature. Thereby, it answers the call for more rigorous investigation of the influence of contextual factors on SDM processes.

Practical implications – The findings enable practitioners to better understand and consequently manage SDM processes and their outcomes. By supporting decision-makers in identifying SDM archetypes, this study allows sourcing managers and teams to make better decisions by avoiding problems that occur in situations in which the preferred decision-making type would result in suboptimal decisions.

Originality/value – The study provides a first step towards a taxonomy of SDM archetypes and is among the first that explores their underlying contextual factors.

Keywords: Global sourcing decision-making; leadership style, product complexity, sourcing maturity, case studies.

Paper type Research paper

1. Introduction

Global sourcing has been one of the most ardently discussed trends in supply chain management in the last decades with a gradually increasing number of articles being published (Giunipero *et al.*, 2018). Many practitioners seem to be convinced that global sourcing is inevitable and/or lucrative for their business (Gelderman *et al.*, 2016; MacCarthy *et al.*, 2016) and a majority of researchers in the field agree with this stance (Quintens *et al.*, 2006; von Haartman and Bengtsson, 2015). However, at the same time, several other studies fail to show any significant benefits from global sourcing implementation (Chiang *et al.*, 2012; Vos *et al.*, 2016) or highlight even negative effects (Jiang *et al.*, 2019).

Although prior studies show that decision-making takes a pivotal role in the success or failure of global sourcing strategies (Gelderman *et al.*, 2016; Kaufmann and Wagner, 2017), the topic of (global) sourcing decision-making (SDM) has scarcely been scrutinized. So far, only few studies provide insight on how companies actually decide in respect of global sourcing (e.g., Cavusgil *et al.*, 1993; Smart and Dudas, 2007; Moses and Åhlström, 2008) but why they undertake a certain path is still opaque. Among the exceptions are the studies of Kaufmann *et al.* (2009; 2012; 2017), Akinci and Sadler-Smith (2012), Riedl *et al.* (2013), Stanczyk *et al.* (2015), Kaufmann and Wagner (2017) and recently Franke and Foerstl (2019) which provide a more nuanced and deeper understanding of strategic sourcing phenomena by applying an organizational buying behavior (OBB) perspective.

Given the above contributions, different SDM patterns are observable in practice and documented in academia and although these prior studies describe the essential character of many SDM processes they do not investigate contextual factors responsible for their emergence. However, research indicates that the decision-maker's task environment is crucial for understanding decision-making process variance (Bourgeois and Eisenhardt, 1988; Elbanna and Child, 2007). In fact, recent studies in the sourcing literature focus on the impact of contextual factors on SDM. Kaufmann *et al.* (2012) test the influence of decision environments (dynamic vs. stable) on the relationship between procedural rationality and decision effectiveness whereas Riedl *et al.* (2013) examine the impact of organizational, situational and personal antecedents on the use of procedural rationality. These studies, however, do not claim to illuminate SDM taxonomies. An exemption in this regard presents one of the latest studies in the field, in which Kaufmann *et al.* (2017) apply hierarchical regression analyses and provide a taxonomy of decision-making modes surrounding supplier selection, but not in the context of global sourcing.

Although supply chain management literature frequently utters the call for more research in behavioral operations management (Stanczyk *et al.*, 2017; Chae *et al.*, 2019; Franke and Foerstl, 2019) and for a more rigorous investigation of the influence of contextual factors on actual decision-making processes and their variance (Papadakis *et al.*, 1998), this gap is a particular shortcoming of the supply chain management field, as strategic decision-making literature has already offered normative models of strategic decision-making processes for a long time (Delbecq, 1967).

To capture these calls, this research investigates different SDM archetypes along with their respective contextual factors. In doing so, this study seeks to answer the following two research questions: (1) Which archetypes of sourcing decision-making exist and (2) how do contextual factors determine these types of sourcing decision-making when global sourcing of complex components is considered a viable option?

In order to answer these questions, this study builds on Stanczyk *et al.* (2015)'s findings on global sourcing decision-making processes together with a multiple case study approach. In total, five cases of SDM were investigated at firms from the mechanical engineering industry in Germany and Austria. In all of these SDM contexts, complex components were purchased and global sourcing was considered a viable option for the involved decision-makers. Whereas Stanczyk *et al.* (2015, p. 161) “investigate the influences of the two behavioral aspects of decision making, namely politics and intuition, on procedural rationality of (global sourcing decision-making) processes”, this study develops a taxonomy of SDM archetypes and explores how different contextual factors influence these archetypes when global sourcing of complex components is considered a viable option.

The remainder of this paper is structured as follows. The next section presents an overview of the relevant conceptual background, i.e., a review of the literature on SDM, OBB and strategic decision-making. Thereafter, the applied case study methodology is summarized. The sections that follow outline the findings of the within- and cross-case analysis, observed decision-making types (i.e., archetypes) as well as the main contextual factors that determine their occurrence. The penultimate section discusses the findings in light of existing research and presents the development of six propositions on the link between the described archetypes and underlying contextual factors. The study concludes by considering limitations and future research avenues.

2. Theoretical background

2.1 Decision-making in global sourcing

Scholarly knowledge about SDM is still in its development stage. Prior studies emphasize that SDM constitutes complex decision-making problems (Moses and Åhlström, 2008; Ferdows, 2018) as multiple different actors and numerous steps are typically involved in these contexts (Van Weele, 2010). Its complexity is additionally driven by a plethora of quantitative and qualitative factors and by an intrinsic difficulty of making tradeoffs among these factors. The wide range of aspects that need to be considered has caused many firms to employ cross-functional sourcing teams, which combine the spectrum of divergent expertise and skills necessary to make global sourcing decisions (Trautmann *et al.*, 2009a; Golini and Kalchschmidt, 2015).

So far, only a few researchers have approached global sourcing at the decision-making process level in order to develop SDM frameworks, however mainly by describing how these processes work (e.g., Smart and Dudas, 2007). Cavusgil *et al.* (1993), for example, developed a descriptive SDM process model which includes a wide set of common decision variables and the interrelations between these. In another study, Moses and Åhlström (2008) have portrayed the procedure of cross-functional sourcing processes and have identified factors that lead to a disruption of these processes, such as misaligned functional goals, functional interdependence and strategy complications.

Other researchers have shed more light on the behavioral aspects of SDM, concentrating primarily on the procedural rationality dimension. Kaufmann *et al.* (2009) investigated how companies support rational supply management decision-making in the context of uncertainty. They identified three debiasing strategies: expanding bounded rationality of the decision makers, reducing dynamism and reducing the complexity of the decision-making environment. Further, Kaufmann *et al.* (2012) link decision processes based on procedural rationality positively to higher decision quality (Kaufmann *et al.*, 2012), whereas Riedl *et al.* (2013) find them effective in reducing uncertainty in supplier selection decisions. Other studies investigate the influence of intuition in sourcing decision-making with a positive correlation of intuitive decisions (Akinçi and Sadler-Smith, 2012).

New advances in the sourcing literature have been made by Kaufmann *et al.* (2014), who integrated intuition into SDM by testing the effect of rational and intuitive decision-making approaches in cross-functional sourcing teams. They found that the cost performance (of the final decision) is enhanced in sourcing teams which applied highly rational decision-making (Kaufmann *et al.*, 2014). These findings suggest that too much focus on rational processes among the team members and the neglect of experience-based intuition can limit the effectiveness of the decision-making process (Kaufmann *et al.*, 2014).

Stanczyk *et al.* (2015) assert that procedural rationality cannot be comprehended without examining politics and intuition at the same time, as those notions appear simultaneously with varying intensities and in different types. The study differentiates between two types of functional politics, namely assertive and negotiating politics. Whereas assertive politics affect procedural rationality negatively, negotiating politics have a positive effect on it. Similar to the opposing repercussions of politics, they find that creative intuition has a negative impact on procedural rationality, whereas justified intuition influences procedural rationality positively (Stanczyk *et al.*, 2015).

Recently, Kaufmann *et al.* (2017) investigate decision-making in sourcing contexts and develop a taxonomy of decision modes in supplier selection by applying a cluster analysis. Although their study focuses more on individual purchasing managers than on cross-functional sourcing teams, the taxonomy bases on rational, experienced-based and emotional processing and shows the possibility of providing meaningful taxonomies which support managers and sourcing teams in analyzing SDM situations properly.

Overall, it can be concluded that although knowledge of the conduct, structure and behavioral dimensions of SDM have been developed recently, the patterns that companies follow and their contextual factors have only very selectively been revealed. Hence, this study strives to extend the literature by sorting the apparent patterns of SDM processes into SDM archetypes and by investigating their contextual factors, building particularly upon Stanczyk *et al.* (2015). Figure 1 shows the initial research framework derived from the research questions.

-----Insert Figure 1 approximately here-----

This study applies the same process dimensions, namely procedural rationality, functional politics and intuition and recognizes the previously evidenced relationships between them (Figure 2).

-----Insert Figure 2 approximately here-----

2.2 Decision-making and contextual factors

To a large extent, prior OBB literature focuses on a better understanding of industrial decision-making processes and their antecedents, as well as on the influence of varying contextual variables (Sheth, 1996). As a main antecedent, the specific task environment was found to significantly determine the behavior of the participants in the decision-making process (Wilson, 1978). The most researched contextual determinants of industrial buying behavior are

novelty, complexity and environmental uncertainty (McQuiston, 1989; Geok-Theng *et al.*, 1999). However, most of the findings provide mixed results with respect to their impact on the decision-making process.

While some researchers have found that higher environmental uncertainty induces firms to apply flexible ways of collecting non-routine and novel information from the environment (Spekman and Stern, 1979), others have suggested that a bureaucratic approach is crucial for the decision-making process in order to facilitate the gathering and processing of information (McCabe, 1987). Further, an increased complexity of the product requires that a larger number of technical experts are involved to develop and evaluate available alternatives (Kotteaku *et al.*, 1995), due to higher information requirements (Geok-Theng *et al.*, 1999). On the contrary, McQuiston (1989) did not find a significant relationship between complexity and the amount of communication in the decision process; moreover, Johnston and Bonoma (1981) did not confirm enhanced divisional involvement with an increase of complexity. With respect to purchase familiarity, OBB researchers agree that a rise in purchase novelty causes increased communication among decision-process participants (McQuiston, 1989) and higher levels of departmental representation in the decision-making process (Johnston and Bonoma, 1981).

Prior OBB research in respect to the influence of contextual factors on the decision-making process provides mixed results. In his literature review, Sheth (1996) contended that OBB research had changed dramatically since the 1970s and that many issues touched upon in the past had become obsolete. For many years, this research stream has not been fully exploited, particularly as it relates to global sourcing. In building on the OBB tradition, however, this study scrutinizes specific aspects of global sourcing, given that global sourcing is a complex phenomenon which reflects companies' contemporary buying behavior (as opposed to locally-oriented industrial buying behavior).

Some insights into the influence of contextual factors on the decision-making process can also be found in the strategic decision-making literature. However, these studies also produced mainly contradictory results. Fredrickson and Iaquinto (1989) argued that companies operating in stable environments have rational-comprehensive decision processes. Likewise, Stein (1981) contended that firms in highly dynamic environments follow less rational decision processes.

Until recently, few authors in the sourcing literature addressed the question of how environmental, organizational and decision-specific factors impact SDM. Kaufmann *et al.* (2012) empirically tested the impact of the task environment on the relationship between procedural rationality and decision effectiveness in the supplier selection process. Investigation

revealed that both in dynamic and stable environments procedural rationality influences decision quality in a positive way. Riedl *et al.* (2013) examined organizational, situational and personal antecedents of procedural rationality in the supplier selection decision-making process. Brief and contradictory remarks have been made with respect to the potential impact of global sourcing level on SDM. In their work, Trent and Monczka (2003) suggest that in international purchasing the decision-making is opportunistic and is driven by need rather than by strategy, whereas global sourcing means that SDM is planned and results from a global sourcing strategy. Conversely, Gelderman *et al.* (2016) found that, irrespective of the global sourcing level, critical incidents trigger global sourcing decisions.

The relatively small number of studies, of which most are surveys, which have investigated the relationship between SDM and contextual factors leaves much room for further exploration of this topic. It is therefore important to gain a deeper understanding of which contextual factors are important for the SDM process, how they affect it and to what extent they are responsible for the emergence of SDM archetypes.

3. Methodology

This study applies a multiple case study approach (Voss *et al.*, 2002). In particular, case studies were considered appropriate as the relatively new research field of SDM archetypes and their contextual factors were to be explored (Yin, 2009). The use of this research method not only allows scholars to study a phenomenon in its natural setting, but it also enables a better understanding of the complexity and nature of the investigated phenomenon (Gibbert *et al.*, 2008).

3.1 Case selection

Following a purposeful sampling approach, key decisions were made in order to set the boundaries for the population covered by this research (Yin, 2009). The case selection followed a structured process to ensure the greatest richness of information and at the same time to limit the number of cases necessary to achieve comprehensive insights (Perry, 1998).

In a first step, selection criteria were established in a way which ensured that the intended participants were supportive in pursuing the study's main goal; namely to identify SDM archetypes and their underlying contextual factors. Johnston and Bonoma (1981, p. 254) noted that "no two purchases in any given company are ever exactly alike, nor will any two companies follow exactly the same procedure in two similar purchase situations, but at the same time, there should be some general patterns of behavior (...) which will be the same

across even moderately dissimilar purchase situations”. Thus, in order to detect such decision-process patterns and their determinants, this study opted for similar purchase situations. It is assumed that the organizational design and the applied processes are mainly dependent on the sourcing category, i.e. a group of similar items that are required for specific business activities (Trautmann *et al.*, 2009a; Van Weele, 2010). Processes for complex components are more sophisticated, relative to the buying processes for standardized goods in a single instantaneous act. Thus, the mechanical engineering industry was selected, in order to make the purchase situations comparable and to ensure the complexity of the sourcing projects and of the components sourced by firms within the same industry.

Furthermore, to assure division of labor at the functional level and at the individual level within the functions (Papadakis *et al.*, 1998; Elbanna and Child, 2007), large organizations were the focus of SDM investigations. A revenue threshold of 1 billion EUR was selected for two reasons. First, large firms are more complex in terms of their organizational structures and their geographic sales and production facilities and second, their procurement operations are more dispersed than those of small firms. At the same time, the sample contained firms with global and regional supply chains to ensure different levels of global sourcing (Trent and Monczka, 2003).

Subsequently, the sample has been limited to private firms headquartered in Germany and Austria, as these countries are major industrialized economies and their cultural proximity permits controlling for the legal and cultural environment of the home country and in order to assure that all firms’ decision-making was primarily economically driven. Table 1 compares the five strategic business units (SBUs) across selection dimensions and industry subsectors.

-----Insert Table 1 approximately here-----

3.2 Data collection and analysis

Case interviews were conducted based on a semi-structured interview guideline with 9 different companies. Yet, out of nine participating companies, two were unable to provide complete and reliable information concerning the same sourcing project and were thus excluded from the data set. After 5 completed cases, further people were interviewed at two additional companies, which led to a final case base of 7 companies. However, these two cases failed to contribute significant new insights about SDM processes. Therefore, it was determined that theoretical saturation was achieved with five cases (Strauss and Corbin, 1998).

The interview protocol called for multiple informants from multiple functional areas

who participated in a particular global sourcing initiative. In total, 19 interviews were conducted, with three to four managers per organization involved in an SDM project representing the purchasing, logistics, R&D, quality, strategy or controlling function. Each interview lasted between 60 and 90 minutes, with two interviews lasting more than 120 minutes. The data were recorded, transcribed and forwarded to each interviewee to gain permission and prevent misinterpretations. In total, 350 pages of transcript were obtained.

Consistent with state-of-the art case-study research rigor, multiple sources of information were used for triangulation purposes and to cross-verify findings (Eisenhardt, 1989). Apart from interview data, annual reports, web pages, market reports and internal documents, such as purchasing guidelines, policies and procedures were analyzed. Further, respected and established coding techniques (Strauss and Corbin, 1998) and quality safekeeping mechanisms were employed, such as the development of a case study database, an independent coding of data and documentation and discussion of coding discrepancies.

Following the procedures of Miles and Huberman (1994) in a first step, the within-case analysis was conducted, which allowed to understand the decision context and the SDM on an individual-firm basis. By drawing up within-case descriptions a comprehensive summary of the SDM process of the cross-functional team and the surrounding context was generated. With respect to SDM process, following the work by Stanczyk *et al.* (2015) process dimensions such as procedural rationality, intuition and functional politics were utilized.

Further, open coding of the interviews was conducted and the codes were organized into categories, continued by axial coding. More specifically, the aim was to look for contextual factors, which have been identified by comparing emerging categories with concepts from OBB and the sourcing literature, outlined in the literature review section. Some of the variables required certain adjustments: Environmental uncertainty has been adjusted to technological uncertainty, as it is more relevant to the mechanical engineering industry context. Furthermore, although explicitly referring to their work, this study uses the term ‘sourcing maturity’ instead of Trent and Monczka’s (2003; 2005) construct ‘worldwide sourcing level’. Trent and Monczka (2003; 2005) subsume five levels of the continuum from domestic to international and global sourcing under their term (i.e., the 5-stage model). In this study, ‘domestic sourcing’, (i.e., level 1 in Trent and Monczka, 2003), reflects ‘low sourcing maturity’, whereas ‘international purchasing’ (i.e., levels 2 and 3 in Trent and Monczka, 2003) reflects ‘medium sourcing maturity’. The most advanced form, ‘global sourcing’ (i.e., levels 4 and 5 in Trent and Monczka, 2003) equals ‘high sourcing maturity’.

Table 2 presents the definition of each major construct.

-----Insert Table 2 approximately here-----

The coded data and the evidence have been discussed among the authors, leading to the clarification of doubts and, if necessary, redefinition of constructs.

A contextual factor that emerged from the data that was not considered in the literature review is the sourcing motive based on which companies decide in favor for or against global sourcing. This is similar to the discussion by Trautmann *et al.* (2009b) who subsume the main motives in situations in which global sourcing is a viable option under three categories: economies of scale, economies of process and economies of learning and Jia *et al.* (2017) who discuss global sourcing ‘goals’ as a main proxy for global sourcing strategies, subdivided into cost reductions, resource access and access to sales markets. Within our analysis, two different categories of the sourcing motive were found: a broad versus a narrow sourcing motive. Whereas a broad sourcing motive includes the interests of diverse departments in the longer perspective, is multidimensional and goes beyond the short-term technology access or cost goals, the narrow sourcing motive focusses mainly on the latter two competitive factors from a short-term perspective. As a broad sourcing motive resonates well with a higher overall sourcing maturity it has been included under this construct. Table 3 and Table 4 present first-order code variables of sourcing maturity and leadership style, respectively.

-----Insert Table 3 approximately here-----

-----Insert Table 4 approximately here-----

After completing the within-case analysis, the cross-case analysis was undertaken to identify common patterns across cases. Based on decision-process dimensions, differences in SDM across cases were observed. Whereas in some decision processes politics and intuition, which both positively influence procedural rationality, co-appeared, in others these behavioral dimensions each negatively influence procedural rationality (cp. Figure 2; Stanczyk *et al.*, 2015).

The cross-case analysis allowed to compare the cases for similarities and differences, and to identify emergent patterns in the contextual factors of SDM. Consistent with the previously developed theoretical pre-conceptualization and the categories that emerged from the data, the cases were compared according to the six key variables as per Table 5: Sourcing maturity, technological uncertainty, product complexity, purchase novelty, ownership type as well as leadership style. Product complexity and purchase novelty have been coded based on

joint discussions supported by company documentation and our notes as well as consultations with engineering professionals.

-----Insert Table 5 approximately here-----

This approach resulted in a recognition of patterns among the contextual factors responsible for SDM variations, which have been combined into three SDM archetypes, i.e. the ‘argumentation’, ‘consensus’ and ‘cabal’ decision-making archetype (Figure 3).

-----Insert Figure 3 approximately here-----

4. Results

In the following, a taxonomy based on three identified archetypes is presented and the key characteristics of each archetype are discussed in detail. Introducing different archetypes means that a firm’s SDM process should be understood and described as a combination of multiple dimensions.

4.1 Sourcing decision-making archetypes

4.1.1 Argumentation archetype

Alpha and Beta represent the argumentation SDM archetype. This archetype is characterized by medium to high *sourcing maturity* levels in which precise guidelines for the decision-making process for complex components exist and in which standardization of purchasing processes and an overall alignment of functional strategies within global sourcing projects are present (despite Beta’s modest operations infrastructure). Beta’s Procurement Manager admitted: “*I need clearly defined partial steps to conduct analysis on good fundamentals*”. Thus, the sourcing procedure in this archetype is cross-functionally designed to select suppliers purposefully. In both cases, the SDM outcome was global sourcing.

The primary *sourcing motive* in the argumentation archetype can be depicted by a broad view (i.e., including the interests of diverse departments from a long-term perspective). For instance, Alpha wants to cater the purchasing volume up to 100% where its production footprints are and at the same time fulfill a set of goals, such as access to technology, lower costs etc. This is supposed to be achieved by an annual global supplier scan. Moreover, the Vice President for Category Management at Alpha explained: “*We have discovered, that so called, low-cost country suppliers are, by all means, capable to support global for global.*” As a result, emerging countries sourcing accounts for 30% of total spend. At Alpha, there are three

broad types of categories – full direct materials, indirect materials and sector specific materials. Apart from the latter one, Alpha looks for synergies whenever it sources globally. Alpha is bundling approximately 60% of its total procurement volume to achieve economies of scale. The product considered in this study is an electronic circuit system for motion control system and thus part of the electronic products category that belongs to direct materials. Once a year, a commodity roadmap is developed for pooled materials, including different circuit boards used across a variety of Alpha's sites. The roadmap cascades from the Purchasing Unit Council to the material team of the business unit and further to the particular electronics site.

At Beta, the procurement process is organized in product groups. All sourcing needs are structured according to a groupwide product group management system that encompasses 40 main product groups. Beta's purchasing volume is broken down into production materials, merchandise and indirect materials. More than 90% of the purchasing volume is allocated in Europe. Indirect spend is centralized at headquarters while direct component purchases are decentralized. In the investigated case, the product in question belongs to direct spend and presents lithium-ion batteries for crafts.

With regard to the *sourcing motive*, Beta is keen to better understand the global supplier landscape in terms of price, technological capabilities, logistics parameters and macroeconomic data and to use this knowledge efficiently in order to pursue economies of information and learning. Against this context, the Purchasing Manager explained: *“The background was a new technology that we wanted to bring into our vehicles and we have had little knowledge of its global procurement market so far. We wanted to get acquainted with this new technology, i.e. the different industrialization progress and cost structures.”* The direct trigger for Beta's SDM was finding a supplier of lithium-ion battery cell. The SDM procedure developed for complex components required the identification of a large number of alternatives. According to Beta's Head of Production Logistics, *“at least a hundred of potential suppliers are usually globally identified in this first phase. Afterwards, they are filtered according to macro criteria and narrowed down to the number of fifty”*. This sourcing procedure prescribes also the conduct of the analysis and the development of the final solution. Alpha initiated an SDM process regarding potential new suppliers following a yearly supplier evaluation of electronic components and a capability verification of the global sourcing pool. Alpha's Head of Strategic Purchasing explained: *“Once a year we ask ourselves in detail, if we can use additional options because of the topic of low-cost countries and [...] opportunities that could emerge from a changed supplier landscape.”*

In both cases, the *product complexity* was medium and the *purchase novelty* was either

high (Beta) or medium to high (Alpha) which instigated certain conflicts of interest between the purchasing and other departments.

In Alpha's SDM process, the quality and the purchasing department's interests collided. As a result of yearly evaluation of the suppliers of the electronic components by a cross-functional sourcing committee, a new supplier has been nominated mainly due to better performance indicators in terms of quality compared to others. The Quality Manager explained: *"You have to imagine we have different circuit boards and there are often process steps that go well beyond 300 different process steps; and all this knowledge that people have acquired cannot be easily wiped off the plate."* Although a fairly good amount of electronic circuit board purchase experience existed in that situation, a potential new supplier provided new product specifications, which is why extensive quality tests had to be conducted. The quality department insisted on the new supplier, whereas the purchasing department preferred to stick to the previous one who provided better cost targets.

At Beta, an innovative type of battery cell for hauling vehicles had been considered from a new supplier. As the Purchasing Manager stated: *"The battery consists of the cell and the electronics. We can manufacture the electronics inhouse because we have our own electronics production, but we have to buy the cell."* He continued: *"Many areas were involved in the lithium-ion project. In addition to the product itself, the unit price and the logistics are crucial as these are hazardous material goods and there are certain restrictions on transport [...]. I need the support of the development department not only to select the supplier from the commercial side but also from the technical side, because there are different technologies, different in their chemical composition. Also, different voltage levels and areas of application for the individual products must be analyzed."* As a consequence, an extensive worldwide search for suppliers has been conducted by the purchasing department. A Korean concern was nominated by the technical department for further tests as it fulfilled all technical requirements. Nonetheless, not all commercial criteria were fulfilled by that particular supplier and therefore the Purchasing Manager had a bad gut feeling. Extensive trial periods were required at an external scientific institute as the product specifications were provided by the supplier. Given the high novelty in commercial and technical aspects, tensions between Beta's purchasing and development department could be noted when it came to the comparison in regard to cost vs. technical adequacy of the supplier.

In the argumentation archetype, such differences of interest are alleviated through fact-based discussions and negotiations (i.e., *negotiating politics*) and the development of a solution is a common effort. In both SDM processes, the purchasing department was the lead

department for coordinating and collecting functional inputs. The purchasing representatives assured a transparent and open discussion among the sourcing committee and argued for the development of a common solution. Alpha's Head of Strategic Purchasing explained: "*To solve this [i.e. conflict of interest] means to bring data, facts and objectivity into the discussion.*" In Beta's case, the Development Manager stated: "*We discussed and came to the conclusion that we need to find a common solution as our opinions are equally important.*" Thus, each party contributed equally and everyone felt involved in the decision-making process at Beta. Consequently, the argumentation archetype can be described as one in which the final decision is collectively reached by a democratic vote which reflects *participative leadership* (cp. Table 4).

Additionally, *justified intuition* in the form of personal experience codified in historic data is sometimes used as a means to support SDM processes in the argumentation archetype. This is particularly the case when multiple suppliers are comparable in terms of 'hard' criteria. Beta's Purchasing Manager admitted: "*One tries to support his gut feeling with facts. No one would accept pure gut feeling as an argument.*"

4.1.2 Consensus archetype

Delta represents the consensus SDM archetype. This archetype is characterized by high *sourcing maturity*, reflected in functional coordination across worldwide locations and mature cross-functional integration. Decision-making occurs according to standardized cross-functional sourcing-process guidelines for complex components. The sourcing procedure as well as the global sourcing infrastructure enable an extensive information search. Delta's Purchasing Manager explained: "*We have defined what the buyer has to do, so he has the obligation to seek suppliers from the global landscape.*" The standardized sourcing process requires purchasing to collect at least four offers, which are evaluated with regard to commercial and technical performance criteria. This resulted in a global sourcing decision outcome.

Similar to the argumentation archetype, the consensus archetype is also defined by a broad *sourcing motive*. In Delta's case this means to achieve an optimal global sourcing footprint, while at the same time to secure an optimum combination of price, logistic costs and technology level. This goal is supposed to be reached through long-term planning, the development of commodity strategies every 4-5 years and a related supplier review. Such a commodity roadmap development was also the trigger for the studied SDM context. The Head of Strategy explained: "*Our product portfolio is structured in a way that most of our products*

are low-volume and high-complexity so we cannot be compared to the automotive industry that can source hundreds of thousands of the same pieces.”

At Delta, direct spend is decentralized, the purchasing of indirect goods and services is centralized with a maintenance, repair and operations business across all sectors. In the Onsite Energy and Components business unit in the diesel engines division, the broad categories sourced are raw parts, finished parts as second source and medium-low tech. parts from low cost countries.

The component in question is a machined cylinder head for diesel engines, it belongs to direct spend, as a mid tech part. Those parts are sourced from low cost countries to achieve economies of scale. The Purchasing Manager elaborated *“at the end of the day the final motivation was the total cost [...] we always look for the landed cost, so total costs of ownership is our decision making factor. We not only look on the export price of the supplier, we look at the quality performance, how are the audit results how is the supplier dealing with flexibility etc.”*

In the analyzed decision-making situation, the *purchase novelty* was not as high (i.e., modestly modified rebuy, coded as low to medium; see Tables 5 & 6) as in the argumentation archetype as the new aspects related mainly to commercial aspects.

The engine’s machined cylinder head was previously produced in-house. Therefore, technology and specifications were already familiar and the overall *product complexity* was rather low. The greatest difficulty in this regard was evoked by commercial complexity, as Delta had decided to purchase the product from Brazil for the first time. Against this background, the Purchasing Manager explained: *“The process to receive finished machine components, including assemblies from Brazil, is a new step for us. [...] We are also able to make this part in-house, so we also did a make-or-buy study for our in-house production in that case. We quoted and made an investment plan that we compared to two suppliers, one in Mexico and one in Brazil and [...] because it was more economical we outsourced it and decided not to do it in-house. It then went to the supplier in Brazil.”* The medium purchase novelty required the involvement from the engineering department in terms of knowledge exchange with the new supplier to secure a stable production process. Yet, their participation in the decision-making was rather limited, presumably due to the low product complexity.

On the contrary, the role of the logistics department turned out to be more important. As Delta’s Head of Strategy explained: *“Our parts are very big [...]. Therefore, logistic costs have to be taken into consideration.”* Nonetheless, the consensus archetype is marked by *goal alignment* and the absence of conflict of interests and hence *functional politics* in the SDM

process. Along these lines, the Purchasing Manager stated: “*Strictly speaking, purchasing decides where we source, based on inputs from logistics*” (i.e., the purchasing department is the lead department).

During the coordination of the SDM process, the purchasing department prepares an approval sheet in which all data (functional inputs) are collected for mutual transparency. As affirmed by Delta’s Purchasing Manager: “*We only move forward in the process if everyone is content*”. Yet, although the solution is truly developed in common by all participating departments, the final decision is made by the purchasing representative in the consensus archetype (i.e., *consultative leadership*). As well as in the case of Alpha and Beta, *justified intuition* serves as a support tool in final SDM processes in the consensus archetype.

4.1.3 Cabal archetype

Gamma and Epsilon represent the cabal SDM archetype. It is characterized by low *sourcing maturity*, resulting in international purchasing. Epsilon pursues an international purchasing approach only when required and conducts its purchases from far-distanced countries through a purchasing agent. Although no standardized sourcing procedures exist, a general rule requires that large purchases for important commodities are based on 2-3 comparable supplier quotations and that the purchases are accepted by the company owner. Similar, Gamma also has no standardized processes and no specified purchasing procedures in place. Thus, SDM participants are trusted to follow their own logic. Gamma’s Business Unit Manager explained: “*We rely on common sense [...] and everyone basically knows what to do.*”

In the cabal SDM archetype, the primary *sourcing motive* is rather narrow compared to the argumentation and consensus types, i.e. to achieve rather short-term goals, with a main focus on low-cost sourcing and/or access to technology (cost vs. quality at Gamma, cost vs. technology at Epsilon).

At Gamma, standardized products are purchased via headquarters, whereas customized products are purchased locally by separate business units. Gamma’s sourced product was a sophisticated air handling unit for testing engines. The trigger for Gamma’s SDM process was an emerging client order and the company’s aim was to achieve economies of information and process. Yet, the search for information was limited as Gamma usually relies on local suppliers in similar cases.

At Epsilon, the purchasing structure is decentralized. The Chief Procurement Officer (CPO) described that “*the plants worldwide are more or less self-sufficient. (...) Epsilon is a very large and worldwide active company. Thus, all decisions are made rather locally.*” In

Epsilon's case, a generation of sourcing alternatives was constrained from the very beginning as the sourcing direction was imposed by the CPO (i.e., *assertive politics*), who intuitively followed the general trend of sourcing from China (i.e., *creative intuition*) to achieve economies of scale.

In the cabal archetype, the *purchase novelty* can be described as low to medium similar to Delta (i.e., the consensus type). Gamma had previously bought a similar product and the Western Europe supply base is well-known. In this light, Gamma's Purchasing Manager commented: "*We have plenty of known suppliers with which we already have some experience.*" However, although the air-handling unit was highly customized, the technical specifications were rather new. For Epsilon, the product was also a slightly modified rebuy. Attempts had already been made to purchase the cooling element from local vendors before and Epsilon's Purchasing Manager stated that "*German suppliers cracked their teeth*" on it. Thus, due to quality and technical problems as well as cost pressure a new supply base had to be found.

On the contrary, the *product complexity* is rather high in the cabal archetype. At Gamma, the component was characterized by a high manufacturing and functional complexity. The testing unit for combustion engines at Gamma had clear limits in terms of temperature, pressure and humidity and needed to be very well integrated as it was part of a larger test system. Thus, Gamma's Business Unit Manager explained: "*In fact, building and delivering building components like this one is really complex, it is always customer-specific.*"

At Epsilon, the production of the cooling element involved four manufacturing processes which is why it was considered and coded as highly complex. Epsilon's CPO elaborated: "*It [i.e. the production of the element] is not easy to technically achieve because they [i.e. suppliers] need a very intelligent tool maker who masters the process [...]. Even our own factory [...] in France, did not manage to do it right.*" In addition, the distance of the potential supplier in China increased the purchasing complexity.

Overall, the cabal archetype can be described as prone to conflict of interests. At Epsilon, the SDM process became a source of disagreement between the purchasing and logistics department because the storage design, consumption pattern and forecasts did not fit within the purchasing department's strategy, i.e., ordering large batches from China to achieve unit cost savings. At Gamma, due to the high degree of technological advancement, the engineering department had a strong position in the SDM process. Thus, Gamma's Business Unit Manager complained: "*They [i.e. the engineering department] are so much down at the technical level*", meaning that it was possible for the engineering department to manipulate the

SDM process by providing questionable recommendations to select their preferred suppliers which caused *assertive politics*. Similar, the emergence of *assertive politics* was observed at Epsilon. Due to a lack of experience in purchasing from China and in interaction with Chinese suppliers, the quality and the technical department were resistant towards a cooperation with Chinese partners.

Consequently, in both cases an individual who was *the lead* in the decision-making process independently developed a solution. At Epsilon, the CPO even withheld important information from the logistics department (i.e., *assertive politics*). At Gamma, the Business Unit Manager steered the decision process and managed the work of the purchasing and development departments. However, he also admitted to influence the SDM process significantly (i.e., *assertive politics*): “*I am challenging [the engineers] and, of course, purchasing is checking this at the end, if the figure is reasonable or if the way to come up with this figure was completely [...] crystal balling [...]. I sometimes need to change an engineer in the project. Otherwise it would end up in a war.*”

With regard to the *sourcing maturity* of the cabal archetype, a certain latitude in the preparation of the analyses and solutions is present, leading to *creative intuition* in the decision-making process, such as relying on gut feeling (as mentioned above for Epsilon).

Eventually, the final sourcing decision is made by the lead individual in the cabal archetype (i.e., *consultative leadership*). Gamma’s Business Unit Manager developed a solution independently, trying to manage the interests of the technical function, the procurement function and local commercial goals. Although he discussed and reevaluated the outcome bilaterally until all parties agreed, he made the final decision on his one. Stressing the role and the responsibility of the purchasing department, Epsilon’s CPO emphasized: “*Basically, purchasing is in the lead, because we also carry the responsibility to ensure that it all works and that’s why we make the final decision.*”

Table 6 provides an overview of the SDM archetypes characteristics.

-----Insert Table 6 approximately here-----

4.2 Propositions

Throughout the study, three different archetypes of SDM were identified: The argumentation, consensus and cabal archetype. Two of the analyzed cases (Alpha and Beta) can be classified as the argumentation type, meaning that the decision-making process is characterized by high procedural rationality and the rationality is enhanced by negotiating politics and justified

intuition. Delta represents the consensus type, where procedural rationality is strengthened by justified intuition. The cabal type (Gamma and Epsilon) has low procedural rationality and the rationality is negatively influenced by assertive politics and creative intuition.

With respect to the contextual factors that account for the emergence of archetypes, some of the factors delineated in the literature were validated, while leadership style was found as a new one throughout the data analysis. Furthermore, based on Trent and Monczka's (2003; 2005) conceptualization of 'worldwide sourcing level', the concept was reframed and amended as 'sourcing maturity', determined according to four dimensions: sourcing strategy, sourcing motive, functional coordination and cross-functional integration.

In the following, the interplay of the contextual factors and SDM is discussed and the findings are reflected against existent literature.

Overall, support was found for the claim that different SDM occur dependent on present contextual factors. As assumed, sourcing maturity matters for the conduct of the decision-making process on complex components. This factor is one of the main contextual factors responsible for the emergence of SDM archetypes. In organizations with more advanced sourcing practices, the SDM process was rationally driven, with political and intuitive behavior strengthening procedural rationality. This can be explained by the existence of standardized sourcing procedures. These procedures improve the scrutiny of the decision process since a more exhaustive search for suppliers is conducted and usually more sourcing options are generated.

Further, these guidelines reflect mature functional coordination and cross-functional integration. Thus, they first prescribe actions and second, secure goal alignment between different functions. Consequently, through clearly prescribed roles and responsibilities that frame the behavior and set the boundaries, negotiating politics and justified intuition are fostered to enhance the comprehensiveness of the SDM in these cases. However, negotiating politics do not always occur in complex-components decision-making situations.

In this context, the cases show that purchase novelty and product complexity are important contextual factors. Medium to higher levels of purchase novelty (driven by both commercial and technical factors), as in the cases of Alpha and Beta, result in certain goal misalignment (i.e., conflicting interests) which activates a negotiating politics behavior (i.e., discussion and negotiations between the departments broaden the scrutiny of the analysis).

Moreover, medium product complexity requires different expertise and transparent information exchange, which is secured by the sourcing procedure, thereby enhancing procedural rationality. The sourcing procedure also enables justified intuition to formally

contribute to final decision-making, thereby likewise strengthening procedural rationality.

On the contrary, Delta demonstrated low product complexity and medium purchase novelty – driven mainly by commercial aspects. This means that the required cross-functional expertise and information exchange was lower and the burden of novelty in this purchase situation was handled mainly by one function (purchasing). Due to decreased cross-functional interaction and a lack of conflicting interests, functional politics did not emerge. However, justified intuition enhanced procedural rationality and supported the final supplier choice.

This leads to the first two propositions:

PIa. Higher levels of sourcing maturity result in an argumentation archetype when product complexity and purchase novelty are rather high than low.

PIb. Higher levels of sourcing maturity result in a consensus archetype when product complexity and purchase novelty are rather low than high.

It was observed that in cases with lower levels of sourcing maturity result in international purchasing outcomes (i.e., Gamma and Epsilon). In these situations, SDM on complex components is less rational and procedural rationality is influenced by assertive politics and creative intuition. For example, the procedural rationality is lower, as the information search is less scrupulous and yields a limited number of alternatives due to the use of an intuitive analysis (creative intuition). Moreover, a low sourcing maturity means both immature functional coordination and low cross-functional integration, which result in a lack of standardized sourcing procedures and a reliance on rather general rules. Such general rules give discretion to the lead individuals in terms of process design, its conduct and outcome.

Against this background, the contextual factor product complexity mattered for the studied decision-making contexts. In both cases, product complexity was high. Whereas Gamma's complexity was driven by technical aspects, Epsilon's was driven by commercial arrangements. However, for both organizations this resulted in conflicting interests among involved departments. Additional escalation was caused by medium purchase novelty; another important contextual factor, which caused additional conflict between the departments with respect to new suppliers at Epsilon and Gamma. Since no clear roles and responsibilities were prescribed, there was plenty of room for assertive political behavior. As assertive politics replace the transparent data exchange and discussion and cause a deterioration in procedural rationality, it is proposed:

P2. Lower levels of sourcing maturity result in a cabal decision-making archetype when product complexity is high and purchase novelty rather low.

A contextual factor that emerged from the data that was not considered in the literature review is the leadership type within the purchasing organization (cp. Table 2 & 4). The leadership style describes the way in which the leader shares the problem with his subordinates and how whom and by the final decision is made.

Although higher levels of sourcing maturity with broader sourcing motives turned out to be a prerequisite of a procedurally rational SDM, this does not automatically lead to the argumentation archetype. Alpha and Beta show that high global sourcing maturity including a broad sourcing motive accompanied by participative leadership is characteristic of the argumentation archetype. The leader facilitates an information exchange and moderates the discussion in case of conflicting interests, thereby fostering negotiating politics. This leadership style also enables equal departmental contributions to developing a solution and making a final joint decision, which ensures that different functional interests are reflected in the decision-making outcome. Thus, procedural rationality is supported.

The case of Delta illustrates that a consultative leadership style, accompanied by high sourcing maturity and a broad sourcing motive, results in a different type. In this archetype, the leader ensures that functional inputs are contributed in the development of the solution in a transparent manner, according to the broad sourcing motive. Yet, after following the input of the team, the leader makes the decision independently. This leads to the following propositions:

P3. A participative leadership style results in an argumentation decision-making archetype.

P4. A consultative leadership style in conjunction with higher levels of sourcing maturity and a broad sourcing motive results in a consensus decision-making archetype.

A lower level of sourcing maturity, including a narrow global sourcing motive which focusses on two competitive factors in a rather shorter perspective is related to less-procedurally-rational decision-making (i.e., Gamma and Epsilon). This is the case, if at the same time another contextual factor, such as consultative leadership occurs. The leader collects the relevant analyses from the involved departments. However, he uses inputs selectively in the development of a solution and makes the final decision individually, giving priority to preferred departmental interests. In those cases, the project leader facilitates assertive politics,

for example, by deploying such tactics as withholding important information. Such tactics cause personal or departmental preferences to substitute for rigorous analytical methods and thus diminish procedural rationality. Therefore, it is proposed:

P5. A consultative leadership style in conjunction with lower levels of sourcing maturity and a narrow sourcing motive results in a cabal decision-making archetype.

5. Discussion

The study's approach to consider sourcing maturity as an important contextual factor leading to certain SDM archetypes turned out to prove right. Thus, the findings extend and modify the view of Trent and Monczka (2003, 2005) concerning the character of decision-making at various global sourcing levels. According to these authors, international purchasing facilitates opportunistic decision-making, while organizations at higher global sourcing levels carry out SDM in a planned manner. The findings show that rationally driven decision-making types marked by higher levels of sourcing maturity lead to global sourcing, as opposed to those where the decision-making is less rational, more opportunistic and intuitive (i.e., more political behaviors occur) which result rather in international or domestic purchasing. Furthermore, this study investigated SDM processes in order to see which contextual factors correlate with certain SDM archetypes from a task perspective, different from the overall purchasing maturity of the organization (Schiele, 2007). Yet, an inclusion of this construct could draw a more holistic picture in this regard and might offer novel research avenues.

Although eventually integrated into the second-order concept of sourcing maturity, this study highlights the role of the sourcing motive for the SDM process. Trent and Monczka (2003) discussed the sourcing motivation mainly with respect to global sourcing. Thus, integrated global sourcing has been found to be aimed at achieving competitive and comparative advantage and whereas an international purchasing perspective relates mainly to expected price benefits. Further literature subsumed the main motives in situations in which global sourcing is a viable option under different categories, such as economies of scale, economies of process and economies of learning (Trautmann *et al.*, 2009b) or cost reductions, access to resources and access to sales markets (Jia *et al.*, 2017). In this study, the sourcing motive has been explored in more depth and been linked to SDM archetypes, thereby also assuming an interaction with different leadership styles.

Moreover, two out of three contextual factors identified in the OBB literature were validated. Regarding purchase novelty, the findings partially agree with prior OBB studies,

which claim that higher purchase novelty instigates higher departmental participation and increases communication (McQuiston, 1989; Johnston and Bonoma, 1981), as well as with Riedl *et al.* (2013), who claim that for medium to high purchase novelty decision-making is more rational. The cases show that in two decision-making archetypes purchase novelty induces increased information exchange. Moreover, decision-making is more rationality-driven in the argumentation archetype, whereas it is less procedurally rational in the cabal archetype. This is due to the fact that higher levels of purchase novelty activate functional politics. Further, depending on the combination of purchase novelty with other contextual factors (e.g., sourcing maturity), this can affect procedural rationality either positively or negatively.

The second validated contextual factor, product complexity, turns out to be linked to all SDM archetypes and the findings confirm some of the prior contributions. In line with Hillier (1975) and Kotteaku *et al.* (1995), the cases show that with higher product complexity more communication and divisional involvement occurs and seems to be necessary, which can be seen by comparing the consensus archetype with argumentation and cabal. Due to low product complexity in the consensus archetype, a lower requirement for data exchange exists compared to the other types. As with purchase novelty, higher levels of product complexity activate functional politics. In fact, in the cabal archetype, both purchase novelty and product complexity apparently enhance assertive politics and the use of creative intuition, which causes deterioration in procedural rationality. On the contrary, in the argumentation archetype, both contextual factors instigate negotiating politics, which strengthen procedural rationality.

Furthermore, two of the analyzed contextual factors do not turn out to be fully valid or at all. On the one hand, technological uncertainty (in the literature environmental uncertainty) does not indicate clearly towards any SDM type (see Table 5). High technological uncertainty appears in the two cases representing the cabal archetype, but at the same time, extreme values are present in the argumentation archetype. Extant research provides mixed results when it comes to the impact of environmental uncertainty. Some researchers claim that in stable environments the decision-making is predominantly rational (e.g., Stein, 1981), other postulate that dynamic environments yield higher rationality levels in the decision-making processes (e.g., Bourgeois and Eisenhardt, 1988). This research confirms the contribution of Kaufmann *et al.* (2012) who found that the relationship between the decision-making process and environmental uncertainty is indifferent.

On the other hand, a similar situation applies to the type of company ownership. Whereas the cabal archetype cases (Gamma, Epsilon) are both family-owned, Beta, which is

also family-owned represents the argumentation archetype (the ownership type is also decoupled from the decision-making process in terms of leadership style, contrary to what previous literature has found (e.g., Fiegener *et al.*, 1994; Sorenson, 2000).

A new contribution in the field of global sourcing is the identification of the decision-maker's leadership style as an important contextual factor for SDM archetypes. The participative leadership type has been identified in the argumentation decision-making archetype, whereas consultative leadership has been identified in both the cabal and consensus archetype. Interestingly, these two different styles can both lead to decision-making for global sourcing, dependent on further product contingencies. Future research should investigate the leadership style in these contexts in a more nuanced way. It is not clear whether another SDM archetype exists in which less rational decision-making occurs and in which the participative leadership style is present. Moreover, different categorizations of leadership styles exist, which could be applied to these or new archetypes.

Overall, following Papadakis *et al.* (1998), it can be concluded that contextual factors in decision situation have the strongest influence on the decision-making process. The findings of this research also suggest that organizational characteristics (i.e., sourcing maturity, leadership style) and product characteristics (i.e. product complexity and novelty) can present further critical factors for SDM processes.

6. Conclusion

This study contributes to the growing global sourcing literature, particularly in the field of OBB and (global) sourcing decision-making (Kaufmann *et al.*, 2009; Riedl *et al.*, 2013; Kaufmann *et al.*, 2014; Franke and Foerstl, 2019). A more in-depth knowledge has been provided on the contextual factors that influence how companies conduct decision-making when global sourcing of complex components is considered a viable option.

The three developed SDM archetypes are the first in the operations literature and can serve as a taxonomic scheme with which to classify decision-making processes. Even though the scheme does not mutually exclusively and fully exhaustively describe variations in decision-making processes, it can be used as a starting point for the development of a more comprehensive system. The descriptions of the SDM archetypes, together with their dimensions, could serve as a diagnostic tool for classifying and identifying further different archetypes. Creating a holistic taxonomical system would require further investigations, however. Further research could refine the decision-making archetypes that have been developed, by examining the possibility of their co-occurrence and by reducing the overlaps

between them. For example, the argumentation and the consensus archetype overlay each other in terms of procedural rationality and in the justified intuition dimension. Moreover, more research is needed in finding out how a different interplay of contextual factors affects the decision-making process in terms of its dimensions. Lastly, most of the contextual factors that influence the archetypes are internal ones, apart from the product complexity and purchase novelty. These internal factors could also be applied to different units of analysis and perspectives. For instance, current research stresses the need to research the composition of cross-functional sourcing teams in more detail (Foerstl *et al.*, 2017; Franke and Foerstl, 2019). However, future studies are encouraged to emphasize further external factors and contexts which might lead to different structural patterns (Mahapatra *et al.*, 2019) which could explain the occurrence of different sourcing archetypes.

Although the empirical findings on the decision-making archetypes are at an early stage, managers could benefit from this preliminary work. Purchasing professionals might rationalize their decision-making processes by reducing negative behavioral effects. For example, managers could increase the level of rationality in the cabal decision-making archetype by replacing consultative leadership with participative leadership.

Finally, while identification of the trends and the relationships between the concepts which emerge from data is an advantage of the case study method, it is also a source of limitations. First, we chose a set of large firms from the same region (Germany and Austria) to ensure comparability of the decision-making processes and the division of labor. Therefore, the results may be biased; for example, in Eastern Europe, the processes may occur differently, not to mention in an Asian culture. This is in line with previous research has found that the purchasing practices can be influenced by differences in geographical location (Wiengarten and Ambrose, 2017). Thus, future research might thus investigate region-specific factors for the emergence of SDM archetypes, as well as the types of decision-making in smaller companies. Moreover, this research focused only on the mechanical engineering industry, to ensure the product complexity and the divergent expertise needed to make a decision. Thus, the results might not be representative for other industry sectors and the findings need to be validated on a large scale across different industries.

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Figures and tables

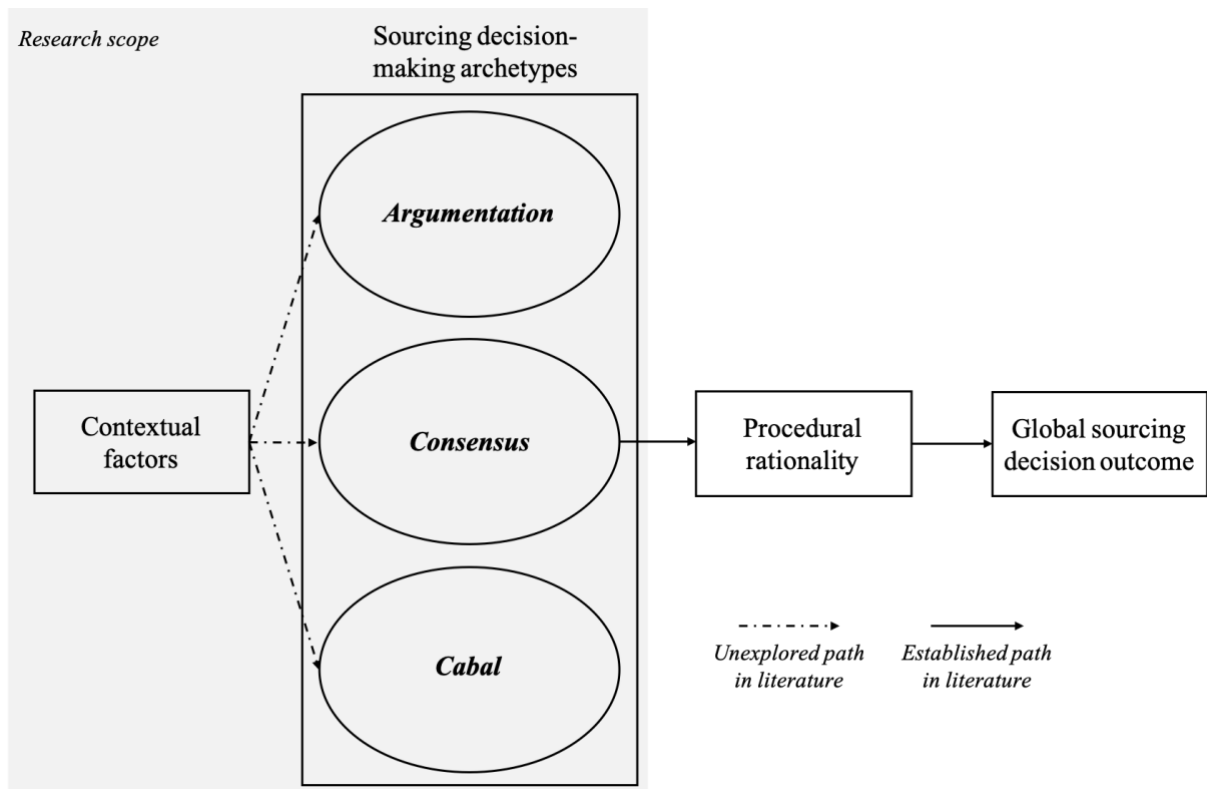


Figure 1. Initial research framework.

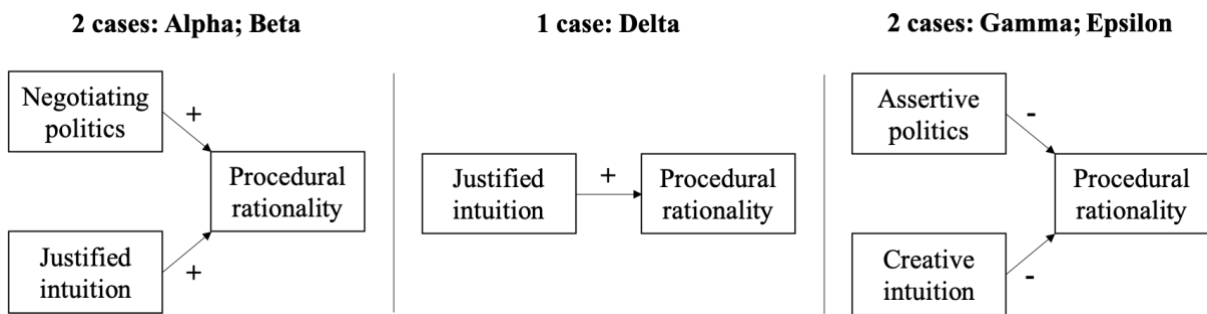


Figure 2. Observed sourcing decision-making process patterns (adapted from Stanczyk *et al.*, 2015).

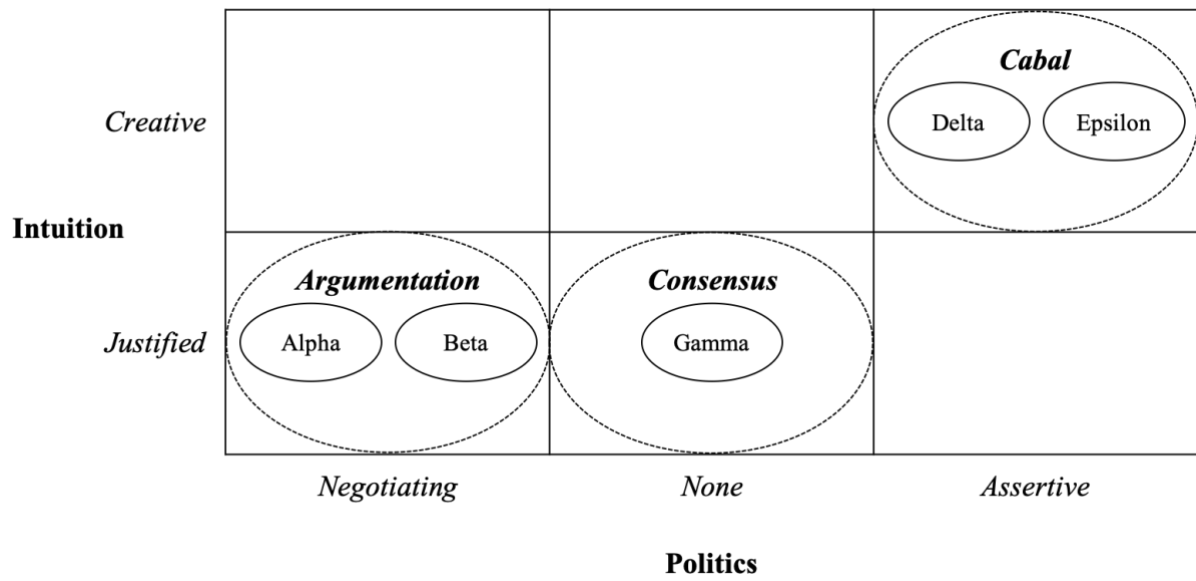


Figure 3. Proposed sourcing decision-making archetypes.

	Alpha	Beta	Gamma	Delta	Epsilon
<i>HQ</i>	Germany	Germany	Austria	Germany	Germany
<i>Ownership type</i>	Corporate	Family-owned	Family-owned	Corporate	Family-owned
<i>FTEs</i>	~45,000	~10,000	~5,000	~10,000	~15,000
<i>BU activity</i>	World leading supplier of automation systems and services for machine tools and production machines in various industries. Develops and produces a range of controls with integrated motion control, logic and technology functions, as well as converters, servo and linear motors.	Manufacturer of material handling equipment, warehousing and material flow engineering systems, leader in the European market.	Provider of consulting and research/testing services for automotive industry. Deals with the development of test systems, instrumentation and powertrain systems, produces also electric powertrains.	One of the world's leading suppliers of engines and propulsion systems for off-highway applications and of distributed power generation systems. Produces engines and propulsion systems for ships, for heavy land, rail and defense vehicles, and for the oil and gas industry.	A world leader in drive technology and in drive-based automation sector, producing gear motors, gear units, motors etc. as well as drive solutions for automotive, transport and logistics, beverages and filling liquids.
<i>Global presence of operations</i>	Connected global operations	Connected manufacturing, R&D in Germany	4 production sites located in Europe and the US	8 production sites across Europe and Asia	15 global plants, centralized R&D in US and Germany
<i>Sourced component</i>	Electronic circuit system for motion control system	Lithium-ion battery cell for cranes	Air handling unit for the test system unit for combustion engines	Finished machined cylinder for industrial engines	Cooling element for industrial gear motors
<i>Industry subsector</i>	Motion control systems	Lifting and hauling vehicles	Automotive engine testing systems	Engines and propulsion systems for ships	Industrial drive systems

Table 1. Sample company characteristics across cases.

Construct	Definition/operationalization
<i>Sourcing maturity</i>	An internationalization of sourcing process as firms develop worldwide experience, i.e. a progression from domestic sourcing level to the global coordination and integration of common items, processes, designs, technologies, and suppliers across worldwide locations (based on Monczka and Trent's (2003; 2005) terminology 'worldwide sourcing level' (i.e., the 5-stage model). Determined according to four dimensions: sourcing strategy, sourcing motive, functional coordination and cross-functional integration.
<i>Product complexity</i>	Product complexity can be determined according to five dimensions: functional, manufacturing, specification, commercial and political complexity (Homse, 1981; Campbell, 1985).
<i>Purchase novelty</i>	A lack of experience of the decision-process participants with similar purchase situations (McQuiston <i>et al.</i> ,1989). Determined according to four dimensions: commercial, specification, technical and supply (base) novelty.
<i>Technological uncertainty</i>	Difficulty in predicting the future of a given environment, stemming from changes in technology (Dess and Beard, 1984; Sharfman and Dean; 1991), operationalized as an average number of patents granted in the industry (field) within the last ten years (Sharfman and Dean, 1991).
<i>Procedural rationality</i>	Extent to which the decision process involves the collection of information relevant to the decision, and the reliance upon the analysis of this information in making a choice (Dean and Sharfman, 1993).
<i>Participative leadership</i>	The leader shares the problem with his subordinates as a group. Together they generate and evaluate alternatives and attempt to reach agreement (consensus) on a solution. The leader does not try to influence the group to adopt "his" solution, and is willing to accept and implement any solution which has the support of the entire group (Jago and Vroom, 1977).
<i>Consultative leadership</i>	The leader shares the problem with the relevant subordinates individually, getting their ideas and suggestions. Then he makes the decision, which may or may not reflect the subordinates' influence (Jago and Vroom, 1977).
<i>Functional politics</i>	Intentional acts of influence to enhance or protect the self-interest of individuals or groups, shaped by goal misalignment and power imbalance among functions involved (Allen <i>et al.</i> , 1979; Stanczyk <i>et al.</i> , 2015)
<i>Negotiating politics</i>	A type of politics driven by a combination of high goal misalignment and low power imbalance. This constellation prevents one function from dominating the SDM process, instead leading to negotiations between the involved representatives about the most desirable choices (Stanczyk <i>et al.</i> , 2015)
<i>Assertive politics</i>	A type of politics driven by a combination of high goal misalignment and high power imbalance, which leads to power abuse by decision-making participants (Stanczyk <i>et al.</i> , 2015).
<i>Justified intuition</i>	A type of intuition that identifies a usage of intuition that is more based on prior experience, which can be more easily documented, shared and discussed with others and, thus be formalized to a certain extent (Elbanna <i>et al.</i> , 2013; Stanczyk <i>et al.</i> , 2015).
<i>Creative intuition</i>	A type of intuition that denote a usage of intuition that is based strongly on the more intra-personal and difficult to communicate gut-feeling component of intuition (Elbanna <i>et al.</i> , 2013; Stanczyk <i>et al.</i> , 2015).

Table 2. Major constructs definition

	Alpha	Beta	Gamma	Delta	Epsilon
<i>Overall sourcing maturity</i>	High	Medium/high	Low	High	Low
<i>Sourcing strategy</i>	Essential part of corporate strategy	International purchasing as part of sourcing strategy	International purchasing only when needed	One of the pillars of corporate strategy	International purchasing only when needed
<i>Sourcing motive</i>	<p>“The decision for global sourcing is naturally [around] the topics of cost, labor cost advantage, risk management, etc. It can also be local content requirement or requirements of our clients or achieving currency balance. [...] It is about taking advantage of the worldwide supply chain.” <i>Head of Strategic Procurement</i></p> <p>➤ Broad motive</p>	<p>“Eroding all possible sources from the price, logistics, customs, quality, security of supply point of view. Exploiting all possibilities and finding there the most adequate supplier. In fact, not only restricting to one country or one region but [looking] really globally.” <i>Procurement Manager</i></p> <p>➤ Broad motive</p>	<p>“Global sourcing is a little bit a vision from my side that it doesn't matter where the goods are coming from as long as they fulfil our specs, the quality is fine and the price is, of course, in favor of our needs. It means not only necessarily the cheapest, but the best mixture of price and quality.” <i>BU Manager</i></p> <p>➤ Narrow motive (cost/quality focus)</p>	<p>“We aim to get an optimal footprint in sourcing. This topic depends on especially where our global production footprint is. Where are our customers? Where is our business? And then we try to find the best solution for suppliers. [...] The cost does not only relate to the price of the part but very much on the logistics. [...] Another point is how to optimally use our own factories, we have factories in North America, in Europe and in Asia. We also have to consider which factory is best suited to work on that part. And we also</p>	<p>“It was first, the cost and second, the know-how (i.e. technology) covered. It was a double hit.” <i>Head of Procurement</i></p> <p>➤ Narrow motive (cost/technology focus)</p>

have to consider the exchange rates. There are several factors, not only the price.” *Vice President Strategy*

➤ **Broad motive**

Functional coordination

Direct and indirect materials are integrated and coordinated across worldwide BUs; specialized components are sourced at the BU level.

Specialized components purchases are conducted upon general sourcing procedures and “One supplier qualification process” – a formal guideline over the supplier qualification process, embedded into the supplier evaluation criteria.

Functional coordination across worldwide locations is achieved through bundling approximately 60% of Alpha’s total procurement volume. LCC sourcing accounts for 30% of total spend.

Functional coordination of indirect materials across Bus, early functional coordination for strategic components (recently developed global purchasing procedures as a standardized process).

“Purchasing market analysis and supplier selection” – a detailed guideline for global purchasing of strategic components, prescribes granular processes for conducting supplier search on global scale and for supplier selection, involving all relevant departments and describes every step in the subsequent phases.

Functional coordination for standardized components occurs regionally; no coordination for complex products, sourcing procedures nonexistent.

A general rule serves – “to rely on common sense”, i.e. it is assumed that everyone contributes what he considers necessary.

Limited exchange on supplier information, processes or technologies among purchasing units (certain information exchanged regarding established European suppliers among regional BUs managers, more in terms of favor rather than formalized procedure).

Exchange of technologies, processes and supplier information across worldwide BUs.

Majority of RFQs go through the global purchasing offices, which results in globally dispersed sourcing volume outside Europe, particularly in China, India and the US.

Standardized sourcing process requires purchasing to collect at least four quotations, they are evaluated for commercial and technical performance criteria.

Purchasing procedures are unified across world locations and the global infrastructure is exploited for information exchange.

There is no established coordination to bundle demand for parts across individual plants.

Sourcing procedures are not specified; a general rule exists that purchases for commodities above 50T€ annual spend require 2-3 supplier quotations to be compared.

No attempts to perform extensive supplier search globally, purchases from China conducted through purchasing agents.

<i>Cross-functional integration</i>	Sourcing strategies are aligned across functions within BUs supported by dedicated tools for cross-functional integration and existence of cross-functional sourcing committees.	Alignment of functions to develop sourcing strategy in some categories within BUs; existence of cross-functional sourcing teams with predefined goals.	Weak cross-functional integration; cross-functional teams do not exist, cooperation between functions based on need.	Cross-functional integration is advanced especially for technically complex components; functional strategies are aligned in GS and functional involvement based on TCO approach.	No integration among functions in terms of processes or sourcing strategy, cross-functional cooperation based on need, no formal cross-functional teams exist.
	Integration across functions is performed through cross-functionally designed sourcing procedures and initiatives such a 'design to cost'.				

Table 3. First-order code variables of sourcing maturity.

	Alpha	Beta	Gamma	Delta	Epsilon
Leadership style	Participative leadership	Participative leadership	Consultative leadership	Consultative leadership	Consultative leadership
	<p>“The final decision is a joint decision and is then presented again. The lead manager is, of course, the purchasing representative, but the decision is comprehensible for all parties involved and is of course well documented.” <i>Vice President Strategic Procurement</i></p>	<p>“We make the final decision together with the development department. [...] Yes, for this last filter stage, both areas are equally entitled to the weighting of the result. The technique preferred in this case, especially when one is not looking at the upper segment, but when looking at the middle, the ones preferred for further tests than I did when purchasing. And then we had to vote. We said however, ok both voices are equal and therefore it is quite normal the mathematical ranking.” <i>Procurement Manager</i></p>	<p>“The final decision in a project is made by the project manager. So, it is with the guy who is responsible for this part of the business. So, in Europe it's me, but of course I rely on the local guys and I rely on the headquarter guys. And if there is a clear conflict [...] and some questions marks, then, it is my task to figure out what is the real cost [...], so, the costs plus quality and then to make a final decision. [...] We have hierarchies, yes, but our company is family-minded. That means, we try to get decisions and consensus so not to have two yes and one clear no, then the majority is yes.” <i>BU Manager</i></p>	<p>“Almost all of the decisions are much cross-functional [...]. We have cross-functional meetings, where we discuss about what is needed, what is possible, what are the options. In the end, it is the final decision of the purchasing department.” <i>Vice President Product Management, Strategy</i></p>	<p>“The decision-making process participants are those in the area of production, usually the head of department, employees from purchasing, logistics and quality assurance. These four departments are actually the partners who then discuss together, [whether it] makes sense or not. That happens together. In such a case, a proposal will be worked out. If it can be implemented, then it is the decision of Mr. K as the purchasing manager, if we do this.” <i>Quality Manager</i></p>

Table 4. First-order code variables of leadership style.

	Alpha	Beta	Gamma	Delta	Epsilon
<i>SDM archetype</i>	Argumen- tation	Argumen- tation	Cabal	Consensus	Cabal
<u>Decision process variables</u>					
<i>Procedural rationality</i>	High	High	Low	High	Low
<i>Functional politics</i>	Negotiating politics	Negotiating politics	Assertive politics	No politics	Assertive politics
<i>Intuition</i>	Justified intuition	Justified intuition	Creative intuition	Justified intuition	Creative intuition
<u>Contextual influences</u>					
<i>Sourcing maturity †</i>	High	Medium/high	Low	High	Low
<i>Technological uncertainty *</i>	111 (High)	14,35 (Low)	118,38 (High)	63,72 (Medium)	231,86 (High)
<i>Product complexity ±</i>	Medium	Medium	High	Low	High
<i>Purchase novelty ⊥</i>	Medium/high	High	Low/medium	Low/medium	Low/medium
<i>Ownership type</i>	Corporate	Family-owned	Family-owned	Corporate	Family-owned
<i>Leadership style</i>	Participative	Participative	Consultative	Consultative	Consultative

Table 5. Cross-case comparison.

Notes: † Abstract code (aggregate of sourcing strategy, sourcing motive, functional coordination and cross-functional integration). *Average number of patents by technology for years 2003-2013 (OECD.stat), brackets show abstract code. ± Abstract code (aggregate of functional complexity, manufacturing complexity, specification complexity, commercial complexity, political complexity). ⊥ Abstract code (aggregate of commercial novelty, specification novelty, technical novelty, supply (base) novelty).

Dimension	SDM archetype		
	<i>Argumentation</i>	<i>Consensus</i>	<i>Cabal</i>
<i>Decision process</i>			
<i>Goal misalignment</i>	Low	Low	High
<i>Power imbalance</i>	Low	Low	High
<i>Functional politics</i>	Negotiating politics	No politics	Assertive politics
<i>Intuition</i>	Justified intuition	Justified intuition	Creative intuition
<i>Contextual influence</i>			
<i>Sourcing maturity</i>	Medium/high	High	Low
<i>Product complexity</i>	Medium	Low	High
<i>Purchase novelty</i>	Medium/high	Low/medium	Low/medium
<i>Leadership style</i>	Participative	Consultative	Consultative

Table 6. Overview of sourcing decision-making archetypes characteristics (partially based on Stanczyk *et al.*, 2015).