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Master thesis

Master of Science Business Administration

Purchasing & Supply Management

From Portfolio to Lever: Evolution of Category Management

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Number of pages: 65

Number of words: 25.181

Enschede, June 4th, 2023

Acknowledgements

This MSc thesis is the result of a journey where I learned an incredible amount, both in knowledge as myself, and had the pleasure to work with very inspiring people. Via this way I want to express my appreciation to the people that supported me during this intensive, but instructive process.

First, I am very thankful for the supervision of Holger Schiele and Vincent Delke and their constructive feedback to bring this MSc thesis to a higher level. Challenging me during this journey resulted in a fulfilled feeling and I look back on a great year where I have grown in both knowledge as skills, and with the IPSERA-conference in Barcelona as a highlight. Furthermore, I want to thank Carolina Belotti for taking the time to thoroughly review and grade my MSc thesis.

Second, I want to thank Fabio Fontes for his discussions, critical view, and clear guidance along the way. You inspired me with your practical knowledge and prestigious purchasing skills, and I couldn't wish for anyone else to work with.

Third, I extend my sincere appreciation to all the participants who graciously volunteered their time to help me generate the data for this research. Their view on the purchase process and managing people have profoundly influenced me and will continue to resonate throughout my professional career.

Last, I wish to acknowledge the invaluable support of my family and friends, whose presence and solace has been instrumental during challenging times. Their unwavering encouragement has played an indispensable role in enabling me to bring this MSc thesis to fruition.

Abstract

The strategic significance of purchase is widely acknowledged in the literature. Many scholars advocate for category management as a fundamental method for firms to capitalise on diversified purchase strategies. Nonetheless, there is a discernible disparity between the theoretical underpinnings of category management and its practical implementation in professional settings.

Therefore, this research aims to explore the category management execution by purchase professionals. Literature review reveals several steps to conduct a category strategy, multiple portfolio models, and a few sourcing lever methodologies for category management. This research draws on expert interviews to understand the practical implementation of category management by seventeen different purchase professionals from companies in several fields.

The findings indicate that almost all professionals do an internal and external analysis and subsequently develop their category strategy. The importance of the stakeholders' input during the process is widely emphasised. Despite all the criticism and other introduced purchase portfolio models, the Kraljic Matrix is still widely present and used in purchasing as an effective communicating tool. Furthermore, advanced firms start to systematically interpret sourcing levers theory in their category strategy development process.

Additionally, using the insights from the professionals, a new approach to reach a category strategy is developed. This new approach draws on the Kraljic matrix as an effective communicating tool with stakeholders, to subsequently select sourcing levers and focus on the required internal or external analysis to deploy the strategy.

Keywords: Category management, portfolio models, sourcing levers, purchase professionals

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Index of abbreviations

| | |
|------|----------------------------------|
| e.g. | For example |
| i.e. | In other words |
| SRM | Supplier Relationship Management |
| ERP | Enterprise Resource Planning |
| AI | Artificial Intelligence |
| KPI | Key Performance Indicators |
| OEM | Original Equipment Manufacturer |

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1. Introduction: category management benefits organisations, yet there is no clear view of use by purchase professional

Purchasing is long considered as an operational buying function; however, it is now recognised as a function having strategic importance and a potential generator of competitive advantage.¹ Due to globalisation and increased competitiveness, purchasing evolved to a strategic sourcing function, which aligns with the overall business strategy.² However, not all products and buyer-supplier relationships are to be managed in the same way, and literature in the field of purchasing shows that purchasing strategies change at different hierarchical levels and product families.³

The purchase department can be divided in different hierarchical levels, see Figure 1. Scholars mainly focused on purchasing strategies aligning with business strategy or the impact on the business results (e.g. Baier et al., 2008; Cousins, 2005; González-Benito, 2007; Knoppen et al., 2010), which all are strategies at level 1 or 2. However, in these studies, purchasing strategy is seen as an overall and single strategy for the purchasing function.⁴

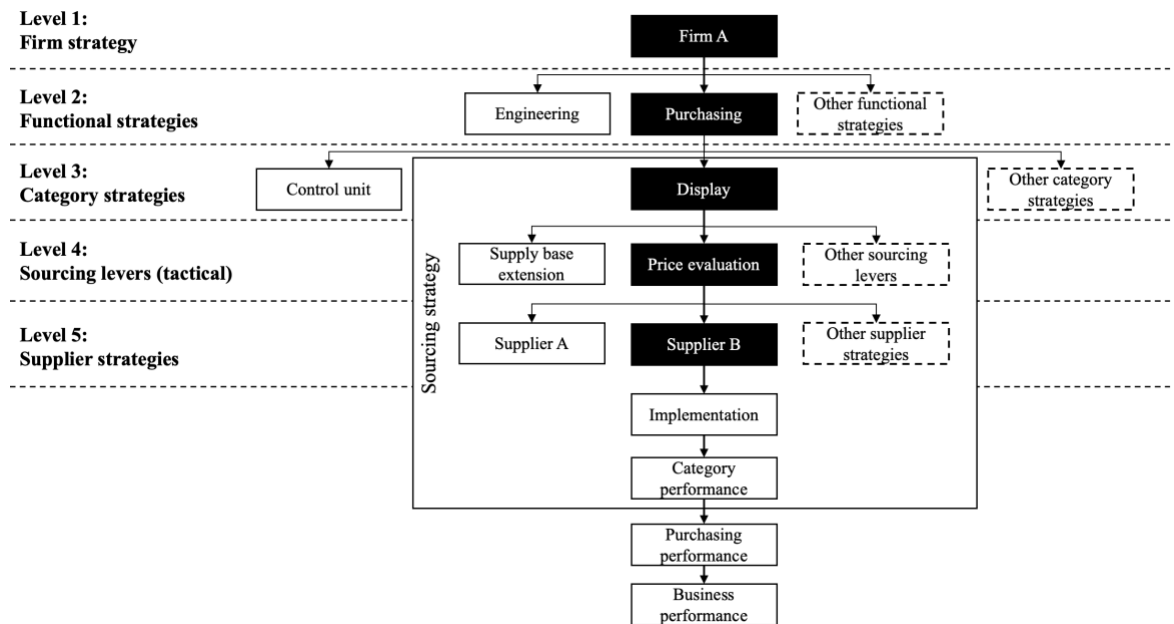


Figure 1 - Five levels of strategy development in purchasing (Hesping & Schiele, 2015, p. 139)

¹ See Scur et al. (2022), p. 40; Burlakova and Ruzhanskaya (2021), p. 206

² See González-Benito (2007), p. 901; Karttunen (2018), p. 3906

³ See Gelderman and Van Weele (2003), p. 207; Karjalainen and Salmi (2013), p. 114; Luzzini et al. (2012), p. 1015

⁴ See Luzzini et al. (2012), p. 1015

Hesping and Schiele (2015) at their turn emphasise that formulating a single purchasing strategy is a difficult task and advocate a strategy on different levels.⁵ Therefore, level 3 and 4 got increased attention, since it allows purchasing to have multiple strategies.⁶ Purchase categories enable to have more individual strategies and aim more accurately on the goods bought. Figure 2 presents the category sourcing cycle, which contains multiple steps to deduct a strategy at category level.

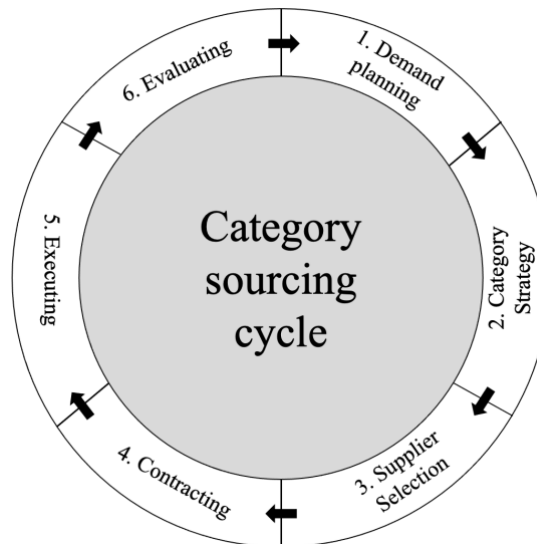


Figure 2 - Six steps of category management (Schiele, 2019, p. 55)

Literature mainly focuses on how to establish elements for category strategies (e.g. Ateş, 2014; Holweg et al., 2009; Luzzini et al., 2012; Sheridan et al., 2006); however, it lacks understanding of how purchase professionals put a category strategy in practice. Burlakova and Ruzhanskaya (2021) state that there is a gap between the theoretical basis and its practical use, signifying an insufficient understanding of how practitioners develop and control category strategies.⁷

According to Gelderman and Van Weele (2002) strategic sourcing frameworks have predominantly relied on purchasing portfolio models.⁸ However, research of Formentini et al. (2019) emphasise that there is need for additional research to bridge the gap between research and practical implementation of purchasing portfolio models.⁹ Hesping and Schiele (2016a) complement this gap by indicating that the literature on portfolio strategies and practice actions remains in the transition from the strategic to the tactical level.¹⁰

⁵ See Hesping and Schiele (2015), p. 138

⁶ See Hesping and Schiele (2015), p. 144

⁷ See Burlakova and Ruzhanskaya (2021), p. 206

⁸ See Gelderman and Van Weele (2002), p. 31

⁹ See Formentini et al. (2019), p. 182-183

¹⁰ See Hesping and Schiele (2016a), p. 113

Therefore, it is essential to gain insights from current purchasing practices at level 3 and 4 of Figure 1, to subsequently identify common practices, encountered difficulties and discover best practices from professionals. Furthermore, identifying how experienced purchase professionals establish and elaborate on category strategies, as well as understanding the systematic use of tools, frameworks, processes, and portfolio models to associate portfolio strategies with tactical levers, is crucial. Hence, this research addresses three research questions:

- 1. What are the portfolio models described in the literature on purchase category management, and what are their intended objectives?*
- 2. How do purchase professionals organise their category strategy process?*
- 3. How do purchase professionals utilise portfolio models to derive concrete sourcing plans?*

To answer these questions, seventeen purchase professionals from companies operating in different industries are interviewed in a semi-structured way. The interviews were recorded after which the recordings were transcribed and analysed by means of content analysis.

Taking a theoretical perspective, this research presents empirically results of how purchase professionals establish and manage a category strategy. Furthermore, this research provides a comprehensive overview of possible frames and tools that purchase professionals can utilise in the category management cycle. Moreover, this research provides insights into the utilisation of portfolio models and presents a novel category management approach tailored to the prevailing requisites of purchase professionals. From a practical point of view, the novel category management approach implicates the improvement of future category strategy practices. Furthermore, this research delivers insights into the current practices of category management by identifying best practices and difficulties of professionals.

The paper is structured as follows. Chapter 2 starts with a comprehensive literature review. Chapter 3 discusses multiple qualitative research methods, why particularly is chosen for 'expert interview' as the appropriate method to draw this research on, and sheds light on the research sample. Chapter 4 presents all the findings from the interviews with the purchase professionals about how they organise their category strategies and how to overcome the gap in the recent literature. Chapter 5 discusses the findings in relation to existing literature and captures the managerial implications and theoretical contributions. Chapter 6 concludes this research by providing limitations and areas for future research.

2. Literature review: category management in purchasing

2.1 Category management

2.1.1 Category management: segmentation and management of spend according to supply markets

Category management was introduced as a fundamental method for firms to capitalise on diversified purchase strategies. The exact origins of category management remain uncertain; Burlakova and Ruzhanskaya (2021) states that category management originated in the 1990s at Procter & Gamble,¹¹ however, in prior to that Kraljic (1983) presented a huge influential methodology in his seminal paper to group products based on their strategic importance and supply market complexity.¹² Subsequently followed a period of silence regarding category management, but approximately two decades ago, it garnered heightened attention from academics and practitioners.¹³ Over the years, numerous companies have implemented category management practices as a means to formulate distinct strategies and effectively accomplish overarching purchasing objectives.

Since category management is the central concept of this research, a well-considered, weighted and compared definition is essential to continue. Van Weele (2018) defines a spend category as follows: “*a group of coherent products or services, bought from the supply market that are used in . . . [the] company to satisfy internal or external customer demands.*”¹⁴ Van Weele (2018) adds to this definition that a category sourcing plan is “*a formal plan for a certain category that explains how the company is going to deal with certain supply markets and its key supplier relationships to secure the supply of these products and services in the future.*”¹⁵ A category encompasses a group of similar items that are required for specific business activities of the firm.¹⁶ Hesping and Schiele (2015) define category groups as: “*general categories of purchased items, including materials or services of a similar type provided by the same group of suppliers, which constitute a single supply market.*”¹⁷ Monczka et al. (2015) define category management as: “*the process of developing insights into stakeholder requirements, comparing these to external industry intelligence, supply base capabilities and operational risks, and developing a strategy to align internal*

¹¹ See Burlakova and Ruzhanskaya (2021), p. 207

¹² See Kraljic (1983), p. 111

¹³ See Hesping and Schiele (2015), p. 144

¹⁴ Van Weele (2018), p. 212

¹⁵ Van Weele (2018), p. 216

¹⁶ See Trautmann, Turkulainen, et al. (2009), p. 58

¹⁷ Hesping and Schiele (2015), p. 144

requirements with external supply market conditions".¹⁸ A last definition of category management is as follows:

*The practice of segmenting the main areas of organisational spend on bought-in goods and services into discrete groups of products and services according to the function of those goods or services, and most importantly, to mirror how individual marketplaces are organised.*¹⁹

The definitions show some communalities, and some contradictions. Categories are in all definitions described in approximately the same way: a group of coherent products or services. However, one aspect in this category is particularly important: products or services are not grouped based on technical characteristics, countries, legal categories or anything similar; rather, categorisation is based external market conditions.²⁰ In other words, the products are provided by the same group of suppliers, an overlapping number of suppliers, i.e., a single supply market. Examples of categories may be 'metal sheets', 'leather', 'cables', 'lighting', 'battery systems' and so on.²¹

Category management is through the years, both in practice as in literature, quoted in different ways. Categories are called as follows: 'commodity', 'material groups', 'product groups', and 'product families'.²² For the sake of clarity and to prevent confusion, during this research, a group of coherent products or services is called a 'category'. This term is used as it avoids narrowness, which is implied by the definition of the words 'material groups'.²³

During this research the term 'category strategy development' is used to indicate the process of developing a category strategy, i.e., from analysis to choosing the appropriate strategy, or: step 1 and 2 of Figure 2. The term 'category management' is used for the total process and cycle of a category strategy, as seen in Figure 2.

¹⁸ Monczka et al. (2015), p. 46

¹⁹ O'brien (2019), p. 2

²⁰ See Hesping and Schiele (2015), p. 144; Schiele (2019), p. 55

²¹ See Hesping and Schiele (2016b), p. 475

²² See Burlakova and Ruzhanskaya (2021), p. 207; Hesping and Schiele (2015), p. 144; Horn et al. (2013), p. 28

²³ See Schiele (2019), p. 55

2.1.2 The effectiveness of category management as organisational frame: professionalisation, knowledge specialisation and pooling effects

A multitude of authors support a category approach in purchasing, with main arguments that it enables firms to form differentiated strategies, taking specific contextual factors of supply markets into account, and helps to achieve overarching functional purchasing goals.²⁴ Not all products and buyer-supplier relationships are to be managed in the same way, and literature in the field of purchasing shows that purchasing strategies change according to different categories.²⁵ Furthermore, Apte et al. (2019) state that category management enables purchasing to look at similarity in organisations to identify best practices and opportunities for demand savings, by adding an additional layer of analysis, see Figure 1.²⁶ Given these reasons, category management got growing importance in literature as well in practice.²⁷

The logic underlying the formation of sourcing categories determines the purchasing performance potential in terms of cost savings, innovation, and flexibility.²⁸ Notably, these results [price reduction, innovation, flexibility] are at the same time strategies, set as goals in prior to practically implement a category strategy. This means that competitive priorities used in operations can also be used to identify purchasing strategies.²⁹ Additionally, the latter instance illustrates the efficacy of category management and its potential to result in, for instance, cost minimisation, which can be simultaneously employed as a category strategy. Apte et al. (2019) confirm this by stating that applying category management techniques often leads to price reduction, process efficiency and/or demand management, without deteriorating to the user's conditions or needs.³⁰ The effectiveness of category management can also be seen from the other way around; Schiele (2019) states that supplies that are not administered in categories result in challenges of professional purchasing activities, e.g., pooling of demand becomes difficult.³¹

In a category strategy is no longer spoken about 'one supplier – one part' sourcing relationships, but about to 'several suppliers – several similar parts'.³² This is where process efficiency and knowhow in the organisation emerge. Suppliers that belong to the same

²⁴ See Hespings and Schiele (2015), p. 145

²⁵ See Gelderman and Van Weele (2003), p. 207; Karjalainen and Salmi (2013), p. 114; Luzzini et al. (2012), p. 1015

²⁶ See Apte et al. (2019), p. 170

²⁷ See Hespings and Schiele (2015), p. 144

²⁸ See Hespings and Schiele (2015), p. 144-145

²⁹ See Ateş (2014), p. 58

³⁰ See Apte et al. (2019), p. 170

³¹ See Schiele (2019), p. 55

³² See Hespings and Schiele (2015), p. 144

category allow buyers to deal with identically, which enables purchasers to generalise processes. Schiele (2019) confirms this by giving three reasons why category management has been introduced, as a reaction to weaknesses faced in traditional purchasing departments, which were often responsible for all type of materials required at a certain location or from a certain group of users.³³

First, in line with the latter, purchasers cannot develop expertise in particular industry because they are responsible for many different materials. For example, if one purchaser only deals with suppliers in a risky environment, in terms of reliable delivery, then this buyer will gain experience and knowledge about how to deal with certain situations, benefiting the purchase results. Hesping and Schiele (2015) give the following example about knowledge creation when implementing category management: “*a traditional sourcing category ‘cables’ might include all types of wires and cables, the ‘new’ sourcing category ‘data transfer’ might look beyond products and services to unrecognised and untapped competencies and knowledge already in the supply base*”.³⁴ This example indicates that category strategies unlock extra benefits to strategic sourcing.

Second, in category management, suppliers are connected to one or only a few suppliers from a purchasing department where they have contact with. This improves the knowledge of this purchaser or small team of purchasers about the supplier, about among others the conditions, and it creates close contact and flexibility, resulting in a steady way of communication and stable relationship towards the supplier.

Third, it creates purchasing power when negotiation about once a large volume of purchased goods instead of buying several small quantities by different plants.

Ending, categories, serving as an additional layer in the purchasing department, give guidance to the purchasing function on how to conduct a purchasing strategy. The range of purchased products and services in some organisations is tremendous, varying from raw materials to office supplies and beyond. The focus in one category can be cost reduction, where other categories need innovation from their suppliers as a strategic goal.³⁵ Other key objectives of category management are: improving category performance which are important to stakeholders; reduce the total cost of ownership for a given category; and reduce the risk in managing a given category.³⁶ Ending, with 10-20 percent savings per category of spend on average, savings achieved from category management efforts can be substantial.³⁷

³³ See Schiele (2019), p. 55

³⁴ Hesping and Schiele (2015), p. 145

³⁵ See Ateş (2014), p. 14

³⁶ See Monczka et al. (2015), p. 200

³⁷ See Apte et al. (2019), p. 170

2.1.3 Multiple steps in a process to conduct category management

2.1.3.1 Defining the product range and stakeholders as a solid base for forming categories

To bring category management in practice, a process of several different business activities are conducted: “*segmentation, spend analysis, activity analysis, cost calculations and estimations, market analysis, negotiations, supplier evaluation and positioning, supplier network structuring, quality assurance, value engineering and others.*”³⁸ Chapter 1 already introduced the category sourcing cycle, containing six steps to conduct a category strategy, see Figure 2. Monczka et al. (2015) and Van Weele (2018) gave multiple steps to manage a category strategy in their books as well.³⁹ By combining the steps from these different sources, the activities of category management are captured this and the following three chapters.

The first step towards a category strategy is understanding the organisations product range and defining the stakeholders. Organisations can perceive information about their product range and entire set of purchases in multiple ways. One way is via a spend analysis, which gives a clear insight on where the business spend its money.⁴⁰ Another way is via a category tree, which identifies the company’s direct and indirect spend categories.⁴¹ Despite the distinction between direct and indirect materials in purchasing is seldomly researched, it is a commonplace in practice.⁴² Lastly, Schiele (2019) proposes to use a spend cube, which demands the information about [a] who in the buying firm bought [b] what product from [c] which supplier.⁴³ To fill this ‘spend cube’, IT infrastructure relying on a fully installed ERP-system with appropriate past oriented data is required, to build a forecast about the upcoming year. When buying new products from new suppliers, an analysis is required in prior to possibly fill the cube, see chapter 2.1.3.2. The spend analysis, category tree or spend tree are some of the ways via how organisations get to know their purchases.

Depending on the type of strategy, stakeholders are selected. Friedman and Miles (2006) define stakeholders as: “*any group or individual who can affect or is affected by the achievement of the organisations objectives.*”⁴⁴ In the case of category management, organisational objectives are replaced by category strategies, which describes the category

³⁸ Apte et al. (2019), p. 170

³⁹ See Monczka et al. (2015), p. 194-239; Van Weele (2018), p. 207-222

⁴⁰ See Monczka et al. (2015), p. 201

⁴¹ See Van Weele (2018), p. 212

⁴² See Delke et al. (2023), p. 3

⁴³ See Schiele (2019), p. 56

⁴⁴ Friedman and Miles (2006), p. 4

level of strategy development.⁴⁵ Category strategies require stakeholders as part of the team.⁴⁶ For instance, if the team is tasked with sourcing materials for a new frame design in a carpentry factory, it is reasonable to include people from operations, engineering, and marketing to establish guidelines for selecting suppliers, understanding product requirements, building forecasts and so on.

After comprehending the diverse array of direct and indirect purchases, it is now opportune to classify them into groups. As seen, cluster analysis “*is a process of grouping a set of objects in such a way that objects in the same group, known as clusters, are more similar to each other than to those in other cluster.*”⁴⁷ As previously stated, Hesping and Schiele (2015) emphasise that it is crucial that categories are based on external market conditions. Trautmann, Turkulainen, et al. (2009) add that categories contain similar items required for specific business activities of the firm.⁴⁸ After forming the categories, it is crucial to get a better understanding of the supply base.

2.1.3.2 The analysis of suppliers, market, price, value chain and risk to provide information about the supply base

It is highly recommended to do market research on the supply base, as it builds and understands the key suppliers, their markets and capabilities, and their capacity to perform and meet the stakeholders’ requirements.⁴⁹ This information provides the organisation with a thorough understanding of the suppliers, their markets and supply chains, the price, and risks.

To analyse suppliers for a certain category, it is crucial to get a complete understanding in which market they operate. Market analysis is an activity that offers valuable information for developing a category strategy. There are multiple ways to gain information about a market, yet Porter’s five forces model is one of the most influential frameworks. The model describes and understands the competitive forces in a market, which determines the market’s structure and competition. Besides competition among the existing competitors, Porter’s model has four other forces, which are: threat of potential new entrants, bargaining power of suppliers, bargaining power of buyers, and the threat of substitute products or services.⁵⁰ By analysing these forces, an organisation understands in which

⁴⁵ See Hesping and Schiele (2015), p. 144

⁴⁶ See Monczka et al. (2015), p. 196

⁴⁷ Apte et al. (2019), p. 167

⁴⁸ See Hesping and Schiele (2015), p. 144; Trautmann, Turkulainen, et al. (2009), p. 58

⁴⁹ See Monczka et al. (2015), p. 213

⁵⁰ See Bruijl and Gerard (2018), p. 2

market the category is operating. Other models that are widely used to gain information about markets are SWOT-analysis and PESTLE-analysis.

Besides markets, the current or future supplier portfolio must be analysed as well. The purpose and goal of this analysis is to work with the suppliers which are the most suitable for sourcing a certain category. A comprehensive supplier analysis to identify specific capabilities and financial health of key suppliers are cost structure, financial status, customer satisfaction levels, core capabilities, strategy direction, culture, and so on.⁵¹ There are multiple ways to reach this goal. One of the methods is benchmarking, which is widely used in practice. There is some discussion about the definition, however, a widely used definition is: “*Benchmarking is the search for the best industry practices which will lead to exceptional performance through the implementation of these best practices.*”⁵² The method enables a comparison of performance with firms in the same industry, to come to the most suitable supplier[s] for a category.

Another way to gain information about suppliers that seem attractive, is to send a request for information [RFI]. The RFI is a formal solicitation document that is used to gather general information of suppliers of a good or services. This is often combined with a request for proposal [RFP] and/or request for quotation [RFQ], where suppliers are invited to submit a detailed bid which meets the requirements as laid down in the request.⁵³ After the analysis, the project team gained a comprehensive understanding to discuss which suppliers are selected for a category. Literature reveals that attributes of quality, cost and flexibility are given primary importance, when selecting suppliers.⁵⁴

Selecting suppliers is a different task nowadays, as modern supply chains are not straightforward series of processes and suppliers, but complex networks depending on multiple links.⁵⁵ For this reason, it is critical for buying firms to collaborate with suppliers that are resilient. Rajesh and Ravi (2015) define resilient suppliers as: “*suppliers who are able to provide good quality products at economy rates and flexible enough to accommodate demand fluctuations with shorter lead times over a lower ambience of risk without compromising on safety and environment practices.*”⁵⁶ Christopher and Lee (2004) state that suppliers are an important factor in the vulnerability of supply risk and mention that risk mitigation is possible through suppliers with high visibility.⁵⁷ Moreover, they stress on the

⁵¹ See Monczka et al. (2015), p. 218

⁵² Anand and Kodali (2008), p. 258

⁵³ See Schiele (2019), p. 56; Van Weele (2018), p. 39

⁵⁴ See Rajesh and Ravi (2015), p. 345

⁵⁵ See Peck (2005), p. 211

⁵⁶ Rajesh and Ravi (2015), p. 345

⁵⁷ See Christopher and Lee (2004), p. 394

necessities of having a collaborative relationship with suppliers. Rajesh and Ravi (2015) complements to this that selecting suppliers which match with the resilient capabilities of an organisations supply chains is one of the main objectives of a buying firm, as suppliers are a vital chain of vulnerability.⁵⁸ The better weighted the selection helps in building resilience and reducing risks in the supply chain.

2.1.3.3 Defining the category sourcing strategy as basis for the use of sourcing levers and contracting suppliers

Based upon a thorough analysis of the company's future requirements and current supply base, the future sourcing strategy needs to be decided for every spend category.⁵⁹ Objectives of a supply strategy are: cost-reduction, product-development, supply base reduction, supply assurance, quality, and so on.⁶⁰ Other issues that should be addressed by a category strategy are single vs. multiple sourcing, global vs. local sourcing, partnership vs. competitive relationship, and buying on contract vs. buying on spot basis.⁶¹ Schiele (2019) summarises the latter by stating that a category strategy explains [1] the value creation model [make, buy or co-operate], [2] sourcing object [raw material, assembled component, complete system], [3] supply chain model [stock, demand tailored, just-in-time, etcetera], [4] number of suppliers [single source, few/many sources], [5] locational concept [local, cluster, global, currency area based], [6] pooling concept [how are synergies between the production units leveraged] to which [7] lever selection may be added.⁶² These questions must be thoroughly considered in prior to start the search on the [international] supply market.

The strategy development process takes place on four levels: corporate strategies, business unit strategies, supply management strategies, category strategies.⁶³ This generally agrees with the strategy development of Figure 1. As seen, Hesping and Schiele (2015) state that one of the main arguments for a sourcing category approach is the possibility of forming differentiated strategies with respect to specific contextual factors of diverse supply markets, and that it contributes to achieving the overarching functional purchasing goals.⁶⁴ Van Weele (2018) contributes to the latter that category strategies need to have a strong link to overall business goals and strategies.⁶⁵ Categories enable to possibly differentiate from the

⁵⁸ See Rajesh and Ravi (2015), p. 345

⁵⁹ See Van Weele (2018), p. 214

⁶⁰ See Monczka et al. (2015), p. 197-198

⁶¹ See Van Weele (2018), p. 215-216

⁶² See Schiele (2019), p. 56

⁶³ See Monczka et al. (2015), p. 195

⁶⁴ See Hesping and Schiele (2015), p. 145

⁶⁵ See Van Weele (2018), p. 216

functional purchasing goals, however, simultaneously contribute to the purchasing goals at the department level, since categories allow to create specific strategies fitted in the most suitable way possible for the products, services, and their markets.

Determining a sourcing strategy is often based on portfolio models. A huge influential one is the Kraljic model [elaborated in chapter 2.2.2.1], which distinguishes categories in four quadrants based on profit impact and supply risk.⁶⁶ After using such a portfolio model, category managers might follow an individual strategy for each sourcing category even when placed in the same portfolio area.⁶⁷ Karjalainen and Salmi (2013) and Luzzini et al. (2012) present an approach to form classifications of category strategies by grouping sourcing categories along different competitive priorities, such as cost, quality, delivery, innovation, efficiency and sustainability.⁶⁸ However, a portfolio model, such as the Kraljic matrix, is and remains a tool, making it not a necessary step to consider when developing a category strategy.

At the strategic level, the functional goals are defined, while the tactical level contains sets of measures, called “levers”.⁶⁹ Schiele (2007) defines a sourcing lever as: “*a set of measures that can improve sourcing performance in a commodity group.*”⁷⁰ Levers vary from commercial [pooling demand, price evaluation, and extension of supplier base] to cross-functional [product and program optimisation, process improvement, intensification of supply relationship] levers.⁷¹ Sourcing levers connect the purchasing strategies at a strategic level with the tactical level, on a practical manner. Sourcing levers will be extensively reviewed in chapter 2.3 After the sourcing strategy has been determined and suppliers have been recommended, the strategy must be implemented and suppliers be contracted.⁷² Contracting and negotiation is a part of the category management approach, and it depends on the strategy per category on what category managers seek from a supplier and their [future] relationship.

⁶⁶ See Gelderman and Van Weele (2005), p. 20

⁶⁷ See Hespings and Schiele (2015), p. 145

⁶⁸ See Karjalainen and Salmi (2013), p. 113; Luzzini et al. (2012), p. 1027

⁶⁹ See Schiele et al. (2011), p. 319

⁷⁰ Schiele (2007), p. 279

⁷¹ See Hespings and Schiele (2015), p. 145; Schiele (2007), p. 280

⁷² See Monczka et al. (2015), p. 228

2.1.3.4 Improving results of categories by managing supplier relationships and driving continuous improvement

In a world characterised by globalisation and scarcity, both buyers and suppliers have resource limitations. Consequently, not only buyers selecting suppliers, but suppliers select buyers to whom they supply their resources.⁷³ Buyers may attain a competitive advantage over their competitors by becoming a preferred customer [PC] to their supplier.⁷⁴ The social exchange theory [SET] provides the basis for the preferred customer status.⁷⁵ According to SET, humans interact in a way that optimally balances costs and benefits before deciding on a deal.⁷⁶

Becoming preferred customer depends on both customer attractiveness and supplier satisfaction.⁷⁷ Customer attractiveness is defined as *“the level to which the buying organisation can offer services to the supplier, as well as how the buying organisation's strategy fits with the strategic objectives of the supplier.”*⁷⁸ Supplier satisfaction refers to the level at which the supplier feels fairly treated, with potential power imbalances not negatively influencing the supplier.⁷⁹ Finally, PCS is defined as the customer that is in a situation where they get access to additional resources compared to other buyers.⁸⁰ The ultimate situation is when the buying firm reaches level 2 stage of PCS, receiving additional benefits compared to its competitors at no extra costs.⁸¹ Buyers should strive to maintain the PCS-level relationship and continually improve performances with suppliers.

The ongoing enhancement and assessment of supplier performances are considered fundamental constituents of contemporary purchasing department.⁸² Organisations necessitate a structured and adaptable framework to facilitate the audit of suppliers' performance, thereby contributing to the amelioration of the overall supply chain performance. The objective for the purchasing firm is to remain apprised of suppliers' performances through the utilisation of for instance Key Performance Indicators [KPIs]. These KPIs can be flexibly tailored to specific circumstances to assess the requisite components of suppliers.

⁷³ See Castellucci and Ertug (2010), p. 1; Pulles et al. (2019), p. 1

⁷⁴ See Schiele et al. (2012), p. 2

⁷⁵ See Hüttinger et al. (2014), p. 698

⁷⁶ See Hutchison et al. (2003), p. 6

⁷⁷ See Baxter (2012), p. 1250; Schiele et al. (2012), p. 1

⁷⁸ Lonsdale and Watson (2005), p. 160

⁷⁹ See Benton and Maloni (2005), p. 5; Essig and Amann (2009), p. 104

⁸⁰ See Schiele et al. (2012), p. 44

⁸¹ See Schiele (2020), p. 125

⁸² See Dey et al. (2015), p. 192

2.1.4 Conditions for category management: Cross-functional approach, collaboration, and consumer-led process to create value for the organisation

Implementing category management in purchasing is merely and easily stated an approach to manage products, which may lead to decentralised purchasing organisations.⁸³ However, implementing category management throughout the organisation relies on collaborative and co-operative supply partnerships achieved through cross-functional interactions between suppliers and retailers.⁸⁴ Cross-functional sourcing teams consist of personnel from different functions and, increasingly, suppliers, brought together to achieve supply management or supply chain-related tasks.⁸⁵ As seen in chapter 2.1.3.1, defining stakeholders, and creating a team is the basis for category management. Fernie (2014) and Holweg et al. (2009) confirm this by stating that, in contrast to traditional purchasing where the department was seen as an operational buying function, category management led to a multifunctional team approach on the side of suppliers as well as retailers.⁸⁶ The purpose of these teams is bringing together knowledge and resources required for coordinated purchasing or pooling of demand.⁸⁷ Moreover, Holweg et al. (2009) stress that key obstacles of implementing a category approach in purchasing are a lack of time, financial resources and skilled personnel.⁸⁸ Composing a cross-functional team and training them are therefore essential factors for the effectiveness of category management.

Monczka et al. (2015) give multiple benefits of a cross-functional team approach: reduced time to complete a task, increased innovation, joint ownership of decisions, enhanced communication among functions or organisations, realising synergies by combining individuals and functions, better identification and resolutions of problems, and the need to build internal relationships through teams.⁸⁹ The cross-functional category team walks through a series of steps that examine current spend associated with a commodity or service, and the current strategy used to purchase the commodity or service.⁹⁰ By identifying new purchasing strategies and/or new suppliers, the team selects the best strategy, executes it, and monitors supplier performance. Moreover, it has been found that cross-functional teams significantly contribute to firm's learning performance and is one of the key issues in the maturity profile. More mature purchasing departments in their turn positively affect the

⁸³ See Heikkilä et al. (2018), p. 535; Hesping and Schiele (2015), p. 147

⁸⁴ See Sheridan et al. (2006), p. 302

⁸⁵ See Monczka et al. (2015), p. 132

⁸⁶ See Fernie (2014), p. 48; Holweg et al. (2009), p. 203-204

⁸⁷ See Heikkilä and Kaipia (2009), p. 332

⁸⁸ See Holweg et al. (2009), p. 203

⁸⁹ See Monczka et al. (2015), p. 133-134

⁹⁰ See Apte et al. (2019), p. 169

business results.⁹¹ However, the success of category strategies relies on an actively engaged category team; which is a function of teamwork, research, consolation and continuous improvement.⁹² Heikkilä and Kaipia (2009) complements this by stating that the right team structure, resources given to the team, capable team leadership, as well as committed team members clearly affect the success of the team.⁹³

Category management is a customer or end-user-led process, which will ideally satisfy their customer's needs, whereas strategic purchasing and strategic sourcing tend to be purchasing-led processes.⁹⁴ Holweg et al. (2009) stress that involving the customer perspective is crucial for the success of category management.⁹⁵ Customers may purchase from multiple categories; however, product-centric strategies are often based on one category, which may depress the overall value of a customer to a firm.⁹⁶ Verhoef and Lemon (2013) complement the latter by stating that employees and departments need to acknowledge that the ultimate objective of the organisation is to maximise customer lifetime value and focus strategies on achieving this objective.⁹⁷

2.1.5 Criticism on category management: lack of project orientation, responsiveness, and access to workforce

Implementing a category approach in an organisation is not without its drawbacks and challenges; it involves a paradigm shift in the way the organisation thinks about acquisition of requirements, and it may even involve structural reorganisation to support the top-down implementation of category management.⁹⁸ The adoption of category management may require a considerable shift in the way an organisation works. Where in traditional strategies the process is purchasing-led, category management requires a customer-led process.⁹⁹ Part of this is that purchasing is no longer done by solely the purchase department, but by a cross-functional approach throughout the whole organisation. The previous chapter summarised the positive results of a cross-functional team, yet it also brings challenges. The shift in how an organisation works may be the biggest barrier to adopting category management.¹⁰⁰ Apte et al. (2019) state that it may even involve structural reorganisation to support the top-down

⁹¹ See Schiele (2007), p. 283

⁹² See Monczka et al. (2015), p. 200

⁹³ See Heikkilä and Kaipia (2009), p. 332

⁹⁴ See Apte et al. (2019), p. 170; Cousins (2005), p. 408; Sheridan et al. (2006), p. 305

⁹⁵ See Holweg et al. (2009), p. 202

⁹⁶ See Verhoef and Lemon (2013), p. 5

⁹⁷ See Verhoef and Lemon (2013), p. 5

⁹⁸ See Apte et al. (2019), p. 170

⁹⁹ See Apte et al. (2019), p. 170

¹⁰⁰ See Sheridan et al. (2006), p. 307

implementation of category management.¹⁰¹ A challenge that arises in multifunctional teams are the lack of responsibility due to the mix of centralised and decentralised purchase activities. Teams without the right commitment and clear arrangements will clearly affect the success of the category.¹⁰²

Another challenge of implementing category management for an organisation is how to select items or services to a category.¹⁰³ Managing and analysing the product range is an important part of this challenge. In chapter 2.1.3.1 spend and cluster analysis has been mentioned. The complexity of this task can be described with a company case where it took an organisation six months to determine what different business units with different coding systems were purchased.¹⁰⁴ It appeared that it was noticed that there was a high number of different specifications within the same material group, since each business unit had created their own specifications. Even if similar specifications were used, they were purchased from different suppliers. This resulted in many suppliers delivering the same or similar items for different business unit.

Chapter 2.1.3.3 shortly discussed portfolio models. Portfolio models are widely used in practice to segment and allocate resources to certain categories, depending on the portfolio model. Heikkilä and Kaipia (2009) stress that a benefit of portfolio models is that it simplifies a complex situation, however, this simplification is a source of criticism as well.¹⁰⁵ Since portfolio models are extensively employed in purchasing, the next chapter will deeply elaborate the different aspects of portfolio models.

2.2 Portfolio management as tool in category management

2.2.1 Portfolio management: Strategic segmentation of categories into similar problem-solution combinations

In the past 30 years, the most used methodology for undertaking category management and developing sourcing strategies has been purchasing portfolio analysis.¹⁰⁶ Therefore, it is inadmissible to neglect its part in implementing category management. This chapter goes in more detail about what portfolio management in purchasing is, what its benefits are, which models are out there, and elaborates on some criticism.

¹⁰¹ See Apte et al. (2019), p. 170

¹⁰² See Heikkilä and Kaipia (2009), p. 332

¹⁰³ See Heikkilä and Kaipia (2009), p. 333

¹⁰⁴ See Trent and Monczka (2003), p. 624

¹⁰⁵ See Heikkilä and Kaipia (2009), p. 334

¹⁰⁶ See Cox (2015), p. 717

Portfolio theory in general addresses the view of trade-offs in expected returns relative to risk characteristics of investments.¹⁰⁷ The need of portfolio management shed to light when literature on buyer-supplier relationships tend to focus on a single relationship, ignoring the interdependencies between relationships and the important task of allocating scarce resources between relationships.¹⁰⁸ Assisting a company's portfolio of supplier relationships resulted in portfolio approaches for management, which can be used to improve the allocation of scarce resources.¹⁰⁹ These approaches are often translated to portfolio models, and from there, strategies are derived. The significance and usefulness of portfolio models for practice has been pointed out, by suggesting that the wide scope of application, flexibility and different levels of sophistication make it a powerful management tool.¹¹⁰

Portfolio models can be used for many purposes, such as a customer, competitor, and supplier segmentation, but also for supplier relationship management. In purchasing, a portfolio model is an analytic and diagnostic tool of a prescriptive nature used to identify different items and categories.¹¹¹ Luzzini et al. (2012) state that purchasing portfolio models aim to classify the purchases of goods and services and/or buyer-supplier relationships to determine the most suitable approach to managing commercial transactions.¹¹² Commercial transactions are the appropriate suppliers, the contractual form, the measures used to evaluate suppliers, and the appropriate level of price, quality, and delivery.

In the late 1970's, there was the realisation that not all products and not all buyer-supplier relationships are to be managed in the same way. Purchasing portfolio models, in general, aim at developing differentiated purchasing and supplier strategies.¹¹³ These differentiated strategies deducted from portfolio models enable organisations to split the overall purchasing strategy into different strategies, depending on the variables and the goal of the model. Successfully implementing a portfolio strategy benefits the organisation in various ways.

Benefits of portfolio models are in many ways similar to the benefits of category management, discussed in chapter 2.1.2, since portfolio models allow and enable the categorisation of product typologies and suppliers.¹¹⁴ One major benefit of categorisation is that it bundles products and services which are appropriate for the same strategy.

¹⁰⁷ See Wagner and Johnson (2004), p. 718

¹⁰⁸ See Olsen and Ellram (1997), p. 101

¹⁰⁹ See Gelderman and Van Weele (2005), p. 21

¹¹⁰ See Trautmann, Bals, et al. (2009), p. 196

¹¹¹ See Caniëls and Gelderman (2005), p. 141; Olsen and Ellram (1997), p. 102

¹¹² See Luzzini et al. (2012), p. 1017

¹¹³ See Gelderman and Van Weele (2003), p. 207

¹¹⁴ See Bianchini et al. (2019), p. 1199

Implementing a strategy not just for one item, but for a category, standardises the practices of employees, departments, and organisations. The result of this is that it creates knowledge, which maybe was already out there, yet not discovered. The example fits to the case of Hesping and Schiele (2015) back in chapter 2.1.2, saying: “*a traditional sourcing category ‘cables’ might include all types of wires and cables, the ‘new’ sourcing category ‘data transfer’ might look beyond products and services to unrecognised and untapped competencies and knowledge already in the supply base.*”¹¹⁵ A car manufacturer might use the knowledge of a wireless data transfer provider to substitute for cable solutions.

In chapter 2.1.4 Monczka et al. (2015) gave multiple benefits as a result from implementing a cross-functional approach in purchasing.¹¹⁶ Gelderman and Semeijn (2006) mentioned that portfolio frameworks facilitate internal coordination and places emphasis on cross-functional teamwork to improve the internal coordination within business units.¹¹⁷ Furthermore, it is an effective tool for discussing, visualising and illustrating the possibilities of the development of differentiated purchasing strategies.¹¹⁸ Moreover, purchasing portfolio models are a powerful tool for coordinating the sourcing patterns of fairly autonomous strategic business units organisations, resulting in leverage and synergy.¹¹⁹ Portfolio models help configuring and managing supplier relationships, considering various interdependencies and trade-offs among relationships.¹²⁰ Portfolio management stimulates differentiating the overall strategy, with different strategies for different supplier groups.¹²¹

In the purchasing context, it has been argued that purchasing portfolio models support companies to systematically analyse their expenditures and that they implement portfolio models directly into their purchasing strategies.¹²² It is even claimed that purchase departments, which use portfolio models, tend to be more mature and is a sign of purchase sophistication.¹²³ Schiele (2007) at their turn show in their research a high positive and significant relationship between purchasing maturity and savings potential.¹²⁴ Meaning that, more mature firms identified larger savings potential than their underdeveloped counterparts. All these reasons demonstrate the worth of employing purchase portfolio models.

¹¹⁵ Hesping and Schiele (2015), p. 145

¹¹⁶ See Monczka et al. (2015), p. 133-134

¹¹⁷ See Gelderman and Semeijn (2006), p. 215

¹¹⁸ See Gelderman and Van Weele (2002), p. 33; Padhi et al. (2012), p. 1

¹¹⁹ See Gelderman and Van Weele (2005), p. 21

¹²⁰ See Wagner and Johnson (2004), p. 728

¹²¹ See Gelderman and Van Weele (2005), p. 21

¹²² See Nellore and Söderquist (2000), p. 259

¹²³ See Gelderman and Van Weele (2005), p. 25

¹²⁴ See Schiele (2007), p. 283

2.2.2 Purchasing portfolio models

2.2.2.1 The Kraljic Matrix as the most comprehensive portfolio model

2.2.2.1.1 Historical development of the Kraljic matrix

Purchasing portfolio models have received considerable attention from academic and business world.¹²⁵ During the years many models are introduced. The first comprehensive portfolio approach for purchasing and supply management was introduced by Kraljic (1983).¹²⁶ Although other models have been developed, Kraljic's approach subsequently became the dominant approach to what the profession regards as operational professionalism, and has become the standard in the field of portfolio models.¹²⁷ In prior to discussing other models, first the Kraljic matrix will be deeply elaborated.

In 1977, Peter Kraljic stresses the fact that purchase is not seen as an important function, despite its responsibility of 60% of the spendings of most industrial firms.¹²⁸ Organisations see purchase as a service or processing function, without any strategic importance. The 1977 German paper called 'Neue Wege im Beschaffungsmarketing', by Peter Kraljic, signals that the world is globalising and therefore purchase requires more attention. In this paper, multiple steps are discussed to bring the purchase function from an operational level to a tactical and even strategic level. In step 3 called 'determine the basic strategic direction' he proposes a purchase portfolio which identifies critical purchased goods and enables to develop strategic directions for them. The purchase portfolio is a matrix where purchasers can classify their goods in. This matrix was built on two factors: 'corporate strength' and 'strength of the supplier market'. Per category, there are certain strategies to follow. For instance, products scoring low on corporate strength and medium or low on supplier strength pose little danger to an organisation, however, this category offers the quickest possibility to gain advantage on the purchase price. All categories are in different situations and therefore have their own strategies.

Six years later, in 1983, Peter Kraljic published a new paper again stressing that it is critical to give purchase, in a complex world of uncertainty and supply or price disruptions, more attention.¹²⁹ The now English paper is very similar to the one in 1977 and still contains the purchasing portfolio matrix, later also known as the 'Kraljic matrix'. Again, the paper

¹²⁵ See Caniels and Gelderman (2005); Dubois and Pedersen (2002); Gelderman and Van Weele (2002); Gelderman and Van Weele (2003), 2005); Nellore and Söderquist (2000); Olsen and Ellram (1997); Wagner and Johnson (2004)

¹²⁶ See Kraljic (1983), p. 111

¹²⁷ See Gelderman and Van Weele (2003), p. 207

¹²⁸ See Kraljic (1977), p. 72

¹²⁹ See Kraljic (1983), p. 110

uses four steps [classification of goods, market analysis, strategic positioning, and action plans] which corresponds to the steps of category management. Where the 1977 paper focused on single materials, the 1983 paper discusses grouping these materials in categories.

The Kraljic matrix was originally developed to classify purchased products and guide in purchase decisions, however, it allows the categorisation of product typologies and suppliers as well.¹³⁰ This seminal paper became tremendous popular in literature and its matrix widely deployed in practice; therefore, the model will be deeply elaborated.

2.2.2.1.2 Application in theory and practice of the Kraljic matrix

The Kraljic matrix identifies areas of opportunity or vulnerability, assesses supply risks, derives basic strategic thrusts for items, plots a company buying strength against those of the supply market and can be used to develop counterstrategies towards key-suppliers, also called “reverse marketing”.¹³¹ The 2 x 2 Kraljic matrix classifies purchases as non-critical, leverage, bottleneck and strategic along two dimensions: ‘strategic importance’ and ‘supply risk’.¹³² Strategic importance [also called ‘profit impact’] is defined in terms of the value added by the product, percentage of total purchase cost or impact on product quality.¹³³ Supply risk is defined in terms of availability, number of suppliers, competitive demand, make-or-buy opportunities, entry barriers and substitution possibilities.¹³⁴

Products are labelled ‘low’ or ‘high’ on the dimensions, resulting in four quadrants, see Figure 3. Non-critical items [low strategic importance, low supply risk] are known for their low strategic importance and are often obtained through multiple sources. The focus here is on reducing the transaction costs and ensure efficient processing through product standardisation, and volume or inventory optimisation.¹³⁵ For leverage items [high strategic importance, low supply risk] purchasing can exploit its full power. These items are strategically important, however, there are many alternative suppliers, making it easy to mix between contract and spot purchasing. Furthermore, vendor selection, product substitution, targeted pricing negotiations and order volume optimisation are often applied in this category.¹³⁶ Bottleneck items [low strategic importance, high supply risk] do not have high

¹³⁰ See Bianchini et al. (2019), p. 1199

¹³¹ See Kraljic (1983), p. 113

¹³² See Caniëls and Gelderman (2005), p. 141; Cox (2015), p. 717; Gelderman and Van Weele (2003), p. 207; Hespings and Schiele (2016a), p. 101; Kraljic (1983), p. 110-112; Padhi et al. (2012), p. 2; Tip et al. (2022), p. 66-68

¹³³ See Tip et al. (2022), p. 66

¹³⁴ See Kraljic (1983), p. 110

¹³⁵ See Caniëls and Gelderman (2005), p. 142; Cox (2015), p. 717; Hespings and Schiele (2016a), p. 102

¹³⁶ See Kraljic (1983), p. 112; Tip et al. (2022), p. 68

strategic importance, however, only available from a small number of suppliers. Therefore, the focus here is on assuring supply, control of vendors and having backup plans.¹³⁷ Strategic items [high strategic importance, high supply risk] are critical for profitability and can be obtained from a limited number of qualified suppliers. Those items require accurate demand forecasting, development of long-term collaborative relationships, risk analysis, and logistics, inventory, and supplier control.¹³⁸

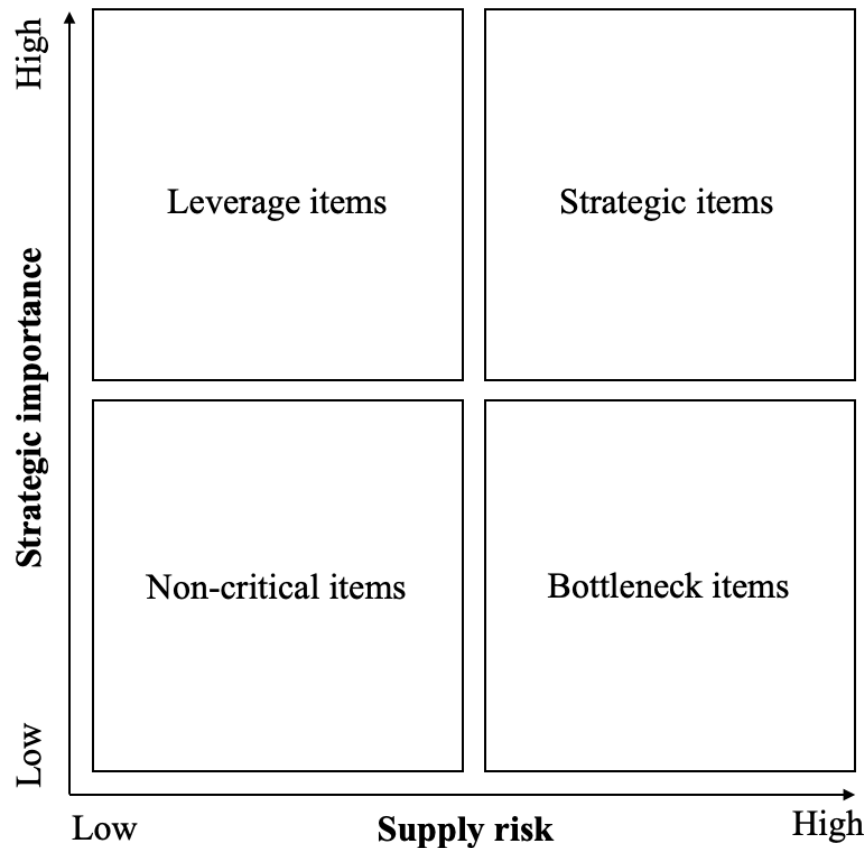


Figure 3 - *The Kraljic matrix* (Kraljic, 1983, p. 111)

Once a supplier [or suppliers] is selected, the methodology recommends the power balance between the buyer and the supplier to be understood, so that buyers can use one of the negotiation strategies.¹³⁹ Kraljic (1983) captures three basic risk categories in the matrix with each having their own strategy: exploit, diversify, and balance.¹⁴⁰ Exploit, a reasonably aggressive strategy, is indicated when purchasers play a dominant market role and those of the supplier is medium or low. The buying organisation should diversify when its role in the supply market is secondary and from their suppliers is strong. The organisation should look

¹³⁷ See Gelderman and Van Weele (2003), p. 207

¹³⁸ See Cox (2015), p. 717; Hesping and Schiele (2016a), p. 102

¹³⁹ See Cox (2015), p. 717

¹⁴⁰ See Kraljic (1983), p. 113

for substitutes of new suppliers. Then there are items with no major risks or benefits, in this case the buying organisation should pursue a well-balanced intermediate strategy.¹⁴¹

Van Weele (2018) recommends using the Kraljic matrix when designing category strategies.¹⁴² The Kraljic matrix should serve as a framework for an in-depth discussion with representatives from the business groups involved.¹⁴³ In the Kraljic matrix, there are no calculating rules or a given measurement to decide whether the importance of a purchase is “high” or “low.” The drawback of this method is that the validation of measures is limited, which is one of the points of criticism, which will be discussed in chapter 2.2.2.1.3. The portfolio analysis is an important tool, especially for discussing, visualising, and illustrating the possibilities of professional purchasing and supply management.

Several studies indicate that the Kraljic matrix more used in larger companies than in small and medium enterprises [SMEs].¹⁴⁴ Larger companies recognise the strategic importance of purchasing as a tool to attain higher quality, increased operational flexibility, shorter lead-time, and cost reduction, where in SMEs most decisions are made by owners of purchasing managers based on intuition or personal experience. However, Cox (2015) shows in his research that managers often “cherry pick”, which means that they adopt any of the strategies available in the box, irrespective of what the methodology recommends them to do.¹⁴⁵ Despite that the Kraljic matrix is tremendous popular, there is, besides the latter observations, more criticism on the model.

2.2.2.1.3 Criticism of the Kraljic matrix

While the Kraljic matrix has significantly influenced professional purchasing and inspired academic research till this day, it also received a fair degree of criticism.¹⁴⁶ Through the year, scholars developed multiple questions about criticism on the Kraljic matrix.

The first part of criticisms has all to do with the measurement of the matrix. First, there are some concerns about the variables: “*How could one know, from all the variables out there, whether the most appropriate variables to deduct a supply strategy from, are being used?*”¹⁴⁷ Then, despite earlier this paper definitions were given to the two variables, literature is still not satisfied with the exact definition of ‘strategic importance’ and ‘supply

¹⁴¹ See Kraljic (1983), p. 113

¹⁴² See Van Weele (2018), p. 174

¹⁴³ See Gelderman and Van Weele (2002), p. 32

¹⁴⁴ See Bianchini et al. (2019), p. 1197

¹⁴⁵ See Cox (2015), p. 718

¹⁴⁶ See Padhi et al. (2012), p. 1

¹⁴⁷ Gelderman and Van Weele (2005), p. 21

risk' and ask for a more precise operationalisation.¹⁴⁸ And if there is consensus about the choice and the operationalisation of the variables, then still: how should the weighting of the factors take place?¹⁴⁹ In the Kraljic matrix, there are no calculating rules or a given measurement to decide whether the importance of a purchase is "high" or "low." The drawback of this abstract measurement method is that the validation of measures is limited. However, Gelderman and Van Weele (2002) give a counterargument on this by stating that there is no belief in a quantitative approach for measuring values of the dimensions: "*It is better to be roughly right, than exactly wrong.*"¹⁵⁰ Ending on the measurement issues, De Boer (1998) suggested a fully customised approach: organisations should determine their own criteria and their own specific threshold values.¹⁵¹

Besides measurement issues, there are some concerns about the strategies deduced from the Kraljic Matrix. The matrix does include the variable 'supply risk', which does say something about the market and their suppliers, however, the position of the supplier dealing with is neglected. Since portfolio models are limited to analysing products in a dyadic context, they fail to capture all the aspects that are considered vital for buyer-supplier relationships from a network perspective.¹⁵² The Kraljic approach does not explicitly consider the possible strategies and reactions of suppliers.¹⁵³

Earlier this chapter it was mentioned that the philosophy of the Kraljic matrix is that it should serve as a framework for an in- depth discussion with representatives from the business groups involved.¹⁵⁴ However, it is argued that the complexity of business decisions does not allow for simple recommendations, so: "*how could one deduce strategies from an analysis that is based on just two dimensions?*"¹⁵⁵ Moreover, during this paper, Kraljic (1983) stated that not all products and buyer-supplier relationships are to be managed in the same way. In the Kraljic matrix, every item and with that supplier, get their own strategy, based on the category they are classified in. However, the matrix does not depict interdependencies between two or more items;¹⁵⁶ instead, they concentrate on separate products. A counterargument on this, and fitting to the context of this paper, is that it is recommendable to classify categories in the Kraljic matrix instead of items.

¹⁴⁸ See Gelderman and Van Weele (2003), p. 208

¹⁴⁹ See Olsen and Ellram (1997), p. 106

¹⁵⁰ Gelderman and Van Weele (2002), p. 32

¹⁵¹ See De Boer (1998), p. 4

¹⁵² See Dubois and Pedersen (2002), p. 39

¹⁵³ See Gelderman and Van Weele (2003), p. 208; Kamann (2000), p. 1

¹⁵⁴ See Gelderman and Van Weele (2002), p. 32

¹⁵⁵ Gelderman and Van Weele (2003), p. 208

¹⁵⁶ See Olsen and Ellram (1997), p. 102

Furthermore, the Kraljic matrix distinguishes categories in four different quadrants, implying that categories in different quadrants demand for specific actions and that not every strategy can be applied in every quadrant. However, the study of Schiele et al. (2011) and Hesping and Schiele (2016a) reveal that sourcing levers are not exclusively limited to a single portfolio quadrant.¹⁵⁷ This questions the value of the Kraljic matrix, since it's relevance of distinguishing strategies is not applicable to these studies.

Lastly, there are some doubts about the usefulness of the matrix in the context of an undeveloped logistic infrastructure. Gelderman and Mac Donald (2008) state that some recent empirical studies (Gelderman & Van Weele, 2003, 2005; Wagner & Johnson, 2004) have corroborated the usefulness of the matrix in practice, however, these studies were carried out in companies located in developed countries under conditions of a well-developed infrastructure.¹⁵⁸ If the Kraljic matrix is neither fully rigorous analytically nor fully robust in its recommendations for action, then it is inevitable that it will lead to potential sourcing errors by those using it or to “cherry-picking”.¹⁵⁹

2.2.2.2 Criticism on the Kraljic matrix leading to further research into purchase portfolio models

2.2.2.2.1 Criticism on the Kraljic matrix leading to modulated portfolio models

Kraljic's purchasing portfolio approach, and its received criticism, has inspired many academics to undertake further research into purchasing portfolio models.¹⁶⁰ Although, these portfolio models do have more similarities than differences in comparison to the original Kraljic matrix.¹⁶¹ Therefore, the modulated models are not discussed in detail in this part of the paper, however, will be taken into account in the questionnaire. An overview of purchasing portfolio models is presented in Table 1 and 2. Table 1 presents portfolio models at category level, and Table 2 presents portfolio models at supplier level. Notably, many of the modulated models contain new dimensions such as lean, agile, and risk. Furthermore, the point of view of the supplier is often included as well. This indicates that scholars stress the importance of the supplier and its dyadic relationship with the buyer. More detailed descriptions of the portfolio models can be found in Appendix 1.

¹⁵⁷ See Schiele et al. (2011), p. 327; Hesping and Schiele (2016a), p. 111

¹⁵⁸ See Gelderman and Mac Donald (2008), p. 78

¹⁵⁹ See Cox (2015), p. 719

¹⁶⁰ See Caniels and Gelderman (2005), p. 141

¹⁶¹ See Gelderman and Van Weele (2005), p. 19

Table 1 - Existing literature on purchase portfolio models at category level

| Paper | Goal | Difference from Kraljic (1983) paper |
|--------------------------------|--|---|
| Nellore and Söderquist (2000) | Linking product categories to different types of suppliers and to link these product categories and supplier types to the specification process. | Using different purchase portfolio models to link product categories with supplier types and the specification process. |
| Cox (2001) | The Power Matrix identifies four Power Scenarios in which buyers and suppliers can operate: leverage, alliance, market, and dependency | Power Matrix was developed as a critique of the work of (Kraljic, 1983) and its recommendations for action. |
| Wagner and Johnson (2004) | A process for configuring and managing strategic supplier portfolios | Mapping the planning, implementation, and monitoring of portfolio's |
| Schuh et al. (2009) | The purchasing chessboard aims to help buyers deal with every transaction type with suppliers. | Four strategies are classified by supply and demand power. From these four strategies, sixteen levers and 64 methods are derived. |
| Trautmann, Bals, et al. (2009) | A portfolio model, based on the work from (Kraljic, 1983) and (Olsen & Ellram, 1997), with the following two dimensions: strategic importance of the purchase, and synergy potential | New dimension to identify whether purchased products are suitable for global sourcing by the integration of different sites |
| Padhi et al. (2012) | Methodology to classify and position commodities in the (Kraljic, 1983) model | Mapping works and services in the quadrants of Kraljic |
| Schiele (2012) | Supplier portfolio based on competitiveness of supplier and attractiveness of the customer | Supplier level, focus on preferred customer status, target at sourcing category strategy |
| Luzzini et al. (2012) | Variables 'technological uncertainty', 'supply market volatility', 'supplier power', and 'customisation' to specify a category strategy | Classifying categories as 'steady', 'volatile', 'special', and 'risky'. |
| Drake et al. (2013) | Portfolio model to classify products into agile, lean, agile and lean, or non-critical | Two new dimensions: lean and agile |
| Ferreira et al. (2015) | Application of the Kraljic (1983) model; investigating purchasing skills' importance for distinct purchase situations | Classifying construction items in the Kraljic (1983) matrix knowledge and its application in the strategic development |
| Hesping and Schiele (2016a) | Matching tactical sourcing levers with the Kraljic (1983) matrix | Examines the deployment of tactical sourcing levers, as an additive practice to portfolio usage, with 'strategic importance' and 'supply risk' |
| Medeiros and Ferreira (2018) | An approach to managing a purchasing portfolio for a large Brazilian hospital, using Kraljic's model | A tool that analyses purchasing objectively and avoids considering only economic measures, identifying different item categories requiring special management |
| Ghanbarizadeh et al. (2019) | A purchasing portfolio model for the commercial construction industry | Examines the relations among the criteria and determines the degree of influence and permeability of each of them. This extended portfolio model offers more realistic solutions to today's projects than the previous ones did |
| Formentini et al. (2019) | Development and implementation of a strategic sourcing framework to support decision-makers in formulating differentiated strategies | Using the three established purchase portfolio models Kraljic (1983), Scott and Westbrook (1991), and Olsen and Ellram (1997) to develop a more practical framework for implementing differentiated purchase strategies |

Table 2 - Existing literature on purchase portfolio models at supplier level

| Paper | Goal | Difference from original (Kraljic, 1983) paper |
|--------------------------|---|--|
| Olsen and Ellram (1997) | Portfolio model for evaluating the relationship with suppliers, considering the dimensions of the supplier's attractiveness and the intensity of the relationship | Supplier attractiveness and intensity of the relationship |
| Dyer et al. (1998) | Portfolio model for evaluating the input of suppliers | Classification based on input from suppliers, such as customisation, interaction effects, buyer-supplier dependence and more. |
| Bensaou (1999) | Portfolio model for evaluation different types of buyer-supplier relationships | Buyer-supplier relationship by their investments |
| De Boer et al. (2001) | A review and proposal of decision methods reported in the literature for supporting the supplier selection process | Focus on supplier selection techniques |
| Park et al. (2010) | Portfolio model based on (Kraljic, 1983) model and (Olsen & Ellram, 1997) to support the management of relationships with suppliers | Relative supplier attractiveness, relationship attractiveness |
| Lee and Drake (2010) | Portfolio model based on (Kraljic, 1983) model to evaluate the dimensions of competitive priorities and company size | Portfolio model to classify products into agile, lean, agile and lean, or non-critical |
| Monczka et al. (2015) | Evaluate individual suppliers as to their suitability to make recommendations for approaching them. | Classifying individual supplier into one of the following segments: 'core', 'develop', 'exploit', or 'nuisance'. This is based on the relative amount of money that the buyer spends with this supplier and the relative attractiveness of the buyer's account |
| Segura and Maroto (2017) | Developing a system for qualifying providers and segmenting suppliers | New strategic and critical dimensions to classify suppliers using historical and reliable data needed in a system to support decision-making at operative, tactical and strategic levels |
| Van Weele (2018) | Allows the buyer to mirror his or her view to the one used by the supplier | Combination of buyer's purchasing portfolio and supplier's customer portfolio, leading to 16 different business-to-business relationships, each of which calls for a different sourcing strategy. |

2.2.2.3 Other widely used portfolio models in purchasing

ABC analysis

Over an extended period, the ABC-analysis, or Pareto principle [i.e., the 80/20 rule], see Figure A1 in Appendix 4, was the only tool for differentiating between important and less important purchases.¹⁶² The principle says that, in many events, 80% of consequences come from 20% of the causes.¹⁶³ This phenomenon was first observed by Italian economist Vilfredo Pareto in 1906. He observed that 20% of the plants in his garden were bearing 80% fruit, and applied this observation to find that 80% of the land in Italy was owned by 20% of

¹⁶² See Gelderman and Van Weele (2005), p. 21

¹⁶³ See Ab Talib et al. (2015), p. 243

the population.¹⁶⁴ Applying the 80/20 rule in management perspective, Ab Talib et al. (2015) stated that it is a theory where a small percentage of the total is responsible for a large proportion of total outcome.¹⁶⁵ For example, 80% of total revenue come from 20% of the product range, or 20% of the bought goods is responsible for 80% of the expenses. Despite the simplicity of the principle, the pareto analysis is prevalently used among the industry practitioners and academicians. For instance, Craft and Leake (2002) stated that the use of Pareto analysis has spread immensely, is rooted in industries, and is still used today by applying it to any situation that has a cause-effect relationship.¹⁶⁶

The principle is besides in purchasing commonly practiced in various fields of an organisation as well, such as in resource planning, inventory management, and total quality management.¹⁶⁷ The ABC-analysis analysis is based on the Pareto principle, qualifying the 20% most important goods or suppliers as 'A', a bigger part of 'less critical' good or suppliers as 'B', and the same for 'C'.¹⁶⁸ Via this way purchase managers get a detailed insight which products are critical for their organisation in terms of value, profitability, costs, quantity etcetera. These purchased items are linked to suppliers, resulting in proper information about which suppliers are critical, deserve [more] attention, and eventually should aim for a preferred supplier condition from these suppliers.

However, there are multiple drawbacks of this the ABC-analysis, since it only concentrates on the financial value of items, ignoring the cost of poor quality, performance risk, social risk, and other components.¹⁶⁹ Moreover, ABC-analysis does not provide strategic recommendations for the categories; it solely provides information of the spend by purchasing. Furthermore, Ab Talib et al. (2015) state that although a small percentage of input can generate a large percentage of output, firms should not downsize their operation by concentrating on the 20 percent and omit the remaining 80 percent.¹⁷⁰ Lastly, Fotopoulos et al. (2011) listing some weaknesses of the pareto analysis: it has no economic evaluation for analysis-based problem frequency; lack of statistical consideration; not useful for trend comparison; and no relationships are shown between listed variables.¹⁷¹ Despite its critics, the Pareto analysis is widely used among the industry practitioners and academicians.¹⁷²

¹⁶⁴ See Kim et al. (2017), p. 492

¹⁶⁵ See Ab Talib et al. (2015), p. 243

¹⁶⁶ See Craft and Leake (2002), p. 730

¹⁶⁷ See Ab Talib et al. (2015), p. 244

¹⁶⁸ See Tanwari et al. (2000), p. 2

¹⁶⁹ See Gelderman and Van Weele (2005), p. 21

¹⁷⁰ See Ab Talib et al. (2015), p. 243

¹⁷¹ See Fotopoulos et al. (2011), p. 580

¹⁷² See Ab Talib et al. (2015), p. 243

Purchasing chessboard

The purchasing chessboard, see Figure A2 in Appendix 4, is derived from the Kraljic matrix as well. The purchasing chessboard is developed to create a more sophisticated positioning approach that uses the four power positions identified in The Power Matrix.¹⁷³ The power matrix, seen in Table 1, was developed by Cox (2001) as a critique on the Kraljic matrix and its recommendations for actions.¹⁷⁴

The basic concept of the purchasing chessboard derives from the relationship between supply and demand and aims to help buyers deal with every type of transaction with suppliers.¹⁷⁵ This relationship is captured as power, resulting in a quadrant with the categories low supply and demand power [manage spend], high demand power [leverage competition among suppliers], high supply power [change nature of demand], and high demand and high supply power [seek joint advantage with supplier].

These four basic strategies are designed to specifically support discussions between the company's purchase department and top management.¹⁷⁶ From these four strategies, sixteen levers are derived, which are approaches to purchasing and useful in interdisciplinary discussions. From these four strategies and sixteen levers, the purchasing chessboard generates 64 methods to use in purchasing. These methods form the actual chessboard and provide an operating tool for purchasing to use. Therefore, the purchasing chessboard is a combination of portfolio and sourcing lever model, which will be deeply elaborated in the next chapter.

Dutch windmill

The Dutch windmill, see Figure A3 in Appendix 4, is introduced as an extension of the purchasing portfolio analysis of the Kraljic (1983) matrix.¹⁷⁷ This extension, called the account portfolio, was developed, since there was a rising demand of a model considering the suppliers' point of view as well. Combining the buyer's portfolio approach and supplier's portfolio approach leads to more realistic expectations and plans and effectively develops collaborations.¹⁷⁸

The account portfolio uses two criteria: customer attractiveness and the supplier's competitive position. Customer attractiveness is determined by among others profit margin

¹⁷³ See Cox (2015), p. 719

¹⁷⁴ See Cox (2015), p. 719

¹⁷⁵ See Schuh et al. (2009), p. 9

¹⁷⁶ See Schuh et al. (2009), p. 13

¹⁷⁷ See Van Weele (2018), p. 179

¹⁷⁸ See Cordell and Thompson (2018), p. 149-150; Van Weele (2018), p. 179

made on customer orders, future business expectations, access to new technologies or new product development projects, customer payment behaviour and customer integrity.¹⁷⁹ The supplier's competitive position is determined among others by the number of current suppliers for the category involved, supplier switching cost, number of substitute products or services available and more.¹⁸⁰

The four segments that derive from the two criteria are core, development, exploitation, and nuisance, resulting in 16 different types of business-to-business relationships.¹⁸¹ Van Weele (2018) does not adequately disclose how these segments are generated. Core is suitable for building long-term and close supplier customer relationships. In the development segment, the supplier has a weak position since they need to compete for the share of the customer's wallet with other suppliers.¹⁸² In the exploitation segment, the supplier has a dominant position compared with its buyers. Nuisance is characterised by buyers that can easily switch between suppliers. Building long-term and sustainable customer relationships is difficult here.¹⁸³ For more detailed explanations of the 16 quadrants and recommended actions, see Table A2 in Appendix 4.

2.3 Utilisation of portfolio models

2.3.1 From sourcing category to effective purchasing: sourcing levers building the bridge between category strategy and implementation

Portfolio models offer the possibility to formulate strategies for categories in purchasing, however, it lacks guidelines to conduct them and there is limited research available that shows the connection between portfolio models and formulating strategies.¹⁸⁴ Luzzini et al. (2012) show in their research that publications on purchasing portfolio models either consider the steps category classification and strategic priorities, or the levers and tools used according to the different types of categories and different category priorities.¹⁸⁵

In the strategy development process, sourcing levers may present a missing step between formulating a general category strategy and implementing activities to conduct them. Schiele (2007) defines sourcing levers as "*a set of measures that can improve sourcing performance in a commodity group [or category]*."¹⁸⁶ These set of measures can be used to

¹⁷⁹ See Van Weele (2018), p. 181

¹⁸⁰ See Van Weele (2018), p. 181

¹⁸¹ See Cordell and Thompson (2018), p. 148

¹⁸² See Van Weele (2018), p. 181

¹⁸³ See Van Weele (2018), p. 182

¹⁸⁴ See Hespings and Schiele (2016a), p. 113

¹⁸⁵ See Luzzini et al. (2012), p. 1018-1019

¹⁸⁶ Schiele (2007), p. 279

operationalise a strategy at category-level. Furthermore, sourcing levers cover multiple competitive priorities such as cost reduction, quality, innovation, or safe supply.¹⁸⁷ As seen in the portfolio chapter, portfolio models give multiple suggestions about strategies in a particular area as well. The difference with sourcing levers is that sourcing levers permit discussing the usefulness of several tactical approaches and the derivation of specific activities toward each sourcing category and the respective supply market, where strategies derived from portfolio models are often framed to one specific area.¹⁸⁸ Hence, sourcing levers describe a typology of activities through which the goals of a category strategy will be realised.

Sourcing levers did not receive much attention and discussion in academic literature for many years.¹⁸⁹ This is reasonable, since sourcing levers enable operationalising a strategy at category level, and a purchasing strategy, as in Figure 1, was for a long time executed solely at the functional level.¹⁹⁰ It was until the early 2000s that authors started writing about levers, subsequent to the implementation of lever analysis by numerous consulting firms.¹⁹¹ The first and initial form of lever analysis was developed by Schuh and Bremicker (2005), presenting a model containing 6 levers and called the ‘sourcing lever diamond’.¹⁹² Schiele (2007) builds on this ‘diamond’ and presented a sourcing lever model with 7 levers, see Figure 4. Besides the ‘sourcing lever diamond’ and the ‘7-levers’, there are only a few other academics that made effort to develop a framework: the ‘purchasing chessboard’, presented in the previous chapter and the ‘purchasing bull’s eye’, discussed in this chapter. However, the most empirical elaborated framework is developed by Schiele (2007).

¹⁸⁷ See Hesping and Schiele (2016a), p. 104

¹⁸⁸ See Hesping and Schiele (2015), p. 145

¹⁸⁹ See Hesping and Schiele (2016b), p. 474

¹⁹⁰ See Karjalainen and Salmi (2013), p. 112

¹⁹¹ See Schiele (2007), p. 279

¹⁹² See Schuh and Bremicker (2005), p. 68

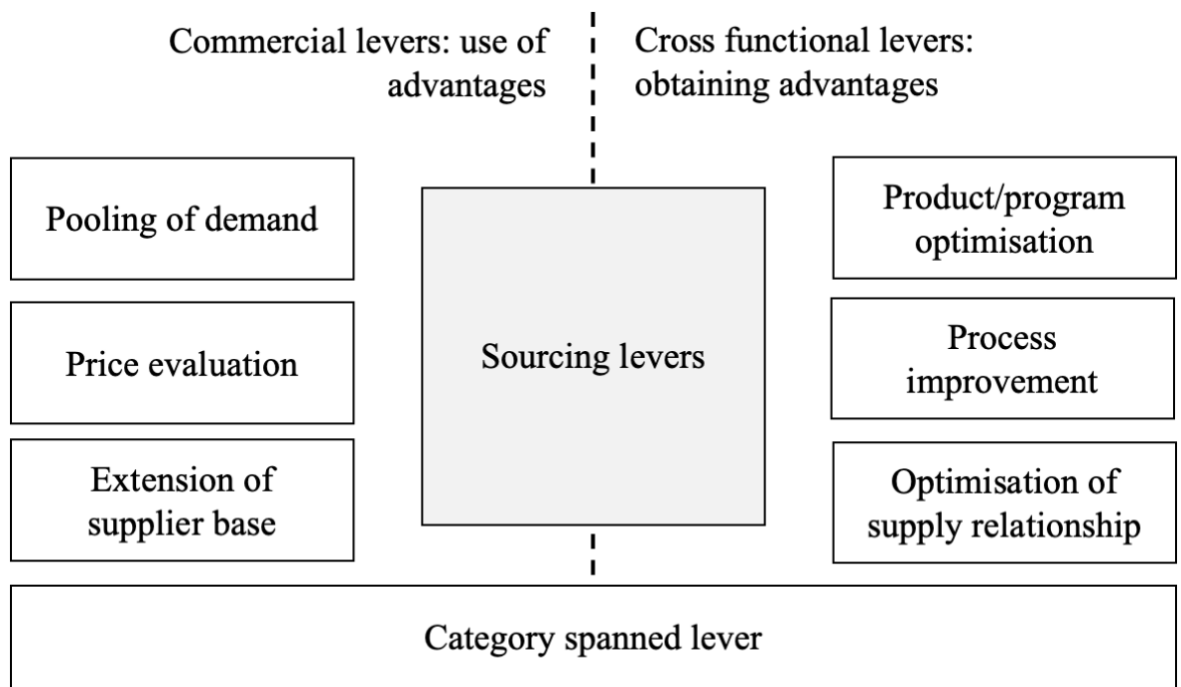


Figure 4 - Seven sourcing levers (Schiele, 2007, p. 280)

Six of the seven levers are divided into two groups focussing on optimisations within categories, where the remaining lever is for categories in general. The first group contains the commercial levers: ‘pooling of demand’, ‘price evaluation’, and ‘extension of supplier base’.¹⁹³ Pooling of demand, also known as volume bundling, is a widely used lever, where companies aim for purchase advantages by ordering in bigger volumes at once. Purchase managers try to engage in consolidating demand and increasing purchasing volume per request for quotation.¹⁹⁴ Price evaluation is a direct approach where purchase managers engage in forming price targets, analysing suppliers’ bids and cost structures, and focus on comparison of quoted prices with past offers or similar purchases. Extension of supplier base deals with the number of suppliers, the competition in the supply market, and it may be done through international sourcing and developing local or foreign sources.

The second group contain the cross-functional levers: ‘product and program optimisation’, ‘process optimisation’, and ‘intensification of supply relationship’.¹⁹⁵ Product and program optimisation includes internal engagement of purchasing into cross-functional product development teams and bringing suppliers’ external expertise into the product development process by stimulating for innovation. Process optimisation focuses on the efficiency and effectiveness of the buyer-supplier interface to reduce transaction costs

¹⁹³ See Schiele et al. (2011), p. 322

¹⁹⁴ See Hesping and Schiele (2016b), p. 478

¹⁹⁵ See Schiele et al. (2011), p. 322

between companies, which mainly focus on information exchange, transparency, and fast process cycle. Intensification, or optimisation, of supply relationship focuses on long-term perspective and joint efforts between buyers and suppliers.¹⁹⁶

The remaining lever is the category-spanning optimisation, which considers possible synergies across categories. Cost reduction in one commodity group may increase costs in another commodity group. Therefore, the category-spanning optimisation lever analyses the interplay and potential trade-offs between different materials or services.¹⁹⁷ These seven tactical sourcing levers enable operationalising a category strategy; however, purchase managers must know which and when levers need to be select.

Besides the Purchasing chessboard, the 7-levers model of Schiele (2007), another model for sourcing levers is developed by the H&Z management Consulting group and called the purchasing Bull’s Eye, see Figure 5. The Bull’s Eye focuses identifying category-specific levers to ensure maximum cost efficiency.¹⁹⁸ The model distinguishes four types of main levers, each containing its own sub-levers; demand planning [planning, reducing, substituting, bundling], specification lever [go-to market, re-design, reduce, standardise], sourcing lever [structure, award, re-negotiate, claim], and execution [supplier development, partnering, process optimisation, supply chain optimisation]. When deploying the Bull’s Eye model, four rules apply; select the right input sources, generate ideas within cross-functional teams, make full use of technology, and define a reasonable implementation roadmap.¹⁹⁹

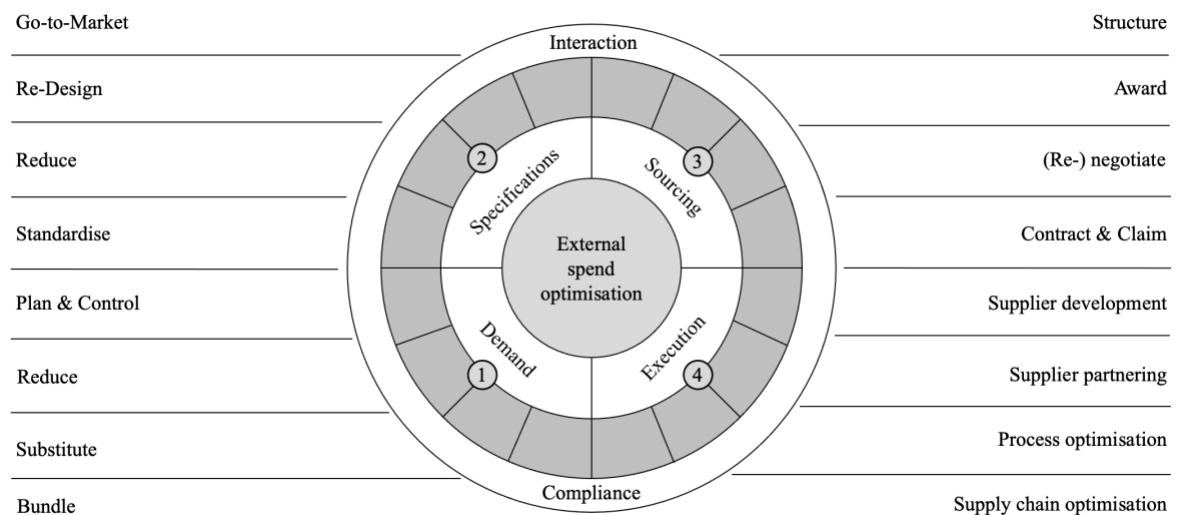


Figure 5 - Purchasing Bull’s Eye (Aichbauer et al., 2022, p. 100)

¹⁹⁶ See Hespings and Schiele (2016b), p. 481

¹⁹⁷ See Schiele et al. (2011), p. 323

¹⁹⁸ See Aichbauer et al. (2022), p. 99

¹⁹⁹ See Aichbauer et al. (2022), p. 101-103

The sourcing lever model developed by Schiele (2007) is the most comprehensive empirical elaborated framework, therefore mainly this model is used as examples in the next chapters.

2.3.2 Sourcing lever selection based on portfolio analysis

Levers are chosen depending on the strategy and situation, however, typically, elements from more than one lever will be used to support the category strategy.²⁰⁰ It is important that activities are combined in such a way that the overall result is significantly improved relative to the individual results. Schiele et al. (2011) show in their research that some combinations can form a coherent sourcing strategy, e.g.: cost leadership, where elements of price evaluation and pooling of demand are used.²⁰¹ Or for instance product differentiation, where elements of product optimisation and supplier integration are used. Internal or external cross-functional teams focus on improving their product, and by involving the supplier more heavily, hidden, or unrecognised competencies and knowledge already in the supply base emerge. Furthermore, Hespings and Schiele (2015) stress that it is critical to choose a set of internally consistent sourcing levers which, when aggregated, form a coherent sourcing strategy.²⁰² A well-defined category strategy may play an important role here as guidance for selecting among several competing levers.

From the latter, it seems that multiple lever combinations seem to work properly together. However, which lever does a purchase manager need to select in what kind of situation? There are many ways, e.g., based on: expertise, a category strategy, a certain purchase goal, portfolio models, and so on. Especially portfolio models create possibilities, as it creates a category specific strategy, and helps with selecting the appropriate lever. Several studies (e.g. Cox, 2015; Hespings & Schiele, 2016a; O'brien, 2019; Raudabaugh et al., 2012; Schuh et al., 2009) present conceptual frameworks linking purchasing portfolios with tactical sourcing levers. Taking the Kraljic Matrix, seen as the most comprehensive and used portfolio model,²⁰³ there are four quadrants [non-critical, leverage, bottleneck and strategic] with their own strategies. The purchasing chessboard, advocated by AT Kearney, exemplifies the interconnection between the Kraljic matrix and distinct levers. Furthermore, the study of Hespings and Schiele (2016a) is notably, since it aims to assess whether and how

²⁰⁰ See Hespings and Schiele (2015), p. 145

²⁰¹ See Schiele et al. (2011), p. 330

²⁰² See Hespings and Schiele (2015), p. 145

²⁰³ See Gelderman and Van Weele (2003), p. 207

the application of tactical sourcing levers vary among the quadrants of the Kraljic matrix, by analysing 107 direct sourcing of an automotive OEM [original equipment manufacturer] in a period of approximately 5 months. Respondents were asked how likely it was whether activities of sourcing levers are used in a certain project, based on a 7-point Likert scale, where 1 = 'not used' to 7 = 'extensively used'.

The table with a comparison of tactical sourcing lever usage across portfolio from quadrants the study of Hesping and Schiele (2016a) show some interesting and surprising outcomes.²⁰⁴ Non-critical purchases [n=11], characterised by their low strategic importance and low supply risk, score high on price evaluation and volume bundling. However, from the four portfolio quadrants, volume bundling is the least utilised approach in non-critical purchases. Leverage purchases [n=11], characterised by high strategic importance and low supply risk, mainly use price evaluation, volume bundling, and extension of supply base tactics. Bottleneck purchases [n=55], characterised by low strategic importance and high supply risk, score below average on six out of seven tactical sourcing levers. Intensification of supply relationships was the only lever where tactics score the average value. Strategic purchases [n=33], characterised by high strategic importance and high supply risk, score, in contrast to bottleneck purchases, high on six out of seven tactical sourcing levers. This shows that a wide range of tactical sourcing levers and much effort is invested into strategic purchases. Only category-spanned optimisation scores little below average. Comparing to the other quadrants, product optimisation scores above averagely high on strategic purchases.

The above study from is one of the few empirical studies and practitioners need to keep this in mind when making conclusions. Volume bundling for non-critical purchases is in several studies strongly recommended (e.g. Caniëls & Gelderman, 2005; Gelderman & Van Weele, 2005; Kraljic, 1983; Nellore & Söderquist, 2000), although it is the least used approach in the study of Hesping and Schiele (2016a). These and more contradictions occur when comparing this study to literature. This indicates that there are no best practices of specific levers in specific portfolio quadrants that frequently yield benefits.

Furthermore study of Schiele et al. (2011) and Hesping and Schiele (2016a) show that sourcing levers are not exclusively limited to a single portfolio quadrant, which could limit purchase managers by selecting levers.²⁰⁵ This also an existing problem when applying the purchasing chessboard, since the framework is developed with fixed levers and is

²⁰⁴ See Hesping and Schiele (2016a), p. 114

²⁰⁵ See Schiele et al. (2011), p. 327; Hesping and Schiele (2016a), p. 111

designed this way so that not every lever can be used in every quadrant. Therefore, the studies of Schiele et al. (2011) and Hesping and Schiele (2016a) question the applicability of the purchasing chessboard.

2.3.3 Portfolios as antecedents for supplier selection

Selecting suppliers and deciding suppliers' strategies is one of the major keys for an effective, optimised, and accountable supply chain.²⁰⁶ Selecting the appropriate suppliers is at the bottom-line of the hierarchical distinction of the purchase department, see Figure 1.²⁰⁷ A close relations with suppliers results in cost reduction, quality increase and faster release of new product in the markets.²⁰⁸ Furthermore, suppliers are involved in a wide part of business, due to the growing tendency to outsource logistics, manufacturing, marketing, and product development activities. Where in the past most manufacturing companies did most of the process by themselves, in this modern world companies outsource their processes, resulting that purchase is responsible for 50 to 70 percent of a company's revenues.²⁰⁹ Therefore, Bianchini et al. (2019) state that integrating and aligning purchasing into company strategic planning can benefit the organisation and give a competitive edge.²¹⁰

Companies' goals of low cost, consistent high quality, flexibility, and quick response result in a generally lengthy evaluation process where suppliers are evaluated on criteria as pricing structure, reliability, personnel, research and development, capabilities, and so on.²¹¹ This selection is often based on values which are important for an organisation, meaning that supplier selection is usually in line with the purchasing or organisational goals.²¹² As seen earlier, these goals or strategies vary from quality, delivery, cost, innovation, and so on. Scur et al. (2022) confirm this by finding that corporate strategy and purchasing strategy can be extended to category strategies through purchasing criteria.²¹³ In their research, they investigate whether strategies at the functional purchase level align with the strategies at the category level, based on the purchase portfolio model of (Kraljic, 1983). The results suggest that the purchasing categories, containing different combinations of supplier selection criteria, in some situations determine criteria in the strategy alignment. These results show that portfolio models, besides category strategies and lever selection, are also used for

²⁰⁶ See Bianchini et al. (2019), p. 1195; Thiruchelvam and Tookey (2011), p. 438

²⁰⁷ See Ekström et al. (2020), p. 141; Hesping and Schiele (2015), p. 139

²⁰⁸ See Genis-Gruber and Ögüt (2014), p. 719

²⁰⁹ See Kraljic (1983), p. 114; Sánchez-Rodríguez et al. (2006), p. 57

²¹⁰ See Bianchini et al. (2019), p. 1195

²¹¹ See Bhutta and Huq (2002), p. 127

²¹² See Huma et al. (2020), p. 1775; Scur et al. (2022), p. 41

²¹³ See Scur et al. (2022), p. 42

supplier selection. Kraljic (1983) states that supply management becomes increasingly important the greater the uncertainty of supplier relationships.²¹⁴ Since portfolio models are widely adopted in practice to manage different types of buyer-supplier relationships,²¹⁵ they can offer an appropriate solution. In this research, extensive elaboration and discussion is dedicated to portfolio models. Nonetheless, it is noteworthy that the efficacy of all strategies, regardless of their level, is ultimately contingent on the actions of suppliers.²¹⁶ This means that there is one last step when utilising portfolio model, selecting, and managing suppliers.

Taking the portfolio model developed by Kraljic (1983) as the most comprehensive one, it gives multiple recommendations regarding suppliers. The classifications allow companies to weigh the suppliers' bargaining power against its own power, resulting in different recommendations per category.

Non-critical items usually have a small value per unit and there are many suppliers that could supply them.²¹⁷ Since the items have low values, organisations do not frequently search for suppliers and try to bundle as much volume as possible, to keep transaction costs low. Purchasers try to work with the same supplier for a reasonable period, however, the appropriateness of the supplier is typically reconsidered periodically and if necessary, a new selection will take place.²¹⁸

Leverage items are known for their low supply risk and high profit impact, meaning that there usually are many suppliers to choose from and the power is at the buying firm's side.²¹⁹ Usually, organisations do not work with one fixed supplier in the leverage category, they are frequently selecting new suppliers, negotiate the best price, and therefore buy from multiple sources.

Strategic items usually require a more established and long-term relationship, which makes that organisations often work closely together with one or a small number of suppliers.²²⁰ These items can give an organisation a competitive edge, meaning that innovation, quality, and reliable are extremely important in a scarce supply market.²²¹ As seen earlier this paper, flexibility from the supplier and getting priority are additional

²¹⁴ See Kraljic (1983), p. 110

²¹⁵ See Hespings and Schiele (2016a), p. 101

²¹⁶ See Thiruchelvam and Tookey (2011), p. 438

²¹⁷ See Thiruchelvam and Tookey (2011), p. 439; De Boer et al. (2001), p. 79

²¹⁸ See De Boer et al. (2001), p. 79

²¹⁹ See Kraljic (1983), p. 112

²²⁰ See De Boer et al. (2001), p. 79

²²¹ See Gelderman and Van Weele (2002), p. 31

advantages that buying firms want and can achieve for strategic items, by obtaining a preferred customer status.²²²

The outstanding criteria for bottleneck items are safe and reliable supply, or ‘volume insurance’.²²³ Due to the high supply risk and usually low number of suppliers, this category causes a lot of problems and risks. To achieve this volume insurance, usually a close buyer-supplier relationship, supplier control, and backup plans are required.²²⁴

Also in the examples of the previous paragraphs, the Kraljic Matrix again show that not all products and buyer-supplier relationships are to be managed in the same way.²²⁵ Since this globalised digital world contains a growing number of potential suppliers, attributes, an increasing number of situational contexts that affect appropriateness of specific supplier attributes and brings difficulty in identifying and defining supplier selection parameters, supplier selection is not a straightforward matter anymore.²²⁶ Suppliers are rated on purchaser’s short-term requirements in terms of cost, quality, service etcetera, and long-term criteria, such as the capability of suppliers that can be leveraged to the buyer’s advantages. Purchase managers can use portfolio models to support their selecting process and substantiate their choices.

2.3.4 Portfolios as safeguard for achieving competitive priorities: cost, quality, safe supply, innovation, strategic advantage, and sustainability

Purchase criteria represent manufacturers’ relative emphasis on strategic initiatives to achieve superior performance and competitive advantage from suppliers.²²⁷ Rashidi et al. (2020) conducted a systematic literature review where they found that quality, delivery, cost, price, technology capability, and flexibility are found to be the most used criteria in selecting suppliers. More recent, innovation and sustainability are also considered as important criteria when selecting suppliers.²²⁸ Hesping and Schiele (2015) Luzzini et al. (2012), and (Karjalainen & Salmi, 2013) confirm this by emphasising the importance of cost, quality, delivery, innovation, efficiency, and sustainability for organisations.²²⁹ McCardle et al. (2019) see cost, quality, and safe supply as exploitative capabilities, because of their focus

²²² See Schiele (2020), p. 125

²²³ See Gelderman and Van Weele (2002), p. 31

²²⁴ See De Boer et al. (2001), p. 79

²²⁵ See Gelderman and Van Weele (2003), p. 207; Karjalainen and Salmi (2013), p. 114; Luzzini et al. (2012), p. 1015.

²²⁶ See Thiruchelvam and Tookey (2011), p. 440

²²⁷ See McCardle et al. (2019), p. 6

²²⁸ See McCardle et al. (2019), p. 6

²²⁹ See Hesping and Schiele (2015), p. 145; Luzzini et al. (2012), p. 113; Karjalainen and Salmi (2013), p. 1027

on efficiency and improvement.²³⁰ Moreover, they consider innovation, flexibility, and sustainability as explorative capabilities as they are oriented toward adaptation and innovation. Sustainability captures both environmental aspects, e.g. carbon footprint, gas consumption and energy efficiency, and social aspects, e.g. workers' rights, health and safety and child labour.²³¹ These competitive priorities help to achieve purchase performance targets.

Portfolio models can be utilised as safeguards for achieving those competitive priorities. Continuing with the example of the Kraljic matrix, the model enables to achieve these priorities. When positioning categories, for example in the leverage cluster, known by its high strategic importance and low supply risk, the Kraljic matrix gives guidance for cost priority. As seen in the study of Hesping and Schiele (2016a), they state that leverage purchases mainly use price evaluation and volume bundling, to exploit its full purchase power.²³² The process of placing the categories in the matrix, visualising it and creating an environment for discussion with the management team, opens the dialogue and enables discussions to set strategies to meet the competitive priorities. It enables the achievement of competitive priorities, by prompting buyers to engage in cognitive deliberation of the purchased items, their attributes, such as leverage in this instance, and their potential capabilities. This example can be used throughout the whole Kraljic matrix, since every cluster recommends certain tactic, which subsequently meet the competitive priorities and the purchase targets.

The Kraljic Matrix is one of the models which serves as a safeguard to achieve competitive priorities, however, there are more. As seen in Table 1 and 2, there are multiple portfolio models, all fulfilling their goals and having their specialisations. Portfolio models such as Van Weele (2018), Monczka et al. (2015), Luzzini et al. (2012), Park et al. (2010), and Bensaou (1999) all aim at the buyer-supplier relationship. When purchasers position their categories in these models, they serve as a safeguard for directly or indirectly achieving competitive priorities as innovation from suppliers or safe supply. Luzzini et al. (2012) define in their portfolio model the product range as 'steady', 'volatile', 'special', or 'risky', emphasising the need for extra attention in, for instance the cluster 'risky'. With this, it opens the discussion and visualises that, continuing the example of the risky cluster, these risky products need extra attention, which may prevent problems in the competitive priorities.

²³⁰ See McCardle et al. (2019), p. 6

²³¹ See Caniato et al. (2014), p. 620

²³² See Hesping and Schiele (2016a), p. 114

The usefulness of portfolio models is seen in the wide application and its flexibility to make it a powerful management tool. Multiple portfolio models, all with their own focus, serve as a safeguard to meet and achieve competitive priorities. The models do so by visualising processes, pushing dialogues, and developing strategies.²³³

2.4 Most publications are conceptual and anecdotal by nature

The study of Hesping and Schiele (2015) contains a comprehensive review of literature about purchasing at tactical or categorical level.²³⁴ It stood out that most of the publications were conceptual or anecdotal by nature. However, the body of literature exhibits a deficiency in comprehending the practical implementation of category management by purchase experts.

The existing gap in literature is visualised at level 3 and 4 of Figure 1. The practical knowledge of developing a category strategy and the transition from category strategies to implementing it at a tactical level by deploying sourcing levers, remains unclear. The gap exists in different parts of the category management cycle.

First, literature lacks understanding about the process of category management in practice. As seen in the introduction, Burlakova and Ruzhanskaya (2021) state that there is a gap between the theoretical basis and its practical use, which implies that there is insufficient understanding about how practitioners develop category strategies and control them.²³⁵ The necessity of a better understanding of this process is, from a practical point of view, to ascertain common practices, identify best practices and to dissolve challenges.

Second, Formentini et al. (2019) emphasise that there is need for additional research to bridge the gap between research and practical implementation of purchasing portfolio models.²³⁶ Purchasing & Supply Management literature has mainly focused on the need to adopt differentiated approaches to exploit the extensive variety of optimisation opportunities available in purchasing, considering purchasing categories and supplier relationships by using purchase portfolio models (e.g. Kraljic, 1983; Luzzini et al., 2012; Olsen & Ellram, 1997). However, Hesping and Schiele (2016a) indicate the gap between the literature on portfolio strategies and practice actions remains in the transition from the strategic to the tactical level.²³⁷

Last, the deficiency in the scholarly literature regarding the category strategy activities of purchasing professionals has also led to ambiguity regarding the technologies

²³³ See Gelderman and Van Weele (2002), p. 33; Padhi et al. (2012), p. 1

²³⁴ See Hesping and Schiele (2015), p. 141

²³⁵ See Burlakova and Ruzhanskaya (2021), p. 206

²³⁶ See Formentini et al. (2019), p. 182-183

²³⁷ See Hesping and Schiele (2016a), p. 113

employed and their importance in the process. In this era of globalisation and technological dependence, it is of paramount interest to ascertain the specific technologies utilised in each phase of the category sourcing cycle, as well as the areas where challenges arise, and where technology can provide potential solutions.

Attaining knowledge on how purchase professionals organise category strategy, and which models they utilise is of utmost importance. Such information would enable scholars and practitioners to gain deeper insights into the current situation in the purchasing domain, identify best practices, and pinpoint potential obstacles. Furthermore, scholars can use this information to conduct more specific research about the pitfalls from the models and demand from the purchase field, to improve the future of purchasing practices.

Therefore, this research is built around the goal of collecting valuable information from purchase professionals regarding their category strategy. Chapter 2 answered the first research question by giving a comprehensive overview of portfolio models and their intended objectives, the steps of developing and managing a category strategy, and different sourcing lever models. The methodology, research design and data collection are discussed in chapter 3. Research questions 2 and 3 are addressed in chapter 4 and discussed in chapter 5, presenting the results of the questionnaire. Chapter 5 discusses the findings in relation to existing literature, captures the managerial and theoretical implications, and provide the limitations and areas for future research. Chapter 6 ends the research with a conclusion.

3 Methodology: conducting semi-structured interviews is the best method to study how professionals organise category management

3.1 Method choice [benchmarks, world café, focus groups, expert interviews]

Two distinct methods of research are quantitative research and qualitative research. Quantitative research requires the reduction of phenomena to numerical values in order to carry out statistical analysis.²³⁸ Qualitative research in contrast involves collection of data in a non-numerical form.²³⁹ Since the aim of this research is to study the category management process by purchase professionals, and it is required to let them explain their experienced view, a qualitative research approach is required.

There are multiple ways to extract appropriate data from purchase managers. Schiele et al. (2022) conducted comprehensive research discussing widely used research designs: ‘Expert Interviews’, ‘Delphi’, ‘Benchmarking’, ‘Focus Group’, and ‘World Café’.²⁴⁰ To make sure getting the most precise and including understanding about how professionals organise category management, these four research designs are discussed, and its advantages and disadvantages are weighed against each other.

Schiele et al. (2022) state that qualitative data collection, as a first phase of research, takes place in form of interviews.²⁴¹ For example ‘Expert Interviews’, is a research design where experts in the field of interest are interviewed to extract rich information and insights based on their experience and knowledge.²⁴² There exists a difficulty in the conceptualisation of who would actually classify as expert. Bogner et al. (2009) state that expert interview is an efficient and concentrated method of gathering data in the exploratory phase of a project.²⁴³ Schiele et al. (2022) add that the overall objective of expert interviews is to generate or refine theoretical knowledge.²⁴⁴ This corresponds to the aim of this study to gather theoretical knowledge about how experts organise category strategy. Moreover, these expert interviews have an individual approach, in contrast to Delphi, benchmarking, focus group and the world café, which involve interaction among study participants.²⁴⁵ However, series of expert interviews are very time consuming, since they have to be scheduled successively, and transcribed.²⁴⁶

²³⁸ See Gelo et al. (2008), p. 268

²³⁹ See Gelo et al. (2008), p. 268

²⁴⁰ See Schiele et al. (2022), p. 287

²⁴¹ See Schiele et al. (2022), p. 281

²⁴² See Hauashdh et al. (2022), p. 3

²⁴³ See Bogner et al. (2009), p. 2

²⁴⁴ See Schiele et al. (2022), p. 288

²⁴⁵ See Schiele et al. (2022), p. 287

²⁴⁶ See Schiele et al. (2022), p. 287

A less time-consuming method for the interviewer is the Delphi method, where the target for a group of experts is to reach consensus on a certain subject through successive rounds of feedback.²⁴⁷ Crisp et al. (1997) define Delphi as: “*as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem.*”²⁴⁸ Since it is a formal process of collecting written feedback and extending over several rounds, a Delphi study takes long to complete as well, however, this time for the participants.²⁴⁹ This could even have the consequence to be prone to the loss of panel-members from one round to the next.

Another way of collecting data from a group is benchmarking. There are various definitions of benchmarking, one of them is as follows.

*A continuous and systematic process of evaluating organisations recognised as leaders by their peer’s determining business and work processes that represent best practices and establishing rational performance goals.*²⁵⁰

Again, benchmarking, as a group technique has the advantage that it is a quicker way of collecting data than personal interviews. However, when comparing benchmark and Delphi studies to ‘focus group’ research or a novel method called ‘world café’, it stands out that speed remains a problem.²⁵¹ These studies heavily rely on awarding participants sufficient time to give feedback on the fellow discussants.

The expeditious technique of gathering data from a group is achieved through the employment of the research design "focus group." Focus group is defined as follows.

*A technique involving the use of in-depth group interviews in which participants are selected because they are a purposive, although not necessarily representative, sampling of a specific population, this group being ‘focused’ on a given topic.*²⁵²

Participants in this type of research are selected on their knowledge of a particular topic. One of the advantages of focus-group interviews is its group dynamics, resulting in often deeper

²⁴⁷ See Schiele et al. (2022), p. 287

²⁴⁸ Crisp et al. (1997), p. 5

²⁴⁹ See Schiele et al. (2022), p. 287

²⁵⁰ Moriarty and Smallman (2009), p. 487

²⁵¹ See Schiele et al. (2022), p. 281

²⁵² Rabiee (2004), p. 655

and richer than those obtained from one-to-one interviews, since the type and range of data generated through the social interaction.²⁵³

A special form of focus group research is ‘world café’, also called ‘circulating focus group’.²⁵⁴ The definition of world café is as follows.

*A method of explorative data collection as part of a qualitative research approach, gathering experts in a workshop, which share their knowledge by rotating between several discussion tables, which each are focusing on a particular aspect of the overall topic.*²⁵⁵

World café differs in several respects to focus group. It distributes sub-research questions to different tables, where participants, randomly rotating between the tables, discuss each sub-question in small groups. This enables the researcher to receive even more richer data collection, since the world café method allows for cross-pollination of ideas.²⁵⁶

It seems that there are several methods to collect data, and all have their advantages and disadvantages. Since time is not a particular problem, it allows to look further than the quick methods as focus group or world café. However, there is one critical prerequisite that needs to be kept in mind: the opinion, method or answers of a purchase professional may not be influenced by other purchase professionals. The goal of this research is to collect data from various purchase professionals and compare their answers about organising a category strategy, which means that cross-pollination of ideas is impermissible, since it withholds the real practices and possibly influence answers. Expert interviews allow the researcher to do one-to-one interviews, where participants, purchase professionals in this case, are not influenced by their co-participants answers. Therefore, the appropriate method for this research to collect individually data from various purchase professionals and later compare the results, is expert interview. An overview of the approach for this research is presented in Figure 6, wherefrom remaining elements will be presented in the next chapters.

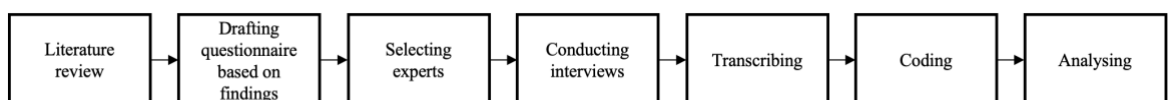


Figure 6 - Research approach

²⁵³ See Rabiee (2004), p. 656

²⁵⁴ See Schiele et al. (2022), p. 281

²⁵⁵ Schiele et al. (2022), p. 281

²⁵⁶ See Schiele et al. (2022), p. 281

3.2 Research goal and design: steps in semi-structured interviews to extract rich and empirical data of category management in purchasing

For the expert interviews, a semi-structured interview is the most suitable method to discover how purchase professionals organise their category strategy. Semi-structured interviews allow for both flexibility and structure during the interview. McIntosh and Morse (2015) states that semi-structured interviews employ a relatively detailed guide and may be used when there is sufficient objective knowledge about an experience or phenomenon, but the subjective knowledge is lacking.²⁵⁷ The latter is why semi-structured interviews fits this research, since the goal is to discover subjective practices of purchase professionals. The semi-structured interviews have a structured set-up, which allows for tailoring the questions towards discovering how purchase professionals organise category strategy. Moreover, semi-structured interviews allow flexibility which enables interviewees to talk freely about their experienced purchase knowledge, not directly captured in the questions. Therefore, this research draws on semi-structured interviews as the most suitable approach to collect rich data about organising a category strategy by purchase professionals.

A research design is the structure that ensures accountable and legitimate answers to research questions by linking methodological assumptions of a research approach to its research methods.²⁵⁸ The semi-structured interviews are captured in a questionnaire that roughly contains three sections: general company characteristics; category strategy, portfolio usage and lever deployment; and the use of software in category management. The questionnaire contains six main questions in total, all with their own sub questions.

The first section contains some general questions to get a better understanding about the purchase professional and the company. By asking to introduce the company and its main objectives in purchasing, information about company activities, number of employees, industry, revenue, and more is expected to be collected. The goal is to get a clear overview of the characteristics of the organisation, which later can be used to seek for similarities or differences between the participants.

The second section of the questionnaire deals with the category strategy of the companies. The first main question is general by asking about the process of deriving a category strategy. This is asked this way intentionally, as it allows the interviewee to freely articulate their initial thoughts without being confined into particular directions. To gain the valuable information looking for, direct questions will follow about the the sourcing process

²⁵⁷ See McIntosh and Morse (2015), p. 1

²⁵⁸ See Gelo et al. (2008), p. 272

and cycle, the cross-functional body of the team, and how and which variables are used to form a category. Since it is expected that portfolio models play an important role in professionals category strategy process, follow-up questions are asked about which models they use, why they use these models and not others, and how they use it for their category strategy. The last questions of this section deal with the way purchase objectives are linked to the category strategy, how the strategy is implemented via sourcing levers and how the strategy is monitored. The interviewees are asked which and how sourcing levers are deployed in the company, since it would be valuable to find out which levers are deployed and whether this is done systematically or by “cherry picking”.

Taking the importance of the industry 4.0 nowadays and in the future, the last section deals with the use of software in the purchase department. These questions are asked to discover if technology takes a critical role in the purchasing, especially in the category strategy process, and how this impacts the process.

Table 3 gives an overview of the main questions of the questionnaire, and their purposes, asked to the purchase professionals. Table 3 does not contain all sub questions; the entire questionnaire can be found in Appendix 3.

Table 3 - *Questionnaire questions and their purposes*

| Question | Purpose | References |
|---|--|---|
| 1 “Could you briefly introduce your company? Which are the main objectives/KPIs in purchasing?” | Understanding the business strategy and their focus in purchasing | (Hesping & Schiele, 2015) (Apte et al., 2019) |
| 2 “How do you derive a category strategy?” | Understanding how a category strategy is developed and managed | (Apte et al., 2019) (Ateş, 2014) (Burlakova & Ruzhanskaya, 2021) |
| 3 “How do you form / assemble categories?” | Discovering whether categories are formed by the market or something else like product characteristics | (Hesping & Schiele, 2016a) (O'brien, 2019) (Van Weele, 2018) (Hesping & Schiele, 2015) |
| 4 “Which models/matrix/portfolios do you use for category management?” | Discovering which methodologies are used by professionals, why they are used and how. | (Luzzini et al., 2012) (Cox, 2015) (Gelderman & Van Weele, 2005) |
| 5 “How do you link the purchase objectives to the category strategy?” | Understanding how professionals operationalise category strategies [by means of levers] and discover whether this process is executed systematically | (Schiele, 2007) (Schiele et al., 2011) (Hesping & Schiele, 2015) |
| 6 “Do you use software/technology for purchasing? Which systems? For all categories?” | Discovering whether technology takes a critical role in the category strategy process | (Flehsig et al., 2022) (van Hoek et al., 2022) (Chandrasekara & Wickramarachchi, 2020) (Schiele & Torn, 2020) (Bienhaus & Haddud, 2018) |

3.3 Sampling and data collection from various professionals to gain a better understanding about organising category management

The sample size is not completely random, since specific companies are targeted to be interviewed. Most of these companies are regarded as big companies [more than 500 employees], and purchasing is for a big part responsible for their revenue. Furthermore, the purchase portfolio deployment in SMEs is much lower than that of larger enterprises.²⁵⁹ This is confirmed by Gelderman and Van Weele (2005) stating that big companies are expected to be more mature and have more processes defined and standardised, therefore they are likely to more frequently use purchase portfolio models.²⁶⁰

Before sampling the interviewees, the sample size was determined. Guest et al. (2006) states that a sample of six interviews is sufficient to enable development of meaningful themes and useful interpretations.²⁶¹ To make sure the data is saturated, the sample size is set on seventeen.

Since the expectation that production companies, instead of service companies, are more focused on purchasing, they get the preference. For that reason, this research focusses on the packaging, manufacturing, retail, automobile, and food industry. However, to balance the sample and discover practices from other industries as well, the financial, consultancy, pharmaceutical, and telecommunication industry are also included. The interviewed purchase professionals are working in big companies, since the use of portfolio models by SMEs is much lower than that of larger enterprises.²⁶²

The questions are asked to purchase professionals with an experience averaging seventeen years. It is for a reason that the questions are asked to these seasoned employees since they have high authority in the purchasing department of the company. Furthermore, it is expected that they have a thoroughly understanding of purchasing, a clear overview of the process, and can better define the best practices and pain points than employees that are new in the field of purchasing.

After defining and setting the sample size and their characteristics, the interviewees were non-randomly selected, contacted and interviews were scheduled. The full sample of interviewees participating in this research can be found in Table 4, where a complete overview is presented of both the interviewees and the company characteristics.

²⁵⁹ See Lee and Drake (2010), p. 6652

²⁶⁰ See Gelderman and Van Weele (2005), p. 21

²⁶¹ See Guest et al. (2006), p. 78

²⁶² See Lee and Drake (2010), p. 6652

Table 4 - Research sample: participant and company characteristics

| Number | Job Title | Experience in purchase [years] | Industry | Number of employees | Company revenue |
|--------|--|--------------------------------|----------------------|---------------------|-----------------|
| 1 | Regional purchase manager | 20 | Automobile | 157.000 | €120B |
| 2 | Indirect purchase director | 24 | Food | 80.000 | €47B |
| 3 | Senior purchase manager | 10 | Financial | 90.000 | €26B |
| 4 | Senior consultant strategic sourcing | 20 | Consultancy | 200 | €5M |
| 5 | Indirect purchase manager | 18 | Food | 104.000 | €26B |
| 6 | Global sourcing director packaging | 18 | Brewery | 80.000 | €30B |
| 7 | Indirect procurement manager | 15 | Retail | 321.000 | €82B |
| 8 | Regional procurement director | 13 | Packaging | 22.000 | €4B |
| 9 | Indirect procurement manager | 10 | Food | 276.000 | €96B |
| 10 | Lead procurement and logistics | 20 | Packaging | 25.000 | €782M |
| 11 | Lead global planning | 24 | Manufacturing | 10.471 | €314M |
| 12 | Strategic procurement & Lead operations | 2 & 20 | Food | 19.000 | €9B |
| 13 | Regional head of procurement | 17 | Food | 23.000 | €12B |
| 14 | Regional category procurement head | 20 | Pharmaceutical | 100.000 | €46B |
| 15 | Global commodities manager & Project purchaser | 25 | Electric | 15.800 | €2.4B |
| 16 | Principal Manager Digital & Purchasing | 19 | Telecommunications | 104.000 | €45.6B |
| 17 | Head of Procurement & Supply Chain | 20 | Industrial mechanics | 96.000 | €41.1B |

3.4 The collected interview data is analysed through content analysis

The interviews are analysed by means of content analysis. Stemler (2000) defines content analysis as “a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding.”²⁶³ Moreover, content analysis is “a technique for making inferences by objectively and systematically identifying specified characteristics of messages.”²⁶⁴ The technique allows discovering and describing the focus of individuals through large volumes of data with relative ease.

The practical application of content analysis is a powerful tool to examine trends and patterns in documents. This fits the research goal to identify communalities between the category strategies of different organisations. Via this way it is possible to discover methods

²⁶³ Stemler (2000), p. 1

²⁶⁴ Stemler (2000), p. 1

that are in common and eventually identify some best practices. Analysing interviews by means of content analysis contains several steps.

The first step in analysing the data of interviews is to convert the spoken words into text. Widodo (2014) defines the meaning of transcribing as follows: “*the act of representing original spoken text [recorded talking data] in written discourse.*”²⁶⁵ The transcriptions of the interviews serve as a fundament of content analysis. The transcriptions are created by the use of Amberscript, which is a software that transforms audio-recordings into text. The generated transcriptions from Amberscript are reviewed multiple times by two individuals to manually correct possible errors in the text.

The transcriptions are analysed by means of codes. These codes are manually and individually made by two individuals, based on the questionnaire, see appendix 3. With these codes, three transcriptions are analysed separately to verify whether all the codes are appropriate, and no codes were missing. Afterwards, the overlapping codes, made by the two individuals, are merged into the most suitable codes for the research goal. The result is a total of 36 codes that are loaded in the program ATLAS.ti. This software is used to analyse the transcriptions and code the text in a systematic and structured way.

After the codes are set, all transcriptions are analysed, and the codes are applied on the text. The codes are reviewed multiple times by two individuals to identify possible wrong applied codes or still to be coded text. In the end, a total of 798 quotations are coded.

The analysis of the transcriptions resulted in a total of 798 coded quotations, which are summarised in 36 codes. Table 5 shows an overview of the 36 applied codes, where a check symbol indicates that the purchase professional mentioned the concept to be part of the firm’s methodology, purchase goals or purchasing process. The additional results from the interviews are shown in chapter 4.

²⁶⁵ Widodo (2014), p. 101-102

4 Results: empirical data on how professional in purchasing organise category management

4.1 Professionals emphasise identical elements in the governance of category management

This section discusses the results from the interviews with the seventeen purchase professionals and addresses the second and third research questions by providing models the professionals mentioned to deploy and their citations. The data from the content analysis, based on these seventeen interviews, is visualised in a cross-comparison chart, see Table 5. For definitions of the concepts, see Table A1 in Appendix 4.

Table 5 - Cross-comparison table

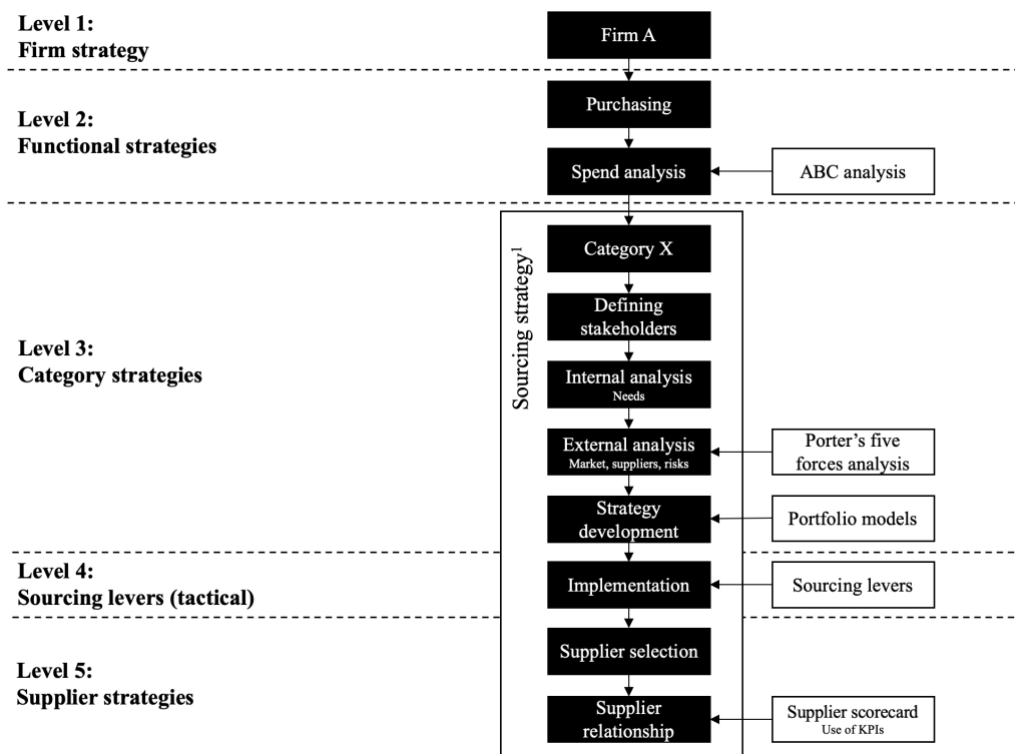
| | Total | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 | R16 | R17 |
|---|-------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Purchasing Objectives | | | | | | | | | | | | | | | | | | |
| Price reduction | 17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ESG goals | 14 | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Security of supply | 14 | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Innovation | 10 | ✓ | | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |
| Quality | 8 | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| User experience | 8 | | ✓ | ✓ | | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | | ✓ | |
| Team satisfaction | 6 | ✓ | | ✓ | | | ✓ | ✓ | | | | | | ✓ | | | ✓ | |
| Efficiency/productivity | 6 | | | ✓ | | ✓ | | | | | | | ✓ | ✓ | | | ✓ | ✓ |
| Supplier relationship | 3 | | | ✓ | | | | | | | ✓ | ✓ | | | | | | |
| Category Strategy | | | | | | | | | | | | | | | | | | |
| Direct/Indirect org. | 16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| User co-development | 16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Global/local level | 14 | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Internal analysis | 14 | ✓ | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| External analysis | 13 | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ |
| Supplier assessment | 9 | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | | |
| Spend analysis | 9 | | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ | ✓ |
| Models/Frames used | | | | | | | | | | | | | | | | | | |
| Kraljic matrix | 14 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Porter 5 forces | 9 | | ✓ | ✓ | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| ABC Curve | 7 | | | | ✓ | ✓ | | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | | |
| SWOT | 8 | | | ✓ | | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | | | ✓ | ✓ |
| Purchasing chessboard | 4 | | | ✓ | ✓ | | | | | ✓ | | | | ✓ | | | | |
| 7 levers approach | 1 | | | | | | | | | | | | | | | | | ✓ |
| Dutch Windmill | 1 | | | | ✓ | | | | | | | | | | | | | |
| Levers used in practice | | | | | | | | | | | | | | | | | | |
| Pooling of demand | 16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Price evaluation | 16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Supply base extension | 15 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Process improvement | 15 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Supplier relationship | 16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Product optimisation | 14 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Category Spanned | 6 | ✓ | | ✓ | ✓ | | ✓ | | | | | | ✓ | | | | | ✓ |
| Systematic Lever def. | | | | | | | | | | | | | | | | | | |
| Yes [chessboard, 7-levers, proprietary] | 7 | | | ✓ | ✓ | | | | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ |
| Not systematically | 10 | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | |
| Technologies/Apps | | | | | | | | | | | | | | | | | | |
| Microsoft Office | 12 | | ✓ | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Power BI/SAP cloud | 9 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | | | ✓ |
| SAP/ERP | 9 | ✓ | | ✓ | | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| P2P [Coupa/Arriba] | 8 | | ✓ | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ✓ |

The results from the interviews show, above all, similarities in the way professionals organise a category strategy and have a lot of communalities with the process as described in chapter 2.1.3. Notably, besides the common price reduction goal in purchasing, security of supply and ESG become more important by all professionals, described as follows:

The focus of the strategies is really the supply chain stable resilience, because we all learned in the last two years it's very difficult now to manage this. The second point it becomes more in the focus is sustainability, what was not part of the strategy the last ten years before. [R17]

Furthermore, it seems that a systematically approach in the transition from portfolios to lever deployment starts to be utilised in the category strategy development process. From the 17 purchase professionals, 7 include the purchasing chessboard, 7-levers model, or a proprietary model in their day-to-day process. Ending, the ‘technology’-part reveals that purchase professionals primarily employ Microsoft Office during their workflow and are progressively adopting data visualisation software such as Power BI.

Based on the results, a current and standard process of organising a category strategy is developed, see Figure 7.



¹ Generalised process based on interview outcomes: not all professionals mentioned the same steps in the exact same order

Figure 7 - Prevalent category strategies by purchase professionals, based on the five levels of strategy development in purchasing (Hesping & Schiele, 2015)

The results of the interviews are exciting; it shows evidence how professionals conduct their strategy in practice and which tools are deployed. The similarities, differences, and best practices are be discussed in this chapter.

At the governance level of purchasing, the importance of aligning the category strategies with the business objectives is often mentioned, which is in line with the study of González-Benito (2007). R2 describes this alignment as follows: *“I personally see it; procurement is to serve the business”*. Other examples can be found in Table 6, number 1 and 2. These examples show that purchasing and its category strategies should not neglect the business objectives when developing a strategy.

The organisations spend are divided into direct and indirect spends. The purchase professionals mentioned that the categories in their organisation are formed based on market, e.g., indirect spends contain standard categories as: logistics, human resource, or travel. For the direct spends, the categories differ per industry, however, in their industry the categories are common. There are some exceptions of categories that are not common, however, this is due to the specialty of this category and its product characteristics, which is described by R4: *“I got to analyse a spent assessment for a company that was a [...] mining company. Well, it's a little different, some of the specific indirect spend they have.”* During the study and segmentation of the spends, the ABC-analysis is an often-used method, seven professionals used in their strategy. Notably, no professionals formed categories based on product characteristics, which is in line with what Hesping and Schiele (2015) state in their research.

In the categories, sub-categories are created, which enables the professionals to be more specific when making a category strategy. The categories maintain stable over time; however, sub-categories tend to change, according to the market characteristics. A well-defined example for can be found in Table 6, see number 3. This explanation emphasises the constantly changing market and the importance for companies to be agile, so purchase goals can be ensured.

The methodology and steps for strategies are formed globally but implemented locally. Since it was not part of the questionnaire, hard numbers of these results cannot be shared, however, many examples were given where the interplay of global and local teams stood out. R1 describes: *“Basically, we replicate the global strategy within a small environment, a regional environment.”* Other examples can be found in Table 6, see number 4 and 5. An important factor in this consideration, is whether the leverage is global or local. R2 explains as follows: *“Try to bring the category where [global/local/regional] you have*

the best leverage or the biggest leverage for that category.” When the leverage is global, or regional, the organisation should act on it. However, it could also be the other way around; in such a case, it does not make sense to set a global strategy, see Table 6, number 6 and 7.

As mentioned, the purchase professionals emphasised the importance of aligning the purchase strategy with the business objectives. For among others this reason, it is key to include stakeholders during your process. All the professionals emphasised the tremendous importance of including stakeholders and their input in the process of developing a category strategy. Sixteen professionals explicitly mentioned that a strategy is not developed solely by purchasing, but in close contact with other departments, e.g., R&D, sales, operations. Two examples are shown in Table 6, see number 8 and 9.

In the process towards making a category strategy, there are two professionals that have formal gates of approval implemented in their process, which is obviously different than the others. R10 describes what questions he asks the stakeholders: *“Are you all okay for us to pursue this category, this strategy for this category? Are you okay with that? Yes, everybody is okay. So, we move to gate one.”* This valid approval of the stakeholders gives the purchase department a green light to continue the strategy development, by conducting an internal and external.

Table 6 - Citations from experts related to category management

| Second-Order Themes | First-Order Concepts | Representative quotes |
|-----------------------------|---|--|
| Purchase-business alignment | 1 Purchase serves the business | “Because sometimes you want to achieve something procurement, maybe the business wants to achieve a stable price with the retailers, right? So, if the business wants that, that is what you have to build.” R11 |
| | 2 Category management: a business-driven approach | “The objective, for me, of a category strategy of strategic sourcing is to transform from point A to point B. Whatever point A was in point B is, in line with the business strategy. So, through the delivery of the category strategies, we will support the business ambition, the business strategy for the next coming year. So, they need to be very much aligned, and that's why it is very much a business-driven type of approach.” R13 |
| Forming categories | 3 Aggregating categories around the supply market at the third level of granularity | “I think that when you talk about on a macro level, they tend to be fairly standardised. So, starting direct and indirect, then next level of granularity, you would go then into the direct materials, into packaging commodities. Systems, depending on what type of business you are [...]. I think that the third level of granularity is actually where you start to see some changing elements [...]. So, ultimately setting the categories, it's matrix of the spend, which you can aggregate around a certain supply market as well as the nature of the demand that the business has in into that supply market. So, it is a bit that combination between the demand side, which comes from the company's particularities, and the supply side, which is more basic and more generic globally.” R13 |
| | 4 Global standardised methodology | “Yeah, it is a global level. We used this methodology everywhere. So, it is very easy for me to move from the UK to Brazil because we are using the same nomenclature, the same process.” R10 |
| Global/Local | 5 Micro strategies inside one strategy | “It's a global strategy, but in the end, if you're buying bottles in Mexico, you have to develop one specific strategy for that country, for example. Right? So, I would say that we have a lot of micro strategies inside the one strategy.” R6 |
| | 6 Strategy development where leverage is | “You could have a local strategy, you could have a regional strategy, you have a global strategy depending on how the supply market is organised and depending on how your company is organised as well, and the possibility to leverage the spend across different regions. Because, if you can't really leverage the spend across different regions, it is very difficult for you to do a strategy on it.” R13 |
| | 7 | “Like, what do you consider your market? What is the market? Am I playing against everybody in packaging? Or am I doing my packaging very specific? Is my market just the US, or is my market just in Ohio.” R11 |
| Stakeholders | 8 Defining supplier criteria with internal stakeholder | “This is very important, and that's why it is red also because it requires stakeholders and team members to be involved and work with the project lead. So, it is defining what the supplier selection criteria are. Because the worst thing is when procurement does all the job, and then the end user says, no, I don't want to work with the supplier because: "I do not like them. I had a bad experience in the past and ten years ago, they failed on me, and I do not like to work with them." So, defining the supplier selection criteria is very important, and you do that with the stakeholders because you need them to agree.” R10 |
| | 9 Strategy validation with stakeholders | “This strategy is not done by the buyer close in their home with nobody involved. Quite on the contrary, it is mandatory, and when we validate a strategy, we ask the key business stakeholders to be part of this strategy validation. That means if I am doing a strategy on IT, my head of IT, my finance from IT, and even some users and others involved in the discussion need to be there to make sure they also sign for it. So, I do not create a strategy that makes sense for nobody except myself. It is the same thing when you talk about packaging or buying commodities. We need to ensure that the different stakeholders involved in that category are aware and are part not only of the discussion but the validation itself. Because if I need to do something, they need to be aware of the roadmap for that category.” R5 |
| Internal analysis | 10 A specification definition with stakeholder | “So, we have the business requirements, which is very important, is basically defining the scope. So, the specification. So, we sit together with the end user, and we define how, what are the requirements that we have today, and what is that we want to achieve in the future. So, a current state and future state. So, this needs to be done with four hands, between procurement and the end user. We, as procurement, we are not responsible for defining the specification. So, this needs to come from the end user. So, this is very important because this will tell us exactly, this will limit or even make it flexible a little bit. What will be the market that we can approach? Because if we are too specific, there could be only one or two suppliers that can fulfil our requirements. If we are very broad, then it could be thousands of suppliers, and this will determine which category are we talking about.” R10 |

4.2 Internal and external analysis: assessing the internal needs, the market, suppliers and risks to identify opportunities

In prior to developing a strategy for a category, professionals indicate to first obtain insights about its products or services. These insights are gained through internal analysis, which serves as a starting point of building a category strategy. Whether this analysis was about needs, product specifications, or risks, almost all professionals [14] conducted internally research. At this point, stakeholders play a dominant role. In line with the purchase-business alignment and the internal stakeholder importance statements from the previous chapter, the internal analysis is the exquisite opportunity to align with the stakeholders and the business objectives. An example quote for this internal analysis can be found in Table 6, see number 10.

Other pronounced objectives of the internal analysis are assessing the current suppliers, study the spend evolution and sourcing history, analysing the price behaviour and get an overview of which contracts are in place. R11 describes why this internal analysis is conducted: *“to make sure that we understand the business”*.

Together with the internal analysis, the external analysis is another frequently emphasised step in the process to develop a category strategy. This external analysis contains the study of the market where the category is operating in, assessing the suppliers, and discover opportunities to build strategies on. During the external analysis, Porter’s five forces model, as seen in chapter 2.1.3.2, plays an important role, since nine professionals mentioned the use of the model. R2 describes the importance of the model as follows: *“the market for that category, where is it? Where are we playing? So, [...] using the Porter approach, to understand.”* The goal here is to get a better understanding of the threats of new entrants, substitutes, and the bargaining power of buyers and suppliers in the market. These elements give a complete overview and understanding of the market.

Besides the analysis at macro-level, purchase professionals mention that external analysis contains analysis at product and supplier level as well. Purchasers use a cost-breakdown or should cost approach to get a better understanding of the price structure of a product or service. This gives the buyer a better position in negotiating, since they obtain detailed information about the supplier’s product. R13 describes the importance of knowing the cost elements as follows: *“You try to understand really what the key cost elements are, which are the cost drivers, how those cost drivers are evolving over time, and what are the dynamics you need to have in place.”*

In-depth information from suppliers and a better understanding of the market can also be obtained through RFI's, RFP's or RFQ's. R4 described the use of RFI's in an interesting practice as follows: *"We put [...] 2 questions for 20 companies, and [...] we mapped the market very fast."*

Once the internal needs and the external market are analysed, the information from these studies are used to define the opportunities and develop a strategy. Before discussing how to develop a strategy, the insights from the analyses are merged in a SWOT by eight professionals. R6 describes this as follows: *"And then, for each [...] analysis you're doing, you should have a conclusion. Right? And in theory, there's sum up of the conclusions of [...] analysis you did. It forms your SWOT."* R6 continues the use of the SWOT with the following: *"And then, with your SWOT, you can clearly implement your strategic actions."* The outcome of a SWOT can serve as a starting point for the professionals to develop a strategy.

4.3 Strategy development and implementation: using portfolio models and levers to develop a category strategy

With the understanding of the internal needs and having the knowledge of the market the category operates in, a strategy is developed. The outcome of the interviews show that it is a common practice to use the Kraljic matrix in this process, since fourteen professionals mentioned its use. R13 explains the value of the Kraljic matrix as follows: *"The most important tool for me is the Kraljic. The Kraljic is the heart and soul of how you explain to people what they are going to be doing and how are we going to be approaching."* Despite all the criticism of the Kraljic matrix (Gelderman & Van Weele, 2005; Nellore & Söderquist, 2000; Olsen & Ellram, 1997), only one version of the modulated Kraljic matrixes, see Table 1 and 2, is used. R4 indicates to use, besides the Kraljic matrix, the Dutch Windmill, since it enables him to understand the supplier's point of view: *"We need to do this because, [...] if you don't have the power to negotiate, if your supplier has this power, it is a no for us."*

All professionals positioned the categories or sub-categories on the quadrant. There was one special practice whereby the focus was solely on categories in the 'leverage' quadrant or positioning categories towards the 'leverage' quadrant. R4 explains: *"What we are looking for is a positive financial impact, less complexity and fast implementation. So, what we are really looking for, it's the leverage categories."*

Another interesting practice comes from R6, which uses contracts to prioritise it's focus.

That's how we do like: Okay, this contract is ending by this date. Then I took two years and a half, and I say no, by this moment, that's when the category needs to have performed their analyses to see if we know what do we do? Do we just go for renew the supplier? Are we going to introduce someone else? And that's how we monitor, you know, our cycle of the micro, the micro strategies. [R6]

R11 complements this by: *“The market has changed a lot in three years, four years, five years sometimes, compared to the when he did the first the initial contract.”* R12 agrees that the market and its corresponding category strategy changes daily: *“If you are in a moment that you have more supply than demand, you focus on cost breakdown, negotiate. If you have in a situation that you have supply constraints, you focus on alternative products.”* These statements indicate that the market is changing rapidly and tends to demand for a more efficient and agile way of working.

Notably, some companies developed their own methodology. Whether this was built on their own experience, existing models, or both, these companies made the methodology in such a way that it fulfilled their needs. R8 explains it as follows: *“We created ourselves. But very, I think with formally speaking, we did not create ourselves, because we took a lot of ideas from many sources. Right?”*

The practical implementation of a category strategy is in some companies systematically done by sourcing levers. Despite that no professional exactly used the seven levers of Schiele (2007) as mentioned in chapter 2.3.1, they all shared their knowledge about levers. Furthermore, most of the professionals somehow implemented them, e.g., price evaluation was called ‘cost breakdown’ or ‘should cost model’ and mentioned by 16/17 participants. The use of the AT Kearney purchasing chessboard (Schuh et al., 2009) was mentioned four times. R13 describes the usefulness as follows: *“The AT Kearney one's a bit old, but I always find that it's a good place for junior buyers to start to open up their minds about what's possible within a category.”* So, whether levers are used from AT Kearney (2009), Schiele (2007), or a proprietary model, the results indicate that the professionals do use levers to practically implement a category strategy. Furthermore, levers are not tied to specific quadrants and are freely deployed throughout the whole portfolio model. This is in line with the study of Schiele et al. (2011) and Hesping and Schiele (2016a), where they state that sourcing levers are not exclusively limited to a single portfolio quadrant.

The last step is to select the most appropriate supplier[s] for the strategy, negotiate the specific terms your strategy is based on, and to monitor the results of that supplier. Notably, the results for selecting suppliers are roughly divided in two parts: an auction or SRM. This means that organisations either intensively collaborate with suppliers to accomplish their specific goals, such as innovation, or they look for the supplier with the best conditions, by means of an auction.

The performances of suppliers are reviewed periodically, for instance quarterly, or yearly. This assessment is done by KPIs, Service Level Agreements [SLA], a scorecard, or via other ways. An interesting practice is the following.

We created a new team inside our structure, that is a contract team. That team is responsible for managing the contracts in terms of deliveries, in terms of SLA and KPIs, in terms of how the performance of our suppliers, in terms of contracts, terms of payments and so on. [R13]

Based on these insights, the professionals determine whether they want to continue or change the strategy. Changing supplier strategies is not that easily done in every industry. There are some industries or categories where suppliers have more bargaining power than the buyer. These factors are taken in consideration by the purchasers as well.

4.4 Technology: embedding Industry 4.0 technologies in the purchase process

The interviews showed us that all professionals want to implement new technologies in their process, however, all are in an early state of this digital revolution. Professionals do mention the importance of it, however, are still searching how to embed the technologies in the day-to-day process.

A dedicated software supporting the process of developing a category strategy was not found. By asking which technologies professionals used to support them in the steps towards developing a category strategy, no software was mentioned. This shows that there is either insufficient software available for the development phase, or professionals are not informed.

The execution of a category strategy is better supported by software, and technology in general. For instance, when entering the supply market, E-auctions are used often to support the process of finding the appropriate supplier. Another notable practice shows the first steps of autonomous purchasing processes.

I have done my homework, I have done my strategy. I put it into [software], and [software] is a platform that executes that with full automation, except few limitations, like answering questions during the tender, which [software] is not yet capable of. [R16]

By utilising technologies such as Artificial Intelligence [AI] and Machine Learning, the platform facilitates the company's autonomous engagement with both new and existing suppliers, supports in making smart decisions and helps in seizing business opportunities. This is an exclusive example from all the interviews that reaches this level of maturity in the autonomous purchasing process.

Regarding internal communication and information exchange, there were no technologies deployed using Artificial Intelligence or Machine Learning. The majority professionals mentioned to use Microsoft Office applications for information exchange. In addition to Microsoft Office, communication is also transmitted via Enterprise Resource Planning [ERP] systems.

Apart from Microsoft Office and ERP-systems, there are scant references of advanced technologies among professionals. Nonetheless, the findings evince that the acquisition, presentation, and utilisation of data represent a pivotal theme for these professionals. Frequently, they encounter quandaries in obtaining the precise data in a timely and appropriate fashion. A potential remedy for this issue is the deployment of Power BI, which mentioned by 9 professionals.

Besides Power BI, Microsoft Office and SAP, there are no other particular technologies that are used in the process yet. R13 describes the use of these technologies instead of I4.0 technologies as follows: “*I find it is very 2000, rather than 2020s in a way*”. This indicates that purchase professionals struggle to deploy new AI and Machine Learning-technologies in their purchasing process.

Nonetheless, the quest for novel technologies endures, and practitioners adopt diverse ways in pursuing this endeavour. Most of the organisations have created an internal team that focusses on identifying new technologies. In addition, some companies conduct benchmarks to discover possible AI-tools. Furthermore, some professionals read articles from Gartner as a source of inspiration for new technologies.

5 Discussion: Opportunity on the practical process and Sourcing levers selection

5.1 Consolidating the analyses to derive a framework to improve category strategy development

From the current and standard process of organising a category strategy from the previous chapter, several gaps and challenges are identified. These gaps reveal the dissimilarity between theory and practice.

First, the professionals state that formation of categories is based on the market. Through this modality, the extent of a category may become overly extensive; nonetheless, ultimately, it is contingent upon the contracts established with vendors. Despite the creation of sub-categories, their linkage with the contractual agreement remains deficient, resulting procedures which still requires the professionals to concentrate on both the classification and the contract. Moreover, professionals may fail to allocate adequate attention towards contracts that possess the potential for direct and favourable impact. A possible solution for this can be to focus on contracts and position them on the Kraljic matrix as a communication tool for discussing strategies with stakeholders.

Second, since almost all the professionals mentioned to use the Kraljic matrix when developing their strategies, it is recommended to use this methodology. However, the Kraljic matrix should be used properly. Positioning categories on the matrix is too broad, therefore contracts, or sub-categories, help to narrow the scope and be more agile in adapting the strategy in a rapidly changing environment.

Last, the traditional waterfall process of developing category strategy, such as described in Figure 7, is considered very time consuming:

It's too long to execute and implement all the seven steps. If we do the first, the second and the third steps, it takes like seven months, eight months in my opinion. And when we achieve this, [...] the companies say: no in this year we go to [...] this strategy and change the targets for the next year. [R9]

According to professionals, markets quickly change and executing the traditional category strategy development, as seen in Figure 7, can take months, where in the meantime the situation can be totally changed. Furthermore, organisations deal with so-called job hoppers [professionals who change jobs frequently and voluntarily], who need an intensive training to execute and understand all the steps from Figure 7. These steps demand several analyses

before proposing the category strategy seems standard in the market, but are very timing consuming according to professionals, and in the meantime the market can be changed and demands for a novel and updated strategy. It is worth arguing to shift towards a direct usage of portfolio models and levers selection to define the strategy as an efficient and agile process.

To bridge this gap, a new approach for developing a category strategy is created, see Figure 8. This method changes the approach towards developing a category strategy, by the direct use of portfolio models as a communicating tool, the fixed inclusion of stakeholders, and the lever selection with the stakeholders.

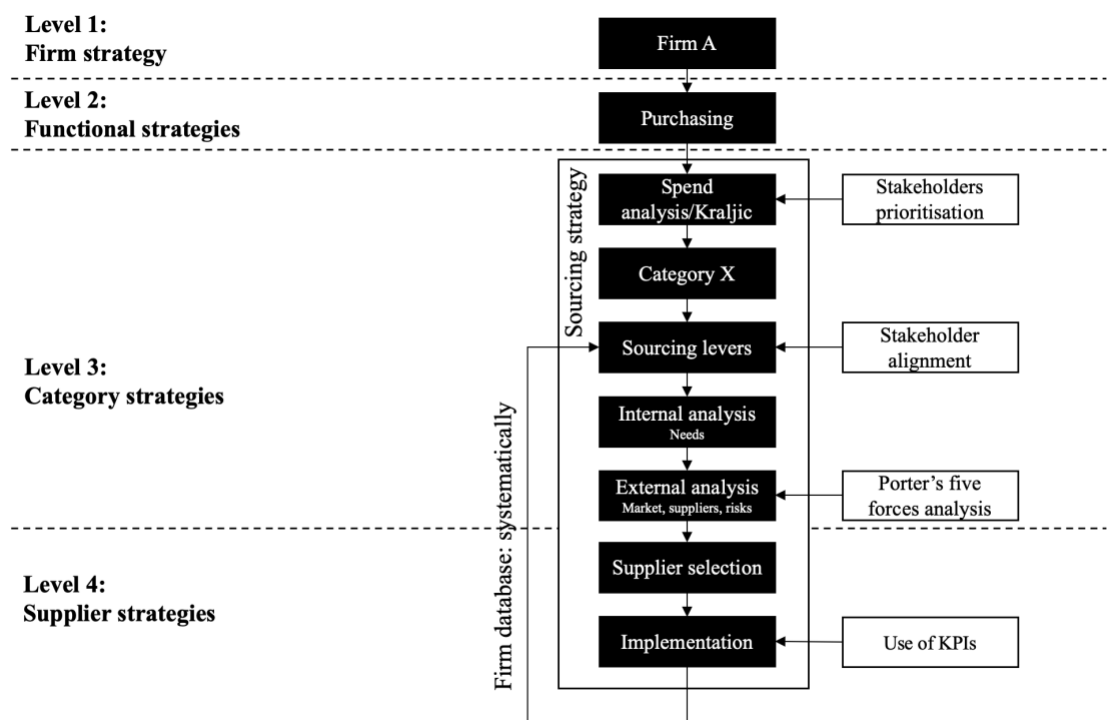


Figure 8 - Adapted category strategy development process with direct usage of portfolio models and levers selection

The motives for the steps of this new approach are as follow:

1. The first step is to find out which of the current contracts in purchasing expire soon, to know which category needs to be focused on. These contracts are positioned on the Kraljic matrix to communicate the current situation with the stakeholders, what the possibilities are, and what category should be prioritised.
2. As R2 said: “procurement is there to serve the business”, strategy development and so lever selection is together done with the stakeholders. The stakeholders know what they need from purchase in their specific area of the company, and, with that knowledge, can select levers together with purchasers.

3. Once the stakeholders and purchasers have decided which lever[s] to deploy, specific analysis for internal or external information can be conducted by purchase. The huge benefit is that this enables purchasing to solely focus on the required analysis for the specific strategy, instead of analysing everything and build you strategy on that, as in the Figure 7.
4. After gathering all the information, purchase discusses the findings with the stakeholders and select the appropriate supplier which meets the demands of the stakeholders best.
5. The steps and decisions taken are stored in the company's database for evaluation and future improvement.

5.2 Theoretical contributions: The process of category strategy development, portfolio use, and sourcing lever deployment

The theoretical contributions of this research are a result from the literature review and the interviews with seasoned purchase professionals. The contributions vary; however all participate in bridging the gap between strategy development and implementation based on portfolios and levers.

The first finding and theoretical contribution is that this research, as one of the first practically and empirical studies, shows practical evidence on category management processes by purchase professionals. This research shows that professionals bridge the gap between strategy development and implementation by means of deploying portfolios and levers. The deployed models differ; however, the results indicate the deployment of portfolio and sourcing levers models to operationalise strategies to be a common practice in purchasing.

The second theoretical contribution regards the list of portfolio and sourcing lever models. In contrast to the almost thirty portfolio models in this study, the literature review only contains three academic based sourcing lever models. This demonstrates that sourcing lever models lacked the appeal of portfolio and are therefore underrepresented in literature. It may be fruitful to explore the deployment and value of these sourcing lever models for purchasing more deeply.

Third, besides the portfolio models and sourcing levers, literature review also described the process of developing a category strategy, as seen in chapter 2.1.3. The steps to develop a category strategy are defining the product range, do internal and external analysis, build a strategy, and involve stakeholders during the entire process. The results of

this research show that the current way how purchase professionals develop a category strategy harmonises with literature (e.g. Apte et al., 2019; Monczka et al., 2015; Schiele, 2019; Van Weele, 2018). So, the way literature describes how manage and develop a category strategy, is adopted in practice.

Fourth, despite the empirical data that the purchase professionals organise their strategy development as proposed in literature, this research also reveals some challenges where future research can build on. These challenges can be summarised as follows; the professionals indicate that current process works, but is too exhaustive for a rapidly changing market, with junior buyers. Therefore, a new approach of developing a category strategy is presented in Figure 8.

Fifth, regarding strategies, the interviews also reveal the objectives that professionals at this moment prioritise. Table 5 shows that price reduction [costs] is still seen as the most important strategy and indicated by almost all purchase professionals. Besides the increasing focus on the safety of supply, purchase professionals indicate that ESG goals can no longer be ignored and are of great importance. This is in line with the studies of Giunipero et al. (2012) and Whitelock (2019), stating that organisations have recognised sustainability and ESG as increasingly important strategic goals.²⁶⁶

Sixth, the interview results confirmed that the Kraljic matrix, as the first portfolio model in purchasing to distinguish products from each other,²⁶⁷ is still the most used purchase portfolio model. Despite all the criticism on the Kraljic matrix (e.g. Day, 1986; Gelderman & Van Weele, 2002; Gelderman & Van Weele, 2003, 2005; Wagner & Johnson, 2004) and the modulated portfolio models as a response on the shortcomings of the Kraljic matrix, these models are not [widely] adopted in practice. However, during the category strategy process some other models are mentioned to be often used; Porter five forces, ABC-analysis, and the SWOT.

Seventh, this research shows empirical evidence on the practical implementation of sourcing levers as well. Despite the found low representation of sourcing lever models in literature, the results show that practitioners intensively deploy levers and almost all professionals use most of the seven levers of Schiele (2007). The way these levers are deployed by the purchase professionals differ. Seven of the purchase professionals do systematically deploy sourcing levers, i.e., choosing levers based on a framework, ten do not.

²⁶⁶ See Giunipero et al. (2012), p. 258; Whitelock (2019), p. 924

²⁶⁷ See Kraljic (1983), p. 111

Ending, technology was found to be an important topic, which is supported by several studies.²⁶⁸ However, purchase professionals struggle to implement new technologies in their day-to-day processes. Via internally created teams, exploring for new technologies and ways to implement them, companies try to keep up with the technology progression.

5.3 Managerial implications: Implementing a framework to advance category strategy development processes

The findings of this research can provide several practical proposed actions for managers to consolidate their category strategy development process. The first managerial implication and proposed action regards the benchmark of the new approach towards developing a category strategy and therefore follow the steps from Figure 8. This process allows purchasers to be more agile and to be more focused on the necessary. Extra explanation for copying these steps follows in this chapter.

As seen in chapter 4 and 5, purchase professionals emphasised the importance of purchasing aligning with the firm strategy. Therefore, the second proposed action is to focus on partnership with relevant stakeholders. Whether this is to understand the other departments interests, to align with the business strategy or the develop a category strategy, purchasing cannot function solely and needs the input from stakeholders.

To discuss strategies with stakeholders and visualise current and future situations, the Kraljic matrix perfectly functions as a communication tool. Therefore, the third proposed action is to use the Kraljic matrix solely as a communication tool with stakeholders and not to build the whole purchasing strategy on. The use of the matrix should be at the beginning of the strategy development process, to position the current situation with stakeholders and the future situation, instead of doing an exhaustive internal and external analysis, without prioritised focus, and then use that information on the Kraljic matrix. As mentioned, the latter demands too much time and therefore the Kraljic matrix should be seen as a communication tool during the initial stages of the process.

The fourth proposed action is to focus more, but not solely, on contracts. As stated, in the end it all comes down on the contracts with the suppliers, which enables the purchaser to focus on what is required. The almost ending contracts can be positioned on the Kraljic matrix to open the discussion with the stakeholders in which quadrant the products should

²⁶⁸ See Flechsig et al. (2022), p. 2; van Hoek et al. (2022), p. 285; Chandrasekara and Wickramarachchi (2020), p. 1103; Schiele and Torn (2020), p. 508; Bienhaus and Haddud (2018), p. 978

be. It is not recommended to solely focus on contracts, otherwise the overarching view and advantages can be missed.

Once known which contracts is ending and needs focus, the fifth proposed action is to discuss the strategy with the stakeholders and choose corresponding lever. Purchase employees do all the purchasing-related activities, yet the stakeholders know best what they need from suppliers and should deliver input when choosing the appropriate strategy. For instance, if stakeholders need a better product, product-optimisation lever can be chosen and if stakeholders do not have specific requirements and the product can be supplied by multiple companies, extension of supply base is the appropriate lever. Without knowing the stakeholders' interest, purchasing does not connect the firm's demand.

Now the strategy is set in prior, instead of after conducting exhaustive analyses, it enables the firm to focus on the specific analysis to be done to select the appropriate supplier. After choosing the appropriate lever to operationalise the strategy, the last information must be gained via internal and external analysis. Purchase employees deduct this analysis to ultimately select the appropriate supplier. Following this structure by first choosing a lever and then do the analysis allows purchasing to focus on specific tasks, i.e., it does not make sense to do an exhaustive market analysis when choosing the 'optimisation of supply relationship' lever, yet it already narrows the analysis to one specific supplier to find opportunities to improve that specific relationship.

After the supplier is selected and the contract is closed, the sixth proposed action is to store the lever and its corresponding situation in the firm's database. When the first results are in, evaluate the chosen strategy and note the points of improvement. Once the firm is starting another category strategy cycle, it can learn from previous decisions and see what happened when implementing a lever in certain situation. Through these evaluations, the purchasing department constantly consolidates its category strategy development.

The seventh and last proposed action for purchase professionals is to focus on implementing technologies in the purchasing process, since it can give organisations a competitive edge by making processes more efficient. Some best practices during the interviews are identified to give guidance and support this process towards implementing new technologies. First, understand the current situation of the firms' purchasing processes and identify gaps which potentially can be closed by technologies. Second, assess new technologies via an intern team constantly focussing on new solutions, or via e.g., benchmarks or Gartner. Ending, verify via pilots if certain technologies meet the criteria of current challenges before implementing it, since the implementation can have a big impact.

6. Research limitations and future research: Qualifying the results based on larger-scale research methods to examine the use of category management

This research holds several theoretical contributions and managerial implications, however, also has its limitations and directions for future research. The limitations regard to the qualitative nature of this research and require quantitative methods to validate the results.

The sample size of seventeen allows the results of this research to be generalised, however, only purchase professionals working for big companies [both in employees as in revenue] are interviewed. This limits the results of this research, since it is not known if processes are the same in smaller companies and if they face the same challenges. The results mainly come from purchase managers which operate at strategic level and with that could possibly miss the operational challenges which buyers face during the strategy development process. Seasoned purchase professionals from big companies are selected since they are expected to be more mature, yet it is not known from this research whether these results are applicable for smaller companies and junior buyers as well. Therefore, to further investigate the category strategy process, it is recommended to focus on smaller companies. Moreover, future research should include junior buyers and other industries in the research sample, to get a more comprehensive representation of category management in a variety of fields.

Subsequently, the scope of this research was broad, since the goal was to get a clear overview of the whole category strategy process, and models supporting this process, yet this withheld the questionnaire to zoom in on specific practices or situations of the category strategy development process, i.e., it is not asked which steps exactly are conducted when doing an external analysis. These questions could possibly give interesting results and can lead to improved practices, hence future research should focus, besides the entire category strategy process, more on specific elements of the category management cycle.

Furthermore, the new proposed model, as seen in Figure 8, is not empirically tested. The results from the interviews contain some challenges and best practices to solve them, combining both resulted in the new model for developing a category strategy. The proposed model is tested by one professional, but not empirically.

Ending, the interviews exposed a crucial practical gap in the purchase professionals' knowledge of integrating new technologies like Artificial Intelligence, Big Data, and Machine Learning in their category management process or as strategy components. Future research should explore how these technologies can aid purchase and align them with the identified levers. Purchase professionals have expressed the need for a technology framework to facilitate digitalisation in purchasing.

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University of Twente

Faculty of Behavioural, Management and Social Sciences

Department of Technology Management and Supply

Master thesis

Master of Science Business Administration

Purchasing & Supply Management

Appendix

From Portfolio to Lever: Evolution of Category Management

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Appendix

Appendix 1: Portfolio models

This section shed some more light on the purchase portfolio models of Table 1 and 2 and group them by ‘risk and power’, ‘buyer-supplier relationships’, and ‘remaining goals’. They all serve, in some way, the goal of forming categories and developing a category strategy.

Portfolio models dealing with risk & power

Lee and Drake (2010) focus on evaluating the dimensions of competitive priorities and company size/supply market. Based on quality, flexibility, time, and cost, components are considered as ‘lean’, ‘agile’, ‘leagile’, or ‘non-strategic’. In their paper, they deeply discuss factors and their measures for defining competitive priorities in a tractable way. Drake et al. (2013) use these variables and categories as well and develop a matrix based on leanness and agility. Components that impact quality and cost are suited to lean supply, flexibility and time are suited to agile supply. Leagile supply is the term for components that impact quality, cost, flexibility, and time and non-strategic items have low impact on the competitive advantage of the end-product.²⁶⁹ Components are placed in one of the four categories, and from that, different strategies are derived.

Cox (2001) develops a framework for categorisation in purchasing based on power, since power is at the heart of all business-to-business relationships. Based on the suppliers’ power and the buyers’ power, suppliers are classified in the ‘independence’, ‘buyer dominance’, ‘supplier dominance’, or ‘interdependence’ category. Ghanbarizadeh et al. (2019) focus in their research on the commercial construction industry. They use the Kraljic (1983) framework, with the variables supply risk and strategic importance as well, and can be used project professionals and. Using the DEMATEL, ANP, and VIKOR techniques, they present a system that examines the relations among the criteria and determines the degree of influence and permeability of each of them on each other.

Portfolio models dealing with buyer-supplier relationship

Besides risk and power, there are portfolio models that serve to develop a category strategy based around buyer-supplier relationships. An important one and yet old model is the one of Olsen and Ellram (1997). Based on the supplier attractiveness and intensity of the relationship the model evaluates the relationship with suppliers. The suppliers with the same

²⁶⁹ See Drake et al. (2013), p. 7

characteristics are grouped together, so that the buyer has clusters of suppliers which are dealt with the same. Based on framework of Olsen and Ellram (1997), Park et al. (2010) did further research on supplier relationship management [SRM]. They present a more integrative SRM framework, since other studies in the past have neglected this integrative concept.

Another widely quoted portfolio framework for managing buyer-supplier relationships is the one of Bensaou (1999), where they focus on the investments of buyers and suppliers. The frequency of the relationship is captured in the clusters 'market exchange', 'captive supplier', 'captive buyer', and 'strategic partnership'. Some decades later, Luzzini et al. (2012) presented a theoretically and empirically tested classification system. With the variables 'technological uncertainty', 'supply market volatility', 'supplier power', and 'customisation', the categories 'steady', 'volatile', 'special', and 'risky' are formed. Every category has its own characteristics and says something about the uncertainty a buyer must deal with. Monczka et al. (2015) evaluates individual suppliers whether they are suitable for the buying organization. Based on criteria such as long-term alignment, purchase revenue, pooling of demand and more, suppliers will be classified into 'core', 'develop', 'exploit', or 'nuisance'.

Portfolio models dealing with remaining goals

Besides risk, power, and buyer-supplier relationships, portfolio models can serve purchasing to a broader extent. Dyer et al. (1998) focus in their research on arm's-length relationships and strategic partnerships. Based on a study in the automotive industry of the U.S., Japan, and Korea, the differences in input of suppliers are assessed. In the end they contrast durable arm's-length relationships with strategic partnerships, both having their own characteristics for suppliers to be classified in. Wagner and Johnson (2004) do not present a framework to classify suppliers or products in, but a process for configuring and managing strategic supplier portfolios. In their study they show how to map the planning, implementation, and monitoring of portfolio's. The strategic portfolio perspective considers risks, trade-offs, and interdependencies between the firm's array of supplier relationship.

Trautmann, Bals, et al. (2009) present a purchasing portfolio model that provides a comprehensive view of relevant global synergy dimensions. The focus in this study is on global sourcing and synergy potential. Factors influencing synergy potential are economies of scale, economies of information and learning, and economies of process. Based on these factors, different recommendations are given.

Padhi et al. (2012) do not develop a portfolio model in their study, but focus on the methodology to classify and position categories in the Kraljic (1983) matrix. Fuzzy multi-attribute scoring is used to assign performance scores to different categories, and with a multidimensional scaling approach, they are placed in the matrix. Ferreira et al. (2015) implement the Kraljic (1983) matrix in the construction industry, since its application in this industry has been limited or undocumented. With the use of analytical hierarchy process [AHP], different dimensions of the Kraljic matrix are evaluated.

Segura and Maroto (2017) present an integrated system, which allows qualifying providers and supplier segmentation by monitoring their performance based on a multiple criteria tool. Decision making not only takes into account opinions and judgements, but also integrates historical data and expert knowledge. Based on the purchasing portfolio model proposed by Kraljic (1983) and the Fuzzy-TOPSIS method, Medeiros and Ferreira (2018) present a multi-criteria approach for the strategic management of purchasing in a hospital in Brazil. The tool that analyses purchasing objectively and avoids considering only economic measures, identifying different item categories requiring special management.

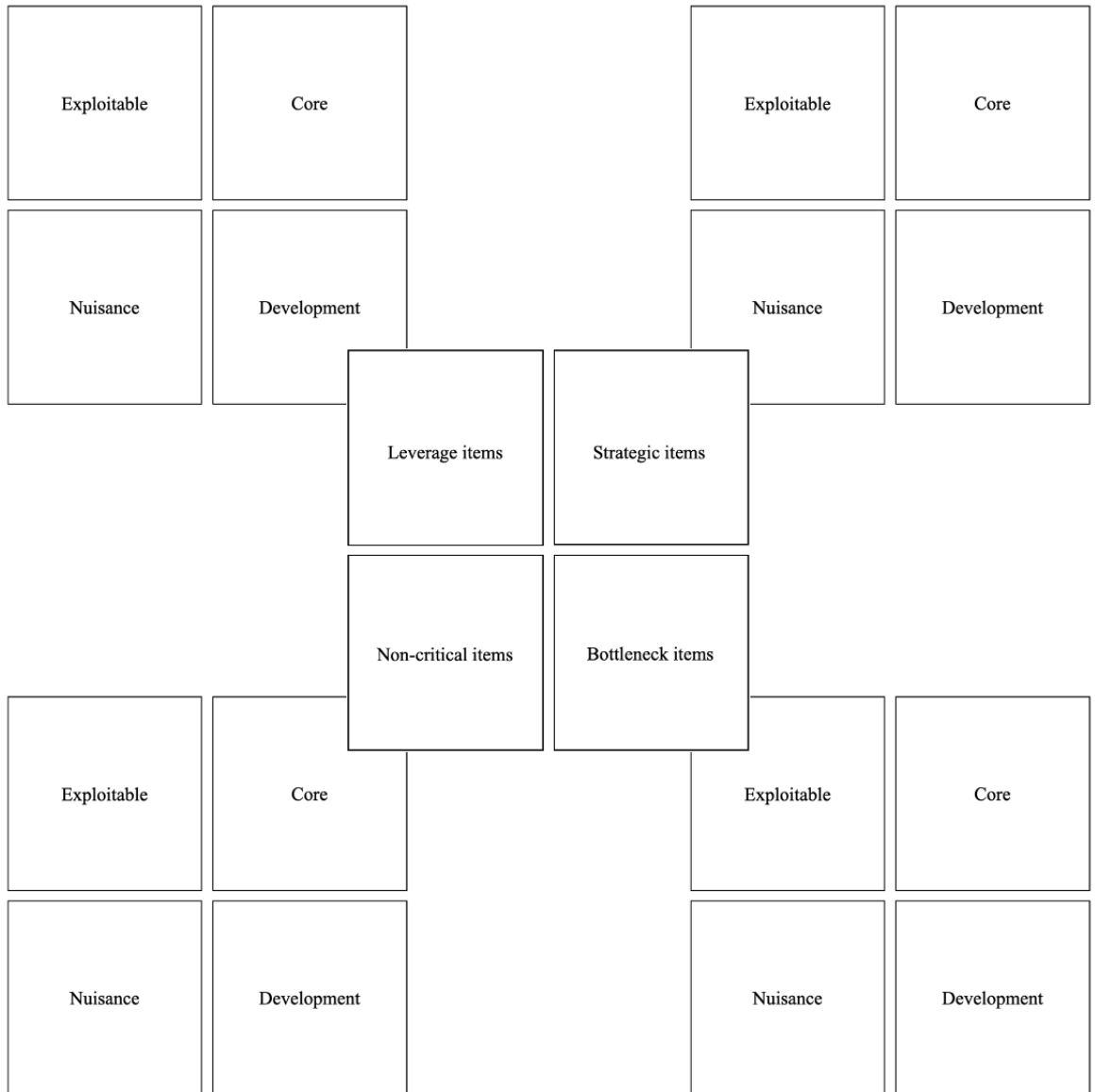


Figure A3 – Dutch Windmill (Van Weele, 2018, p. 182)

Appendix 3: Questionnaire interviews purchase professionals

Questionnaire category management

Introduction Introduction of interview moderator

Briefing **Is it possible to record the interview?**
Purpose of research
Purpose of interview
Explain the interview procedure
Question: **Do you have any questions before starting the interview?**

—
Question 0: Would you be so kind to introduce yourself and your function.

Back-up:

- Time period
- Responsibilities
- Years of experience
- Years with the company
- *[Add bullet points here]*

—
Outline question 1 from literature:

The logic underlying the formation of sourcing categories determines the purchasing performance potential in terms of cost savings, innovation, flexibility and so on (Hesping & Schiele, p. 144 - 145). Apte et al. (2019)170 confirm this by stating that applying category management techniques often leads to price reduction, process efficiency and/or demand management, without deteriorating to the user's conditions or needs. Karjalainen and Salmi (2013) and Luzzini et al. (2012) present an approach to form classifications of category strategies by grouping sourcing categories along different competitive priorities, such as cost, quality, delivery, innovation, efficiency and sustainability.

Question 1: **Could you briefly introduce your company? Which are the main objectives/ KPIs in purchasing?**

Q1a: **Which are the most important objectives of purchasing in your company [ranking according to purchasing strategy: safe/timely/sufficient supply, quality, price, innovations, strategic access, sustainability]?**

Back up:

- Characteristics
 - o Activities
 - o Number of employees
 - o Number of employees in purchasing
 - o Industry
 - o Company Revenue

- Percentage of revenue spend on goods and services per year
- Objectives
 - Overall strategy
 - Differentiated strategies [in different circumstances]

Outline question 2 from literature:

To bring category management in practice, a process of several different business activities are conducted: “segmentation, spend analysis, activity analysis, cost calculations and estimations, market analysis, negotiations, supplier evaluation and positioning, supplier network structuring, quality assurance, value engineering and others” (Apte et al., 2019, p. 170).

Question 2: **How do you derive a category strategy?**

Q2a: **With whom do you do that? A purchase team / cross-functional body?**

Q2b: **Could you briefly describe your category sourcing process?**

Q2c: **Could you give a brief overview on your category sourcing cycle [1. Planning, 2. Category strategy development, 3. Supplier selection, 4. Contracting, 5. Executing, 6. Evaluating]?**

Back up:

- Cross-functional team
 - Who is in there?
- Process
 - Defining product range/stakeholders
 - Supply base analysis
 - Strategy development
 - Negotiation, contracting
 - Controlling
 - Improving results, evaluating

Outline question 3 from literature:

“Cluster analysis is a process of grouping a set of objects in such a way that objects in the same group, known as clusters, are more similar to each other than to those in other cluster (Apte et al., 2019, p. 167).” After understanding the variety of direct and indirect purchases, the time is there to group them. As mentioned, Hesping and Schiele (2015)¹⁴⁴ emphasise that it is crucial that categories are based on external market conditions, where Trautmann, Turkulainen, et al. (2009)⁵⁸ adding that they contain similar items required for specific business activities of the firm. After forming the categories, it is crucial to get a better understanding of the supply base. In purchasing, a portfolio model is an analytic and diagnostic tool of a prescriptive nature used to identify different items and categories (Caniëls & Gelderman, 2005; Kraljic, 1983; Olsen & Ellram, 1997).

Question 3: **How did you form / assemble the categories?**

Like based on markets, product categories, locations, internal needs, r&d requests...

Q3a: **Which variables do you use to differentiate categories?**

Back up:

- Possible answers
 - Use of portfolio models
 - Same strategy
 - Product characteristics
 - Etc.
- Possible variables:
 - Risk
 - Power
 - Lean/agile
 - Supplier attractiveness
 - Products appropriate for global sourcing
 - Etc.

Outline question 4 from literature:

Luzzini et al. (2012)1017 state that purchasing portfolio models aim to classify the purchases of goods and services and/or buyer-supplier relationships to determine the most suitable approach to managing commercial transactions. With commercial transactions is meant the appropriate suppliers, the contractual form, the measures used to evaluate suppliers, and the appropriate level of price, quality, and delivery.

Question 4: **Which models/procedures/checklists/matrix/portfolios [like Kraljic] do you use for category management?**

Q4a: **[How] do you organise portfolio management?**

Q4b: **Which models do you use for portfolio management?**

- *Kraljic Matrix*
- *Modulated Kraljic matrixes*
- *Purchasing chessboard*
- *Dutch Windmill*
- *ABC Analysis*
- *...?*

Q4c: **Why do you only use the Kraljic matrix, why does it work for you? Why do you use other models or why not?**

Q4d: **How do you assess/position the categories? [critica/checklist for forming the portfolio]**

Back up:

- Models, probably Kraljic
- 4d: purchase volume, risk ...

Outline question 5 from literature:

At the strategic level, the functional goals are defined, while at the tactical level, sets of measures called “levers” (Schiele et al., 2011, p. 319). Schiele (2007)279 defines a sourcing lever as: “a set of measures that can improve sourcing performance in a commodity group.” Levers vary from commercial [pooling demand, price evaluation, and extension of supplier base] to cross-functional [product and program optimisation, process improvement, intensification of supply relationship] levers (Hesping & Schiele, 2015, p. 145; Schiele, 2007, p. 280). Sourcing levers connect the purchasing strategies at a strategic level with the tactical level, on a practical manner.

Question 5: **How do you link the purchase objectives to the category strategy? [this question refers to question 1]**

Q5a: **Which sourcing levers do you use most often (in order to put the strategy into practice?)**

- Commercial: pooling demand, price evaluation, and extension of supplier base;
- Cross-functional: product and program optimisation, process improvement, intensification of supply relationship

Q5b: **How do you monitor and control category strategy execution?**

Back up:

- Linking objectives of question 1 with the strategy of question 2
 - o Possible via sourcing levers
 - o Possible via other ways, let them talk
- Monitor/control
 - o Cross-functional teams
 - o KPI's
 - o Annual supplier evaluation

Outline question 6 from literature:

[Type text here]

Question 6: **Do you use software for purchase? Which systems? For all categories?**

Q6a: **Do you use any digital tools to support category management?**

Q6b: **How do you embed / link the technologies to your category strategy/ levers?**

Back up:

- Industry 4.0

Outline question 7 summary:

Company characteristics, purchase objectives, category management, the process of forming a category strategy, portfolio models, sourcing levers, monitor and control, digital tools.

Question 7: **For me everything is captured and discussed now. Do you want to add something?**

Ending Thank you for participating

Appendix 4: Tables

Table A1 explains all the definitions of Table 5. All the columns in Table 5 containing a check symbol, indicates that the purchase professional mentioned the concept to be part of the firm's methodology, purchase goals or purchasing process.

Table A1 – Table 5 concept definitions

| Concept | Definition |
|--|--|
| Purchasing Objectives | Objectives that currently are prioritised by purchase professionals |
| Price reduction | Obtaining an efficient price savings, and cost avoidance |
| ESG goals | Environmental, Social, and Governance |
| Security of supply | The security that the supply is delivered as agreed with no ruptures |
| Innovation | Obtaining innovation from suppliers to the business |
| Quality | Secure a high quality |
| User experience | Pursue a good user experience in the systems deployed |
| Team satisfaction | Pursue a friendly and safe environment for the team |
| Efficiency/productivity | Pursue standardised, automated, and efficient processes |
| Supplier relationship | Strive for good supplier relationships |
| Category Strategy | The steps and cycle of developing a category strategy and area costs |
| Direct/Indirect org. | Distinguishes products in direct and indirect |
| User co-development | Include stakeholders in the category strategy development process |
| Global/local level | The interplay at global and local level of strategy development |
| Internal analysis | Need and demand analysis |
| External analysis | Suppliers, price, cost structure, and market analysis |
| Supplier assessment | Assessing suppliers for risk, quality, and services |
| Spend analysis | Spend analysis assessment |
| Models/Frames used | Models and frames used as part of the strategy development process |
| Kraljic matrix | Kraljic matrix – frame proposed by Peter Kraljic |
| Porter 5 forces | Porter 5 forces |
| ABC Curve | ABC Curve – based on Pareto |
| SWOT | Strengths, Weaknesses, Opportunities, Threats |
| Purchasing chessboard | Purchasing chessboard – frame developed by AT Kearney |
| Dutch Windmill | Dutch Windmill – frame derived from Kraljic matrix |
| Levers used in practice | The seven levers deployed to operationalise the category strategy |
| Pooling of demand | Ordering in bigger volumes at once |
| Price evaluation | Analyse cost structures, e.g., cost-breakdown |
| Extension of supply base | Expand the supplier portfolio, new suppliers' prospect |
| Process improvement | Efficiency and effectiveness of the process managed by buyer and supplier |
| Supplier relationship | Joint efforts between buyers and suppliers |
| Product optimisation | Cross-functional product development to stimulate innovation and efficiency |
| Category Spanned | Considers possible synergies across categories |
| Systematic Lever def. | Deploying levers systematically based or not from outputs of portfolio models |
| Yes. Chessboard, 7-levers, proprietary | Deploy levers systematically. Group of method as Purchasing Chessboard, 7 levers from Schiele or own company method. |
| Not systematically | There isn't a systematic lever deployment frame. However, procurement professionals are familiar with the Levers theory seen in the section "Levers used in practice." |
| Technologies/Apps | Technologies/apps mentioned to use in the strategy development |
| Microsoft Office | Microsoft Office |
| Power BI | Power BI |
| SAP/ERP | SAP/ERP |
| S2P [Coupa/Ariba] | S2P systems from companies [Coupa/Ariba] |

Table A2 – 16 quadrants of the Dutch Windmill (Cordell & Thompson, 2018, p. 149)

| | Exploit | Core | Nuisance | Develop |
|-------------------|--|--|--|--|
| Leverage | Adversarial relationship. Assess the power balance. Consider other resources. | Good negotiating position; improves bottom line. Maximise competitive pressure on supply base. | Relationship mismatch. Accept situation in the short term. Change supplier if possible. | Supplier development potential. Encourage participation in savings opportunities. |
| Strategic | Risk of overdependency. Attempt to raise the supplier's dependency. Look at alternative sources. | Complementary; potential for a long-term relationship. Develop opportunities for mutual gain. | High risk of supplier exit. Look at alternative sources. Become more attractive to the supplier. | Potential for a good match. Work closely together to develop opportunities. |
| Routine | Moderate risk. Review prices periodically. Review alternatives periodically. | Buyer in a strong position. Maintain the relationship. Look at offering the supplier other opportunities. | Potentially a mismatch; anodyne relationship. Look at alternative sources. | Supplier interest. Look for further incentives to develop business opportunities. |
| Bottleneck | Moderate cost risk. Monitor the supplier closely for price and service changes. Change supplier if possible. | Complementary; potential for a long-term relationship. Develop mutually beneficial relationship to cover risk. | Disruption to service/ production risk high. Change supplier if possible. | Potential for risk. Work closely together to develop dependency and opportunities. |