

**MASTER**

**Performance enhancement by supplier relationship management**

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**Industrial Engineering and Innovation Sciences**  
**Master thesis**

**Performance Enhancement by Supplier Relationship  
Management**  
*Master Thesis*

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### **Abstract**

This study focuses on performance enhancement by managing supplier relationships. For this purpose, a tool has been developed to define the objectives and policies at strategic level for managing the relationship with suppliers. This includes assessment of the ideal strategy by assessing the strategic importance of the purchased goods from the suppliers and the current relationship styles with suppliers. Using a portfolio method, three different strategies towards suppliers are proposed: transactional, collaborative and strategic relationship. Each strategic relationship type requires different levels of resources and activities for managing the relationship. This includes various factors, such as planning, communication, sharing of risk and rewards, commitment, contracts and investments. At tactical level, a process-flow has been developed for managing the relationships by including the translation of the objectives and policies at strategic level for execution at operational level. Lastly, operational control and performance measures are proposed for intra-organizational and inter-organizational collaboration with the aim of increasing the organizational performance of the company.

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Engin Kopal, November 2018

## Management Summary

Supplier Relationship Management (SRM) gives the potential to improve performance and benefits by external collaboration with suppliers. This research is aimed at implementing SRM to manage the supplier relationship, internally and externally, with the purpose of increasing the organizational performance outcomes at the case company. This thesis has been conducted at Office Depot EU B.V. located in Venlo, the Netherlands.

The management wants to gain insights on whether a more collaborative approach towards suppliers may improve their performance, since collaboration with suppliers is positively related to organizational performance in terms of sales, market share and growth (Carr & Pearson, 1999; Johnson, 1999; Frolich & Westbrook, 2001). The business model of the case company hasn't been changed since the mid-80s and the collaboration with suppliers can be classified as an arm's-length relationship with limited information sharing. Based upon this the following main research question:

***“How can Office Depot EU B.V. increase their organizational performance by managing the relationship with their suppliers?”***

For this research, empirical and theoretical analysis has been conducted to produce specific knowledge on the context and nature of the problem by using quantitative and qualitative research methods. For the solution design, a tool ('Supplier Relationship Management Tool V1') has been developed to propose strategies using two steps: a strategic material evaluation, and an evaluation of the relationship attractiveness with suppliers using the method proposed by Park et al., (2010). The tool can be used to determine the most effective strategy for managing the supplier relationships with the aim to increase organizational performance. Furthermore, the means for translating the strategic objectives and policies have been developed. This includes, besides the strategic tool, a process-flow diagram which can be used to define the conditions for managing the supplier relationships. Lastly, appropriate control and performance measures are proposed for measuring the outcome of supplier relationship management on the organizational performance and creating intra-organizational alignment between the different business functions within the company.

### Conclusion

Office Depot EU B.V. can increase their organizational performance by implementing SRM. This means that the case company needs to differentiate their strategies for supplier relationships. Currently, the organization is adopting a competitive strategy and is focused on primarily maximizing their own share of value generated from doing business. There are collaboration initiatives, however, there are no clear

structured guidelines and processes in place to manage these collaboration activities. A traditional way of doing business is being pursued, which is an arm's-length relationship with suppliers. SRM can affect the performance of the organization measured by the economic value added (Lambert & Schwieterman, 2012). However, the company needs first evaluate the strategic importance of their purchases. By using the tool, the ideal strategy and the current relationship with suppliers can be assessed which leads to three different types of effective strategies for managing the supplier relationships: transactional, collaborative, and strategic. This tool has been developed by combining different frameworks and methodology, and by using the empirical analysis to make it company specific, since the dimensions and factors isn't comprehensive and may vary among firms. It is important to translate these strategies into tactical plans. There are no complete methodologies or frameworks which gives a complete guide towards implementing an SRM protocol. Therefore, the solution design contains a detailed and whole process for managing the relationship on operational level by not only defining the objectives at strategic level, but also developing the operational steps for managing these different types of relationship style to improve the performance of the organization. This required a thorough empirical and theoretical analysis to find the models and frameworks, which lead eventually to a combination of different methodologies. The solution design can be used to define strategic objectives and policies, implement these by using the developed tactical plan, and to control and measure the execution of the processes of SRM. It is important to note that the most important collaboration type is the internal collaboration before pursuing external collaboration with suppliers to increase the organizational performance. For this purpose, the DuPont Analysis can be used, which includes profitability and efficiency factors. For the inter-organizational collaboration with suppliers, the appropriate control and performance measures are defined by a supplier evaluation tool within the 'Supplier Relationship Management Tool V1'. The strategic material evaluation step can be used to translate the strategies for managing the supplier relationship into strategies for managing the whole supply chain. This includes an additional step of assessing the demand patterns.

## **Recommendations**

This project reveals new insights for the organization on how the supplier relationships can be managed. However, the first recommendation for the company is on the effective management of the intra-organizational collaboration within the SCRUM teams between the business functions of Merchandising, Procurement and Supply Chain. This means that the objectives of these departments need to be aligned and the departments need to include each other in the decision-making processes, since these departments are responsible for the purchasing function within the organization. Furthermore, it is important to consider that the SCRUM teams are merchandising driven; merchandising managers are responsible for the SCRUM teams and can prioritize their objectives, which may conflict the targets set for the departments of Procurement and Supply Chain.

Secondly, for the inter-organizational collaboration with suppliers the Supplier Relationship Management Tool V1 has been developed. This tool can be used to analyze on strategic level the best strategy and approach to suppliers. However, the tool is based on subjective analysis whereby users must rate the factors using a scale from 1 to 10. The next step for this tool is to quantify the factors to be able to do an objective analysis by using quantitative data.

Thirdly, the organization is focused on a competitive strategy towards their suppliers which is a traditional way of doing business with each other. While this arm's-length relationship may be suitable for some cases, the organization adopts this strategy towards all their suppliers. This means the organization is trying to stay in the leverage quadrant of the portfolio or tries to give the impression that they are in a leverage position and has the power in the negotiations. Looking at the power structure of the relationship with the supplier, it seems that the most important factor affecting the distribution of the power is the value of the purchases bought from the supplier. The higher this value is, the more leverage the organization has on their suppliers due to the fact that in these cases the organization represents a large percentage of their turnover. In these cases, the supplier finds the case company very attractive to do business with and is even willing to share the value generated from doing business with each other unequally. However, the performance of the company is in decline which means that the organization is reducing the number of products purchased from the supplier. This will lead to a decrease in power. Therefore, the organization should use a more cooperative approach to secure the best terms and agreements with suppliers. By collaborating with suppliers, it is possible to find other opportunities to generate sales, because the organization wants to sell as much as possible and this will lead to more purchases from suppliers. This can create a win-win situation with even more value generated to share (un)equally among the partners.

Furthermore, while the company is focused on having a wide assortment, it is important to consider per subcategories the importance of the item within the assortment. While certain product categories may have a strategic importance for the company and therefore need a different approach towards suppliers, this doesn't necessarily mean that every item within this category needs the same approach. Differentiation per SKU is needed.

The last recommendation is to adopt the concept of total costs of ownership (TCO). This concept differs in two ways looking at the cost of doing business with suppliers (Ellram, 1993). First, it considers cost as a broad spectrum. Secondly, it also includes life cycle costs associated with the product during its entire life-time. This concept can act as a performance measurement to evaluate suppliers.

**Table of contents**

List of Figures .....	9
List of Tables.....	10
Abbreviations .....	11
1 Introduction .....	12
1.1 Company Background.....	12
1.2 Products and Services.....	13
2 Project Design .....	16
2.1 Problem description.....	16
2.2 Problem Definition .....	17
2.2.1 Main research question.....	17
2.2.2 Sub-questions .....	18
2.3 Project Approach .....	18
2.4 Project Scope .....	20
2.5 Research methodology.....	21
2.5.1 Research design.....	21
2.5.2 Data collection.....	22
2.5.3 Validation and Reliability .....	23
3 Analysis & Diagnosis .....	24
3.1 Organizational Performance .....	24
3.1.1 Purchasing function and internal collaboration.....	24
3.1.2 Organizational Performance objectives and targets .....	25
3.2 Supplier Relationships Types .....	27
3.2.1 Buyer-Supplier Relationships.....	27
3.2.2 Performance outcomes .....	29
3.3 Products .....	30
3.3.1 Own brand products .....	30



3.3.2	OEM Products .....	30
3.4	Power Distribution.....	32
3.4.1	Supply Side.....	32
3.4.2	Power structure.....	33
4	Solution Design .....	36
4.1	Strategic Objectives.....	36
4.1.1	Strategic Importance.....	37
4.1.2	Relationship Attractiveness.....	40
4.1.3	Supplier Relationship Management Strategies.....	42
4.2	Tactical Plans.....	47
4.3	Operational Control .....	50
4.4	Supply Chain Strategies.....	52
5	Case Study .....	54
6	Conclusion.....	60
6.1	Conclusions.....	60
6.2	Limitations.....	62
6.3	Recommendations.....	62
6.4	Further Research.....	64
	References .....	65
	Appendix A Ishikawa diagrams .....	69
	Appendix B Interview Template.....	71
	Appendix C Analytical Hierarchy Process .....	74
	Appendix D Supplier Relationship Management Process .....	79
	Appendix E Supplier Evaluation Tool Interface.....	80

## List of Figures

Figure 1.1: Characteristics of the two main brands of ODE .....	13
Figure 1.2: The different product categories at ODE.....	14
Figure 1.3: Business functions at ODE .....	15
Figure 1.4: SCRUM team members and functions .....	15
Figure 2.1: The regulative cycle (Van Strien, 1997).....	20
Figure 3.1: Purchasing function at ODE .....	25
Figure 3.2: SCRUM Scorecard .....	26
Figure 3.3: Key Performance Indicators of the different business entities at ODE .....	27
Figure 3.4: 1 <sup>st</sup> and 2 <sup>nd</sup> tier of ODE suppliers .....	33
Figure 4.1: Supplier Relationship Management Tool V1 Interface .....	37
Figure 4.2: Kraljic Matrix .....	37
Figure 4.3: Strategic Importance Matrix .....	39
Figure 4.4: Relationship Attractiveness Matrix .....	42
Figure 4.5: Relationship Style Matrix .....	43
Figure 5.1: Decision tree for assessment of profit impact.....	54
Figure 5.2: Strategic Importance Matrix .....	55
Figure 5.3: Decision tree for assessment of supply risk.....	55
Figure 5.4: Decision tree for the assessment of Relative Supplier Attractiveness.....	56
Figure 5.5: Decision tree for the assessment of Strength of the Relationship .....	56
Figure 5.6: Relationship Attractiveness Matrix .....	57
Figure 5.7: Strategic Material Evaluation assessment .....	57
Figure 5.8: Decision tree for the assessment of the relationship style strategies .....	58
Figure C.1: Decision Hierarchy (Saaty, 1994).....	75

## List of Tables

Table 2.1: Guidelines for conducting a case study research (Blumberg et al., 2014).....	21
Table 4.1: Different classification dimensions for Portfolio Management.....	38
Table 4.2: The three factors to assess the profit impact.....	39
Table 4.3: The three factors to assess the supply risk.....	39
Table 4.4: The Relationship Attractiveness Factors proposed by Olsen and Ellram (1997) .....	40
Table 4.5: Factors to assess the Relative Supplier's Attractiveness .....	41
Table 4.6: Factors to assess the Strength of the Relationship .....	41
Table 4.7: Strategic Objectives and Policies for transactional, collaborative and strategic relationships ..	46
Table 4.8: The six SCOR processes .....	47
Table 4.9: The SCM framework processes .....	47
Table 5.1: Selection of suppliers for case study.....	56

## Abbreviations

<b>AHP</b>	Analytical Hierarchy Process
<b>COGS</b>	Cost of Goods Sold
<b>EBIT</b>	Earnings Before Interest and Tax
<b>EVA</b>	Economic Value Added
<b>FED</b>	First Effort Date
<b>FOQ</b>	First Order Quantity
<b>KPI</b>	Key Performance Indicator
<b>MDF</b>	Market Development Funding
<b>MDM</b>	Master Data Management
<b>MPA</b>	Master Purchasing Agreements
<b>OB</b>	Own Brand
<b>ODE</b>	Office Depot EU B.V.
<b>OEM</b>	Original Equipment Manufacturing
<b>OTIF</b>	On-Time-In-Full
<b>PSA</b>	Product and Service Agreement
<b>ROA</b>	Return On Assets
<b>ROI</b>	Return On Investment
<b>SCM</b>	Supply Chain Management
<b>SCOR</b>	Supply Chain Operations Reference
<b>SOP</b>	Standard Operating Procedures
<b>SRM</b>	Supplier Relationship Management
<b>TCO</b>	Total Cost Of Ownership

# 1 Introduction

According to Mentzer et al. (2001), supply chain management is the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for improving the long-term performance of the individual companies and the supply chain as a whole. This coordination entails collaborating and working together with the supply chain members to increase performance, not only for one supply chain, but for all the organizations across the supply chain (Kumar et al., 2007). Collaboration within the supply chain can have two forms: vertical and horizontal (Barrat, 2004). Vertical collaboration entails external collaboration with customers and suppliers, and the horizontal collaboration entails external collaboration with competitors and non-competitors (Simaputang & Sridharan, 2002). Focusing on the external collaboration with suppliers, supplier relationship management (SRM) is one of the potential opportunities to improve performance and benefit further from closer relationships by fostering more initiatives for greater improvements (Barrat, 2004). According to Van Weele (2014), SRM plays a key role within the purchasing function, which is the management of the external resources of a company in such a way that the supply of all goods, services, capabilities and knowledge necessary for running, maintaining and managing the primary and support activities of a company is secured at the most favorable expeditions. Internal collaboration, which entails integration of the business functions and activities, must be aligned with external collaboration. Functional thinking is supported by organizational structures and performance measures aligned to functional activities (Barrat & Green, 2001). This research is therefore aimed at implementing SRM to manage the supplier relationship, internally and externally, with the purpose of increasing organizational performance outcomes. This thesis has been conducted at Office Depot EU B.V. (ODE) located in Venlo, the Netherlands.

## 1.1 Company Background

Office Depot was founded in 1986 and opened its first store in Fort Lauderdale, Florida ([www.officedepot.com](http://www.officedepot.com), 2018). Within 2 years, they had 26 stores open in seven states in the United States with a total sale of \$132 million dollars and started in the year 1990 to operate in Europe starting first in the United Kingdom (UK). As remaining the largest supplier of office products in the world, Office Depot merged with Viking Office Products in 1998 with sales of \$9 billion, which was the leading direct marketer of office products in Europe and Australia. Under the Viking Office Products brand, Office Depot has direct mail and delivery operations in Australia, Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands and the United Kingdom. From this moment, the Company's International Division operated under both the Office Depot and Viking brand names. In the year 2014, Office Depot Inc. received an offer from the AUREALIUS group to acquire substantially all the business in Europa. On December 31,

2016, the Office Depot European Business was sold to the AUREALIUS Group. This acquisition was the largest so far in the history of the AURELIUS Group (Annual report AUREALIUS Group, 2016). The European company ODE is located in Venlo, the Netherlands, and is the number one reseller of workplace products and services and serving consumers and businesses in over 30 countries with more than 100 retail stores. The European operations can be divided into different regions, consisting of the countries, Germany, Austria, Switzerland, Belgium, Netherlands, United Kingdom and Ireland with each having its own responsibility.

## 1.2 Products and Services

ODE is the reseller of stationary and furniture products of both Original Equipment Manufacturing (OEM) and private label brands (own-brand). In Europe, approximately 6% of the overall Office Depot EU sales is contributed by the own brand portfolio. The private label brand products are sold under various labels; Office Depot, Viking, FORAY, ATIVA, and realspace.

There are different approaches for the customer segments of ODE. To their regular consumer segment, the internet (e-commerce) is the primary channel to sell their product, while small home offices receive the catalogues of ODE to choose certain products. For the small to medium enterprises, they use a more active approach, by calling them and giving offers. The larger the enterprises, the more resources, services, offers, and better pricing is offered. The company sells products mainly in the business to business (B2B) market under two main brand names: (1) Office Depot, which supplies to small, medium, and cooperation (100 000 active customers) and (2) Viking, which has a distinctive small- and medium sized business focus, along with a growing consumer and home-office audience (1.2 million active customers). A graphical presentation of the characteristics of the two main brands is shown in Figure 1.1.

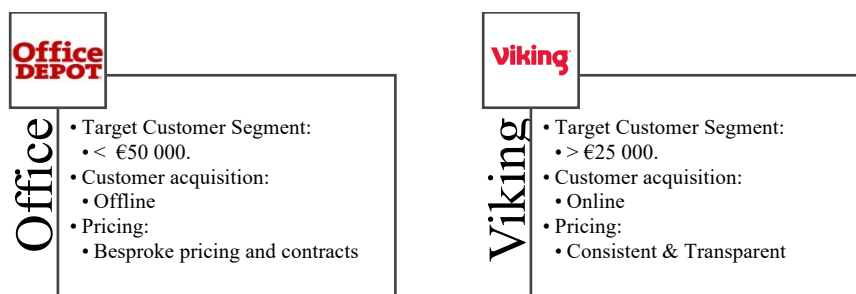


Figure 1.1: Characteristics of the two main brands of ODE

The company uses three different sales channels: direct, contract and retail stores. The products can be bought using an e-commerce platform for online ordering, by phone and mail via call centers, and visiting retail stores. The main brand Viking sells product through direct sales channels and retail stores, while main brand Office Depot sells the products through contract.

The products are generally classified into three main categories (see Figure 1.2): (1) Facility management (supplies), including products such as paper, writing instruments, office supplies, cleaning

and breakroom items, (2) Printing & Technology (technology), including products such as toner and ink, computer, tablets and accessories, printers, electronic storage, as well as service for technology products, and (3) Office Administration (furniture and other), including products such as desks, seating, and luggage, as well as sales in their copy and print centers (Annual Report Office Depot, 2016).

There is a special separate product category called Retained which is provided as an extra service for contract customers of ODE. There is no limit on the type of product that falls within this category meaning that every kind of product can fall in this category. The purpose of this additional product category is to provide extra service for the customers by providing other products that are not included in the regular assortment of ODE. ODE sources these products at different vendors based on orders by their customers.

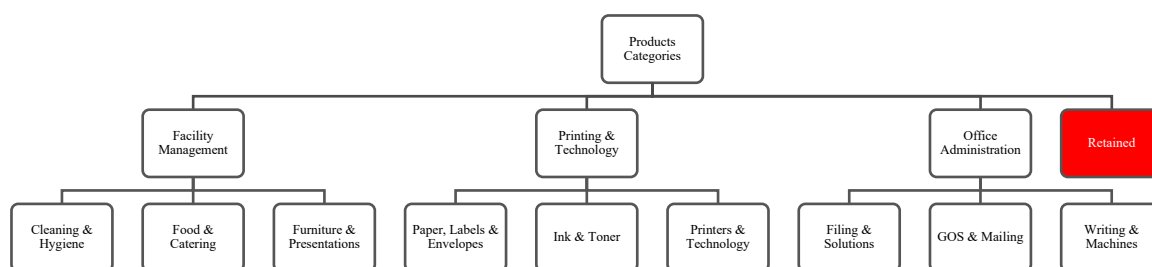


Figure 1.2: The different product categories at ODE.

### 1.2.1 Business functions

There are multiple corporate departments at ODE (see Figure 1.3 for the different business functions at the organization). Supply Chain Department and Procurement Department are primarily responsible for the upstream side of the organization, which is the sourcing and supply management activities. One of the focus of ODE was to reduce the organizational complexity of the European business as the basis for profitable growth across all customers and divisions (Annual Report Aurelius, 2017). Since July 2017, the concept of inter-segmental teams (SCRUMS) was implemented to come up with improvements in product strategies, marketing, merchandising, and customer service. These cross-functional teams consist of individuals from different functional areas within ODE. There are in total 10 SCRUM teams: (1) Cleaning, Hygiene & Workwear, (2) Food & Catering, (3) Furniture & Presentation, (4) Printing & Technology, (5) Ink & Toner, (6) Paper, Envelopes & Labels, (7) GOS (General Office Supplies) & Mailing, (8) Writing & Machines, (9) Filing & Solutions, and (10) Retained (see Figure 1.2). Each SCRUM team consist of individuals from the department of Merchandising, Procurement, Inventory, Item data, and BI (see Figure 1.4).

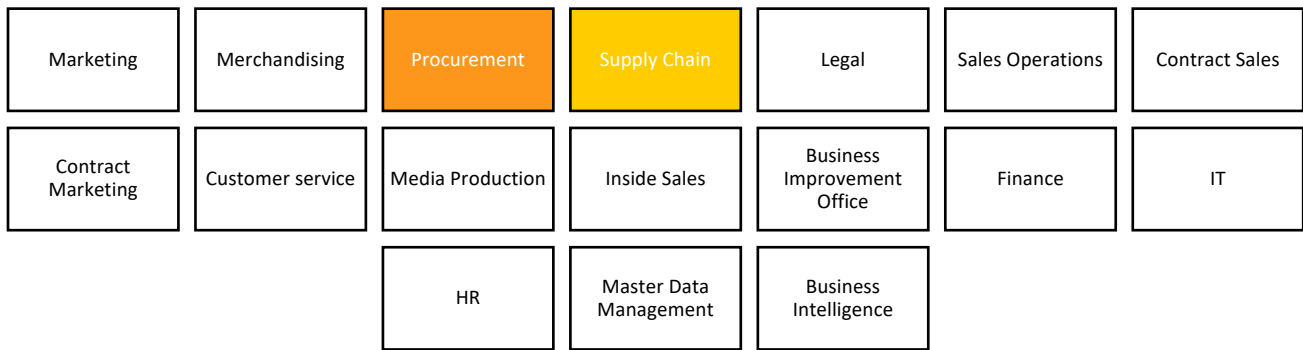


Figure 1.3: Business functions at ODE

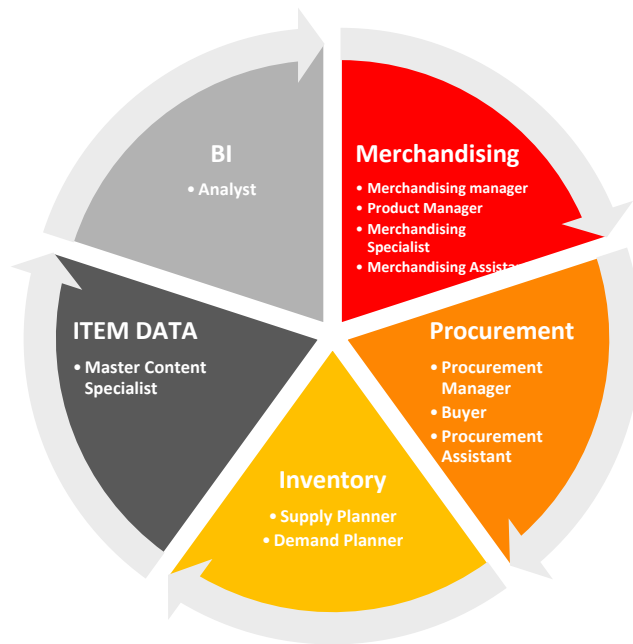


Figure 1.4: SCRUM team members and functions



## 2 Project Design

This chapter is dedicated to the design of the project. First, section 2.1. is dedicated to the main problems and the problem definition of this research. The research questions and the deliverables are presented in section 2.2. The scope of the project is defined in section 2.3. Section 2.4 is dedicated to the research approach of this project.

### 2.1 Problem description

The problem description presented in this section is based upon interviews held with different stakeholders at ODE and the information received from different departments. The organization wants to gain insights on whether a more collaborative approach towards suppliers may improve their financial performance, since the strategic integration of suppliers within a supply chain and the collaboration with suppliers is positively related to organizational performance in terms of sales, market share, and growth (Frolich & Westbrook 2001; Carr & Pearson, 1999; Johnson, 1999).

According to Stevens (1989), to be able to implement SRM as a SCM practice, it is firstly important to view the supply chain from three perspectives; strategic, tactical and operational. At strategic level, the organization has no insights on which kind of policies and objectives should be implemented for managing the relationship with their suppliers and their whole supply chain in compliance with the overall business strategy of the company. While the design of a strategy depends on the nature of the product (Ayers, 1999), the organization has also no insights on what the effect is of the characteristics of their products on the supplier relationships. Furthermore, at strategic level, the organization has miscoordination of the business functions within the organization due to misalignment of objectives. The organization lacks coherent objectives to reduce costs and to limit the ability of departments from taking steps that would distort the overall strategic goals of the organization. The conflicting goals and interests limit the possible effective relationship building with other members of the supply chain. The organization has furthermore no strategical alignment within the supply chain in terms of supplier-buyer relationships. There is a traditional view on supplier relationship management focused on minimizing the dependence on suppliers and maximizing the bargaining power in the negotiations. There is no clear insight on whether to foster a certain level of relationship or to maintain their traditional approach of arms-length relationships. There is a power distribution between the suppliers and the organization, but there are no sufficient insights on its effect on the organizational performance of the company. At tactical level, the organization has no means by which the strategic objectives can be realized. There are no strategic objectives and policies translated into complementary goals and objectives for each function of the company. The organization lacks the resources and means to integrate their suppliers in terms of cooperation and collaboration. This is especially noticeable within the purchasing function of ODE. The purchasing function contains those activities and

decisions regarding sourcing and supply management. At operational level, the organization has implemented a supplier delivery performance tool to measure and control the flow of supplies, however, there are no appropriate control and performance measures to achieve internal collaboration. The delivery performance of the suppliers is related to the efficiency of the operations, but not every impact of supplier relationship on the profitability of the organization is measured and controlled. While there are certain performance metrics, there are no aligned performance metrics to ensure that the complementary goals and objectives are achieved and followed.

Based upon these three levels a preliminary cause-and-effect diagram has been developed (Ishikawa, 1999). The problems related to strategy management, tactical management, and operations management are covered in a cause-and-effect diagram presented in Appendix A (see Figure A.1).

## **2.2 Problem Definition**

It appears that ODE is having decreasing financial performance. Their business model hasn't been changed since the mid-80s and the collaboration with their suppliers can be classified as an arm's-length relationship with limited information sharing. Based upon the problem description, the topic of this project will be on performance enhancement by managing the supplier relationships. Related to this topic, a main research question and sub-questions are formulated, which is covered in the following sub-sections.

### **2.2.1 Main research question**

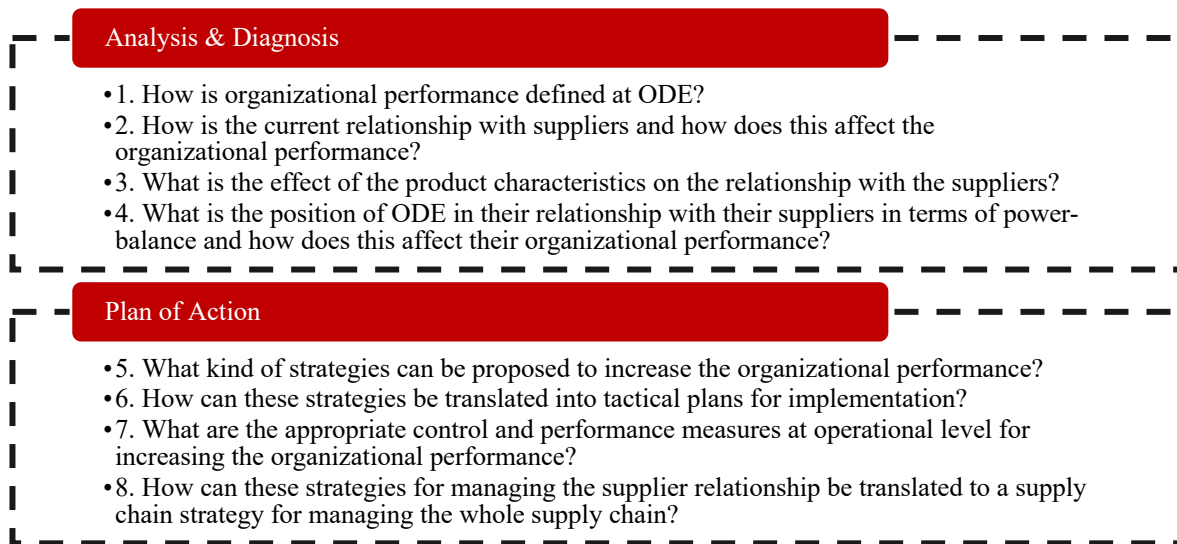
The research question for this master thesis project at ODE is:

*How can ODE increase their organizational performance by managing the relationship with their suppliers?*

This research question is based upon different literature studies stating that the strategic integration of suppliers within a supply chain and the collaboration with suppliers is positively related to organizational performance outcomes (Frolich & Westbrook 2001; Carr & Pearson, 1999; Johnson, 1999).

### 2.2.2 Sub-questions

Related to the research question for this master thesis, the following sub-questions are formulated. The first four sub-questions are related to the identification phase and the last four sub-questions are related to the improvement proposal of this project. For each of the sub-questions, the related deliverables are formulated.



## 2.3 Project Approach

For this project, the regulative cycle by Van Strien (1997) has been used. This framework is a problem-solving cycle for business problem solving projects and consist of the following steps: problem mess, problem definition, analysis & diagnosis, and plan of action (Van Aken et al., 2007). The regulative cycle has been combined with the outline of the rest of this project to define the structure of this thesis (see Figure 2.1). The problem mess and problem definition are covered in Chapter 2. Within this chapter, the initial problem statement has been put into the context of the problem mess.

The next step is the analysis and diagnosis phase. This analytical step of the project is discussed in Chapter 3 in which the first four sub-questions is answered. This step involves producing specific knowledge on the context and nature of the problem by using quantitative and qualitative research methods. The purpose of the phase is firstly to validate the business problem of the organization. Secondly, to explore and validate the causes and consequences of the business problem. Lastly, the development of preliminary ideas about alternative directions to solve the problem. For the execution of the analysis and diagnosis phase, empirical analysis and theoretical analysis has been conducted. Literature review is conducted for several purposes. Firstly, as support to find extra source of evidence on causal relationship by using reliable literature. Secondly, literature has been used to conceptualize empirical phenomena. Translating non-theoretical factors into theoretical concepts helps sharpen the analysis. Thirdly, literature is as a guiding

framework. For some business problems a comprehensive theoretical framework is available, which can be a description of a solution concept or process (Van Aken et al., 2007).

The last step within the scope of the project is the plan of action phase, which involves the solution design (Van Aken et al., 2007). The plan of action phase is covered in Chapter 4, in which the last four sub-questions is answered. At this stage a new model of the new business system, process, tool, and procedure supporting the business system with internal and external interfaces has been designed. For the diagnosis phase, several information sources were used: information from stakeholders suggesting possible solutions, theoretical analysis, and the diagnosis of the main causes of the business problem. For the solution design, a tool has been developed to propose strategies using two steps: a strategic material evaluation, and an evaluation of the relationship attractiveness with the supplier. The strategic material evaluation is based upon a portfolio strategy to divide the products into different categories with corresponding strategies. The evaluation of the relationship attractive is determined by the relative attractiveness of the supplier and the strength of the relationship with a certain supplier. This strategic decision-making tool can be used to determine the most effective strategy for managing the supplier relationship to be able to increase the organizational performance. Furthermore, a tactical, time-phased plan has been developed to define the conditions for supplier relationship management. This includes a process-flow of the daily activities at operational level in accordance to the defined tactical and strategic objectives for managing the supplier relationships. Lastly, appropriate control and performance measures are developed and proposed, firstly, for measuring the outcome of supplier relationship management on the organizational performance, and secondly, for creating intra-organizational alignment between the different business functions.

The **intervention** and the **evaluation** steps are out of the scope for this project, since these steps are related to the implementation of the improvement proposal.

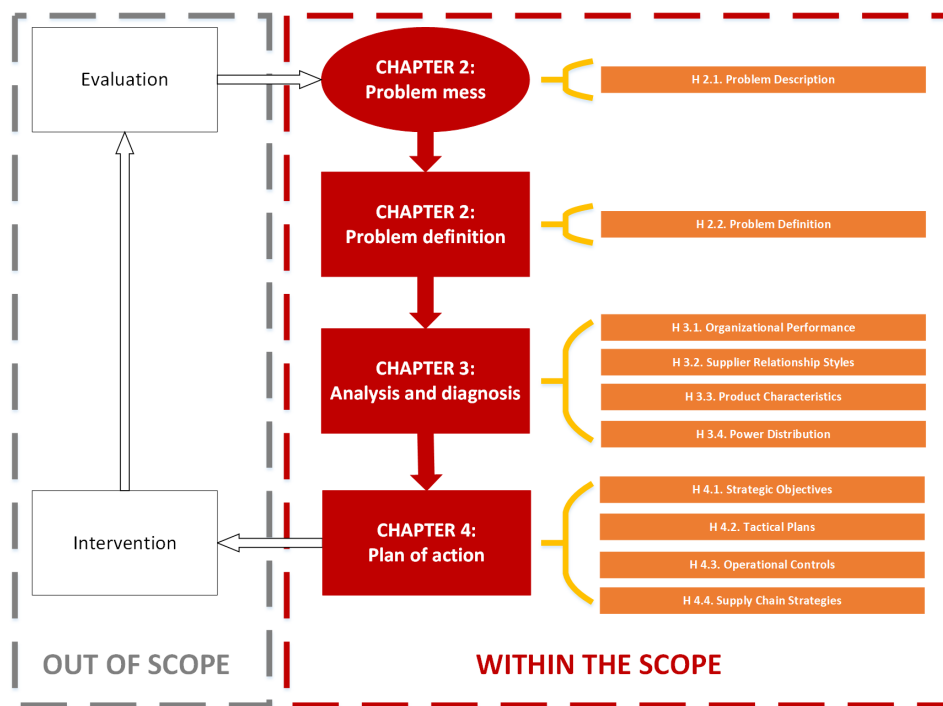


Figure 2.1: The regulative cycle (Van Strien, 1997)

## 2.4 Project Scope

The scope of this project has been determined by several factors. The first factor is due to the data collection method. For this study, qualitative data analysis has been conducted. The focus of this analysis was on those business functions focused on the upstream side of ODE's supply chain which is Procurement and Supply Chain. Due to availability of data subjects, the focus is on the product categories of 'Cleaning, Hygiene & Workwear', 'Food & Catering', 'Ink & Toner', 'Printing & Technology' and 'Paper, Envelopes & Labels'.

The second factor determining the scope was the adjusted cause-and-effect diagram (see Appendix A Figure A.2). The preliminary cause-and-effect diagram (Appendix A Figure A.1) has been adjusted by using literature to translate the non-theoretical factors into theoretical concepts to sharpen the analysis. The output of this process was combination of the set of problems under different theoretical concepts: intra-organizational collaboration, inter-organizational collaboration and information technology. Supplier integration (inter-organizational collaboration) involves coordination and sharing of information with key suppliers that provide the organization insights into suppliers' processes, capabilities, and constraints (Schoenherr & Swink, 2012). This external integration focuses on the breadth and depth of relationships that organizations maintain with their upstream supply chain partners and refers to the processes and activities with key suppliers to achieve stated objectives and goals of the focal organization (Atasever &

Nair, 2017; Kumar et al., 2017; Quesada et al., 2008). On the other hand, internal integration refers to cross-functional intra-firm collaboration and information sharing activities. This relates to collaboration between various functions of an organization, such as operations, logistics, and marketing (Atasever & Nair, 2017). With internal integration, the business processes of departments in an organization are linked together into a strategic fit (Kumar et al., 2017; Fawcett & Magnan, 2002). Therefore, the focus will be on these intra-firm and inter-firm collaboration.

## 2.5 Research methodology

This section will cover the methodology that has been used to be able to conduct the research. Subsection 2.5.1 is dedicated to the research design. The second subsection 2.5.2. is dedicated to the different data sources that has been used. The last subsection, subsection 2.5.3, is dedicated to the validity and reliability elements within this project.

### 2.5.1 Research design

To be able to answer the main research question, a case study has been conducted at ODE. According to Yin (1989), a case study is ‘an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used’. Within this case study, question such as why supplier relationship management can affect the performance of the organization and how a supplier relationship management can affect the performance of the organization will be discussed. The benefit of case studies is to be able to use multiple sources of evidence, which will be primarily interviews and additional documents and archives. There are several guidelines for conducting a case study research (see Table 2.1 for a list of criteria for good research adopted from Blumberg et al. (2014). Since a single case has the opportunity to focus on a specific case, there is no aim to generalize or compare cases and therefore a qualitative research design is more applicable than a quantitative research design (Eriksson & Kovalainen, 2008).

Table 2.1: Guidelines for conducting a case study research (Blumberg et al., 2014)

Criteria for good research	How may these be achieved in case studies
Purpose clearly defined	Explicit formulation of the research objectives and research problem
Research process detailed	Provide all information pertaining to the research process, including process of information collection.
Research design thoroughly planned	Planning of information gathering from different sources of evidence.
High ethical standards applied	Protect the rights of interviewees involved in the case study and ensure the quality standards of good research. Resist the desire to exceed the scope of your study
Limitations frankly revealed	Mention deviations from the planned procedures to collect information and discuss the extent of the completion of the case study
Adequate analysis of decision-maker's need	Explain the method of information gathering, including how it is assessed, which information sources are combined.
Findings presented unambiguously	Clear structure including all relevant details and use tables and graphs to support the presentation of the findings
Conclusion justified	Ensure support of your conclusions by the findings of the research.

### 2.5.2 Data collection

For this project, semi-structured interviews were conducted. These interviews are the most used source for collecting information for evidence, since they provide valuable insights into the case issues and can point the case researcher towards other sources of evidence, such as relevant documents (Bloomberg et al., 2014). The main objectives of conducting this kind of interviews is to know the interviewees' perspective on the issue and to know whether the interviewee can confirm insights and information to be able to identify the issues relevant to understanding the situation. Furthermore, it fosters interactivity with participants to be able to elicit perceptions and perspectives, and to facilitate discoveries to the solution design. During the semi-structured interviews, different types of questions are use. The first type of questions are introductory questions to gather general information about the interviewee. Follow-up and probing questions are used to ask the interviewee to elaborate further or specify the answers. Direct as well indirect questions are used to ask for specific perspective or a general accepted perspective towards an issue. Before conducting the semi-structured interviews, a pre-testing has been conducted to refine the questions of the interview and to get a general feeling in how much time and effort it will take and how it performs in social context. In this way, necessary improvements are applied to the interview questions. A few key people are asked to provide feedback with providing each pilot tester the objective of the interview. To assess the quality of the interview questions the following questions were asked to the pilot tester:

1. How easy it is to answer the question?
2. Is the question well-structured to be understood by the interviewee?
3. Are there biased questions?
4. Are there questions of hypothetical form?
5. Can you give general comments and/or tips?

In this way, a shorter and complete list of interview questions was provided to use during the case study at the organization. See Appendix B for the complete list of interview questions and the explanation of the reasons behind asking these questions.

Besides the semi-structured interviews, additional documents were analyzed as secondary data source. These include different types of contracts signed with suppliers, which includes the master purchasing agreements (MPA's), the Standard Operating Procedures (SOP). Furthermore, other types of documents have been analyzed, such as PowerPoint presentations and annual (financial) reports.

Besides qualitative data, also quantitative data has been analyzed. Firstly, the annual consumption values have been calculated. Based upon the last 53 weeks of demand and the cost prices of each SKU (stock keeping unit), the annual consumption values were calculated for conducting an ABC-analysis, which is an inventory categorization method. Secondly, performance scorecards were analyzed.

### 2.5.3 Validation and Reliability

According to Yin (2009), there are four different tests which indicate whether a research is trustworthy and has the quality of being accepted. The first one is the construct validity, which is the degree to which a test measures what it claims to investigate. The main tactic to deal with this validity is to use multiple data sources. For this reason, multiple sets of qualitative and quantitative data have been analyzed. Another tactic to deal with this type of validity, is to have informants reviewing the research report. This research report has been reviewed by supervisors.

The second type of validity is the internal validity referring to the results of the research (Yin, 2009). It is related to the causality, which deals with preventing conclusions of causal relationship to be incorrect. It shows the degree of confidence to support the conclusions. For this purpose, an extensive literature study has been conducted to find possible causal relationships that are validated in prior studies.

The third type of validity is the external validity referring to whether the findings of this research can be generalizable (Yin, 2009). Since this study is a single case study, the external validity is low. According to Yin (2009), case studies are not generalizable to populations. This means that case studies are only generalizable to theoretical propositions.

The reliability refers to whether the study can be repeated and if the same process of conducting the research will lead to the same findings. Since a case study is of qualitative nature, there is a higher chance that a replication of the study might lead to different findings. One of the reasons for this is that the interviews were semi-structured. Nevertheless, for increasing the reliability, the interview questions are included with brief descriptions of the reasoning behind the questions (see Appendix B).



## **3 Analysis & Diagnosis**

### **3.1 Organizational Performance**

This section is dedicated to organizational performance objectives of the case company and to analyze whether the business problem is a valid one. For this purpose, section 3.1.1. is dedicated to the different business entities at the organization and how they interact, since the most important collaboration type is the internal collaboration (Barrat, 2004). When organizations pursue external collaboration with supplier, these collaborations are detriments of efforts at internal collaboration (Fawcett & Magnan, 2002). Therefore, section 3.1.2, will cover different objectives and targets of these business entities related to the organizational performance.

#### **3.1.1 Purchasing function and internal collaboration**

According to Van Weele (2014), the purchasing function can be divided into sourcing activities and the supply management activities. The Merchandising Department within the SCRUM team is responsible for the selection of the right product, which is primarily done on SKU (Stock keeping unit) level. This means that the phasing in, phasing out, and the commercial activities of the products are made by the Merchandising Department. The Procurement Department is responsible for negotiating the price and the other terms with the potential vendors that can deliver a particular SKU or a collection of SKUs as selected by the Merchandising Department. After a list has been made by the Merchandising Department, Procurement will source the products by looking for the correct vendor or distributor based on the requirements set by the Merchandising Department. The vendor or distributor will be checked by their terms, their pricing, and whether there is already a contract in place. If not, the Procurement Department is responsible for negotiating the terms and agreements, and to sign the contract with the supplier. Once this is done, Procurement asks for confirmation by the Merchandising department to initiate the setup. After confirmation by the Merchandising Department, the Procurement Department is responsible for loading the item on the item onboarding tool (IRT). However, if it is not an existing supplier, the supplier needs to be added into the data-base. This is done with Master Data Management (MDM) team by a new item vendor form. The MDM team will create a supplier ID, and the procurement assistant will use the IRT system. After the item is set up by the MDM team, content and images are added. Then, the merchandising department is informed about the fact that the item is ready. Once the item is set up, and all the decisions regarding the item and supplier has been made, the Supply Chain Department is informed about the first effort date (FED), which is the date of the item going live on the website and ready to be ordered by the customers. Furthermore, the Supply Chain Department is informed about the first order quantity (FOQ). After all the information about the item, such as the descriptions, prices, and quantities, has been set up in

the systems by the MDM team, Supply Chain Department will check whether the items are linked to the correct supplier within their replenishment system called RMS and will communicate the requirements with supplier, such as pallet quantities. Supply Chain Department is then responsible for the (re-)ordering of the items and making sure that there is enough stock available at the warehouses. See Figure 3.1 for the decision hierarchy and stepwise interconnection between the departments of Merchandising, Procurement and Supply chain combined with the purchasing function by Van Weele (2014).

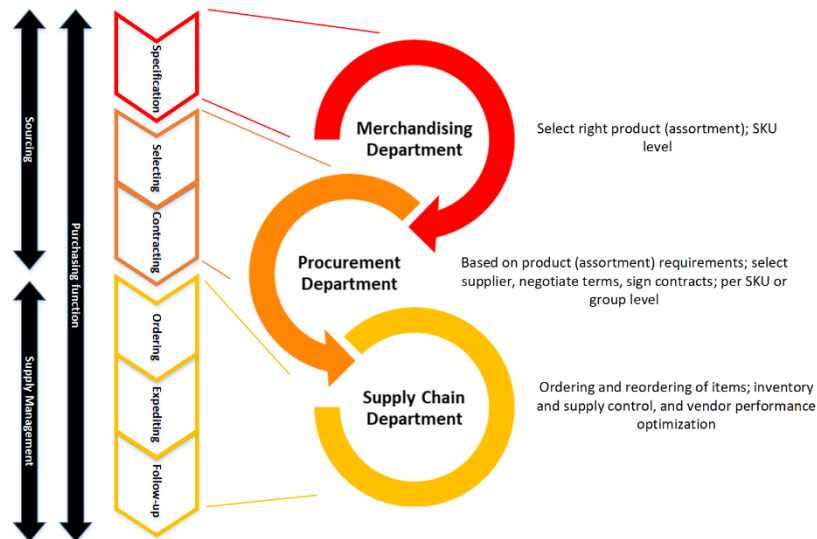


Figure 3.1: Purchasing function at ODE

Each department is focused on their own core activities associated with their function within the company. This means that Merchandising department is responsible for the assortment and will make the decision to list the item or not. However, it seems that the involvement and collaboration activities of Procurement department in the selection of the items is much larger than the Supply Chain Department. This is basically due to the fact that Procurement Department is responsible for searching the correct supplier and the decision to list the item depends on the availability of suppliers. Therefore, there is a closer interaction between Procurement department and Merchandising department than between Merchandising and Supply Chain Department in the decision-making processes. Furthermore, Supply Chain Department isn't being involved in the selection of the assortment and the selection of supplier. The consequences of this is that there are cases where suppliers are selected based upon the best prices, but with bad OTIF (On-Time-In-Full) performance. This means that Merchandising and Procurement department can make decisions that are disadvantage for the Supply Chain department.

### 3.1.2 Organizational Performance objectives and targets

A number of prior studies have defined organizational performance as financial as well as market performance including measurements such as return on investment (ROI), market share, profit margin on

sales, the respectively growth on these measurements, and the competitive position of an organization (Tan et al., 1998; Vickery et al., 1999; Stock et al., 2000; Chen & Paulraj, 2004; Li et al., 2006). According to the literature, organizational performance is widely accepted as the combination of an indicator of operational performance (non-financial) and financial performance (Venkamatran & Ramanujam, 1986; Yamin et al., 1999; Bhagwat & Sharma, 2007). The operational performance is related to the efficiency and effectiveness of the logistics processes, while the financial performance is related to the profitability of the organization. However, management should focus on the change of profits or costs, because the impact on profit before taxes will determine how any activity affects earnings per share (Lambert & Schwieterman, 2012). According to the Annual Operation Plan of the company and the empirical analysis, the organizational performance of the company is defined by three performance indicators: (1) net sales, (2) profit contribution, and (3) number of customer accounts. Each of the SCRUM member, plays a key role in the delivery of these KPI's. These performance objectives were analyzed using the SCRUM scorecard. From this scorecard (see Figure 3.2), it can be seen that the net sales are in decline for each of the SCRUM categories. The highest decline is for the category of Printing & Technology, followed by Filling & Solutions, and Ink & Toner. The categories of 'Cleaning, Hygiene & Workwear' and 'Food & Catering' have the lowest decrease in net sales. Also, the gross profit margin for each of the SCRUM category is in decline, with the highest decline for "Ink & Toner", Paper, Envelopes & Labels, and Filling & Solutions. The lowest decrease in gross profit is again for the category of 'Cleaning, hygiene & Workwear', and 'Food & Catering'. Looking at the key performance indicators 'number of accounts buying', this number has the highest decreases for the 'Food & Catering' category, followed by 'Ink & Toner'. However, 'Cleaning, Hygiene, and workwear' has the least decrease in number of accounts buying. This means that the company is facing a performance decrease.

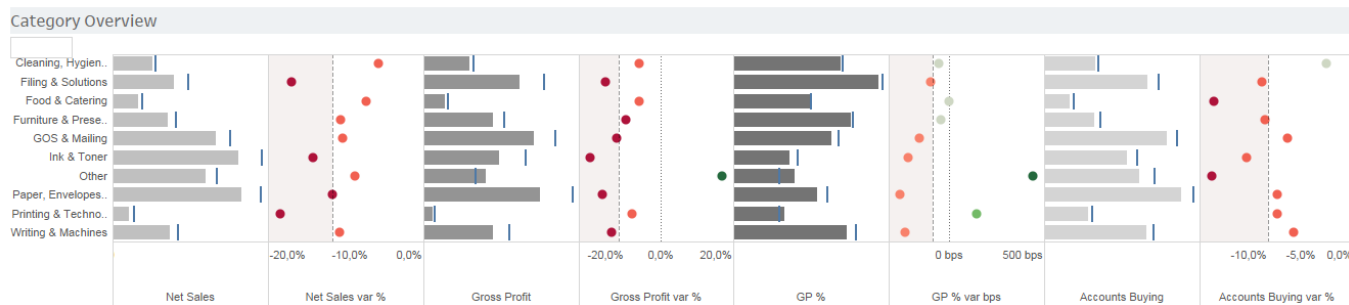


Figure 3.2: SCRUM Scorecard

While there are three main KPIs set, each of the business function has also their own objectives and targets (see Figure 3.3 for the different KPIs of Merchandising, Procurement and Supply Chain departments). The objectives of the Merchandising department within the SCRUM team is to increase the sales, the profit and the number of customers, which is also the main KPIs the organization focuses on. Procurement department is concerned about cost of goods sold savings, the rebates percentages and the

market development funding (MDF). Supply Chain department is focused on optimizing inventory levels, the service level towards the customers measured by the line fillrate, and the delivery performance of the suppliers measured by OTIF, which indicates whether the items are delivered at the right time, with the right quantity and quality. This means that the performance of ODE is measured by a combination of financial measures and operational (non-financial) measures for their day to day activities. However, each of their performance indicators should eventually affect the overall organizational performance objectives. Based upon the answer on the first sub-question is as follow: the organizational performance of the company is defined as the net sales, the profit contribution margin and the number of customers (accounts buying).

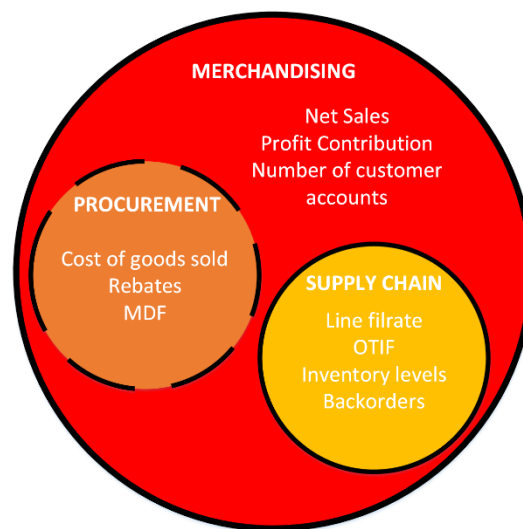


Figure 3.3: Key Performance Indicators of the different business entities at ODE

## 3.2 Supplier Relationships Types

This section is dedicated to the type of relationship with suppliers. The first subsection 3.2.1. covers the different types of supplier-buyer relationships at the case company. Subsection 3.2.2. covers the effect of the different types of relationship on the organizational performance objectives.

### 3.2.1 Buyer-Supplier Relationships

The relationships with supplier at ODE are of the competitive type, where the exchange partners act in their self-interest to capture a larger share from the relationship (Trent, 2005). There are regular meetings with suppliers, in where OTIF performance is being shared with suppliers. There are business reviews with suppliers and phone conversations. While the suppliers try to support the organization to achieve their objectives and targets, such as the line fillrate and the OTIF performance, at the end, each of the parties are focused on their own share of benefits from the transactional relationship. This means, that

even if there is some sort of collaboration and information sharing between the exchange partner, each of the exchange partners still focuses on their own objectives and goals, even at the expense of the other partner. There is a clear misalignment of objectives between the suppliers and ODE. The exchange partners aren't working actively against each other's interest, however, there is also no congruence of goals. This is also confirmed by the fact that the organization has penalty fees agreements included in their contracts. These agreements include applying fees to suppliers, when the deliveries are late, or the supplier didn't announce the organization about any changes to the deliveries. Based upon the empirical analysis, the case company has the intention to pursue a competitive relationship with suppliers with the focus on competitive bidding and price comparison (Trent, 2005).

While there are attempts to switch from a competitive type of relationship towards a more cooperative or a more collaborative type of relationship, this is not formalized within the contracts and there are no clear structured guidelines for this kind of collaboration activities. Furthermore, consignment stock agreements are in place or there are negotiations to implement consignment stock agreements with few suppliers. This indicates that there are initiatives to create a more collaborative and integrated relationship with suppliers. Both of the collaborating partners do recognize that the value they receive would be less if the collaborative relationship wouldn't exist, but the level of collaboration isn't sophisticated and intensive enough to create a win-win situation. In this kind of situations, the exchange partners should be working together to identify new and better ways to operate or compete in the marketplace (Trent, 2005). The relationship styles with suppliers can be classified as a win-loss situation and is accepted by the exchange partners. Both exchange partners do gain from the relationship, however, the sharing of these gains isn't equal among the partners.

The interviewees were asked about the operational linkage of the exchange partners. The relationships with suppliers are of the arm's-length relationship where basic information is being shared with the suppliers (Cox, 1999). Sharing of this information is more out of necessity to execute different processes by the exchange partners. Sales forecasts are being shared with some suppliers, since some of the suppliers are manufacturing for the organization. There are also cases in which promotional plans and objectives are being shared with suppliers. Furthermore, the delivery performance of the suppliers is being shared. This indicates that there is a lot of information sharing, but the level is basic and there are no structured guidelines for determining the right degree and/or type of information that should be shared with suppliers. In some cases, more than basic information is being shared. These cases are related to consignment stock agreements with suppliers, in which the supplier has the ownership of the inventories stored at the warehouses of ODE until it is shipped to the customers. This kind of collaborative relationship needs extensive dedicated investment and adaptations to operational processes (Cox, 1999). While this kind of relationship is of a more collaborative type, the organization is adopting an adversarial arm's-length relationship towards these suppliers. Regarding the commercial intent of the exchange partners entering

into transaction, each of the partners are primarily interests in maximizing his own share of value from the relationship at the expense of the other party. There is no open and transparent commercial information about profit margins and cost of operations being shared equally between the partners (Cox, 1999). This means that the relationships with suppliers can be classified as an adversarial arm's-length relationship.

### **3.2.2 Performance outcomes**

The arm's-length relationship with suppliers has an effect on the performance of the organization in terms of profitability and efficiency. Firstly, having this kind of relationship with suppliers creates the situation where the supplier and the organization primarily acts on their own interest by focusing on maximizing their own share of the value from the relationship. This means that the negotiations with suppliers are primarily focused on getting the best deal. The supplier is focused on selling as much as possible, while the organizations wants to purchase only that amount from suppliers based on their sales forecast. However, when the sales are in decline, the purchased volume and/or value will decrease. The consequence is that the organization isn't able to get the best deal from the negotiations. There are no collaboration initiatives with the supplier to generate more sales to increase the value for both the exchange partners by doing business with each other. There are also no collaboration initiatives to decrease operational costs, which may lead to lower cost price of the products being purchased by the organization. The arm's-length relationship creates an environment, whereby the organization is focused individually on its own on strategies to increase sales.

There are collaboration activities in the form of increased communication levels with few suppliers. This has primarily a positive effect on the efficiency of the operations, especially the OTIF performance of the supplier. Having a closer relationship with the supplier creates support in achievement of different targets and goals of the organization. It seems that when the relationship is good with suppliers, in terms of higher level of communication and collaboration, the supplier is more willing to align processes and take proactively action to help the organization in achieving their targets. There are no mutual goals (formally), but there are certain levels of collaboration and information sharing activities to increase the value from doing business with each other. A closer collaboration with a supplier creates mutual goals and therefore priorities are giving to the organization when there is an excess need of products to fulfill the demand of the customers. The supplier seems to be more willing to prioritize the organization in case of a closer and collaborative relationship. However, at the end the supplier is focused on maximizing their own share of value even at the expense of the case company.

From this, we can answer our second sub-question: the type of relationship with suppliers is of the adversarial arm's length relationship in which both of the exchange partners are trying to capture the highest share of the value created (win-lose situation) by doing business with each other. This means that one of the exchange partner gains at the expense of the other partner. The case company is concerned operationally

with the functionality of the goods in terms of performance, quality, on-time delivery and commercially concerned with reducing the cost of goods by having better price deals, MDF deals and rebates percentages. On the other hand, the supplier is concerned with making profits, and delivering goods to increase operationally the revenue received from the case company. Due to the arm's-length relationship, there is no agreement in goals and objectives to increase organizational performance of the case company.

### **3.3 Products**

This section is dedicated to the characteristics of the products offered by the case company affecting the type of relationship with suppliers. Subsection 3.3.1. is dedicated to the private label branded assortment of the organization. Subsection 3.3.2. is dedicated to the Original Manufacturing (OEM) assortment of the case company.

#### **3.3.1 Own brand products**

ODE is the reseller of OEM products but has also a portfolio of private label brands which is called own brand (OB). The private label brand products are sold under various labels; Office Depot, Viking, FORAY, ATIVA, and realspace. For the sourcing of OB products, there is a separate department. In contrary to the SCRUM teams, the OB team is primarily supporting the SCRUM teams in sourcing new products for assortment for which there is a potential to develop a private label product. The OB team works with the SCRUM teams on the different product requirements and is concerned with finding the right vendor in Europe or far east (Asia) for the manufacturing of these private label products.

The vendors within the OB category consist of manufacturers supplying the products to ODE based upon forecasts. The relationship with OB vendors is very basic, whereby the organization orders and the suppliers supply the products according to the contract agreements. There is no collaboration with these vendors and the main concerns is regarding the accuracy of the forecast, the quality and the price/cost of the items. One of the reasons that the relationship with the OB suppliers is very basic is that these vendors are managed by a third-party office. The management of the OB items is more complex than the management of the OEM products, since the OB items are being manufactured for the case company only.

#### **3.3.2 OEM Products**

Besides the private label brands, ODE is also the reseller of OEM products. The OEM products are sourced from manufacturers or distributors of these products. In comparison to the OB manufacturers, the type of relationship with suppliers differs within the OEM assortment. This difference is due to the different characteristics of the OEM products. One of these characteristics is the strategic importance of the purchased product for the organization due to the economic value and customer demand. The higher the demand at the customer side, the higher the volume and value of purchases sourced from suppliers. This

means that the organization will have more leverage in the transactional relationship for demanding better price agreements and other terms from the suppliers. In these cases, the organization adapts an adversarial relationship with suppliers and creates a win situation for itself by maximizing their own value from the competitive relationship. However, not only the economic value of the products, but also the brand name of the products plays a key role in determining whether the purchase is of strategic importance, and therefore, it affects the type of relationship with suppliers. Certain branded products need to be included in the assortment to be able to fulfill (specific) customer demand and compete on the market. The strategy towards the customers is also a factor considered in determining whether the purchases goods are of strategic importance of the company. The organization is currently competing on service by having a wide assortment and providing their customers a one-stop-solution whereby customers can buy more than traditional office supplies. This means that certain products, while in low in economic value, still have a significant effect on the strategic importance of the purchase.

Another characteristic that affects the type of relationship with supplier is the associated supply risk of the product due to the difficulty of managing the supply. When it is possible to source the product from many suppliers, the degree of complexity of the supply market is relatively low. This means that these products can be managed relatively easy and can be acquired from many suppliers. In this case, the organization focuses primarily on tendering with aggressive bargaining to obtain the best deal from the suppliers. This is primarily associated with the characteristics of the supply market. In markets with many suppliers to source from, suppliers have relatively low power which makes it easy for the organization to exercise their purchasing power.

The complexity of the products is another element affecting the type of relationship with suppliers. Technological products are complex and there are frequent innovations and updates, such as new functionalities. Due to the long period of setting the item up in the systems and making it available for customers, the technically complex product may already be outdated for the customer. The type of relationship the organization is trying to establish for the suppliers of these complex products is a more collaborative one instead of an arm's-length relationship to assure the supply of these goods in time.

At last, due to products with seasonality in the demand pattern, the organization has more difficulty in managing these products and is focused on building a closer relationship with suppliers instead of maintaining an arm's-length relationship. The main reason is that the seasonality factor creates a higher risk and uncertainty at the supply side.

The different characteristics associated with the products does have an effect on the type of relationship with suppliers. When the value of the purchases is high, the organization has the leverage to ask for best price deals and performance from the suppliers. This means that the case company can apply their traditional way of doing business, which is of the arm's-length relationship with limited information sharing (Cox, 1999; Trent, 2005). However, those characteristics of the products which increasing the risk



associated with the supply side pursues the organization towards a more collaborative type of relationship. The economic, market and uncertainty characteristics associated with the products affect the relationship with suppliers, since these characteristics may require a more collaborative type of relationship with suppliers. This answers our third sub-question.

### **3.4 Power Distribution**

The power distribution between the organization and their suppliers is covered in this section. In the first subsection 3.4.1. general information about the supply side of the organization is provided. Subsection 3.4.2. is dedicated to the power structure between the suppliers and the case company and its effect on the organizational performance of the company.

#### **3.4.1 Supply Side**

ODE is totally dependent on their suppliers and adopts an outsourcing strategy whereby the manufacturing of the products is outsourced to third parties (Cohen et al., 2005). In this way the organization focuses on their own core competences to enhance their own competitive positioning, which is providing the customers the best service. This means firstly having a wide assortment. Looking at the offerings of the organization to their customers, the company is focused on providing the total package to their customers, especially the contract customers. Secondly, the company has set targets to achieve high service levels towards customers. The company has set a target of 99,1% for the line fillrate KPI and a target of 95% and above for the delivery performance of the supplier measured by OTIF.

The company acquires the products from different types of suppliers. The organizations sources from OEM distributors, but also from second tier suppliers, which are the OEM manufacturers. Furthermore, the organization has dedicated the manufacturing of their OB products to manufacturing companies (see Figure 3.4).

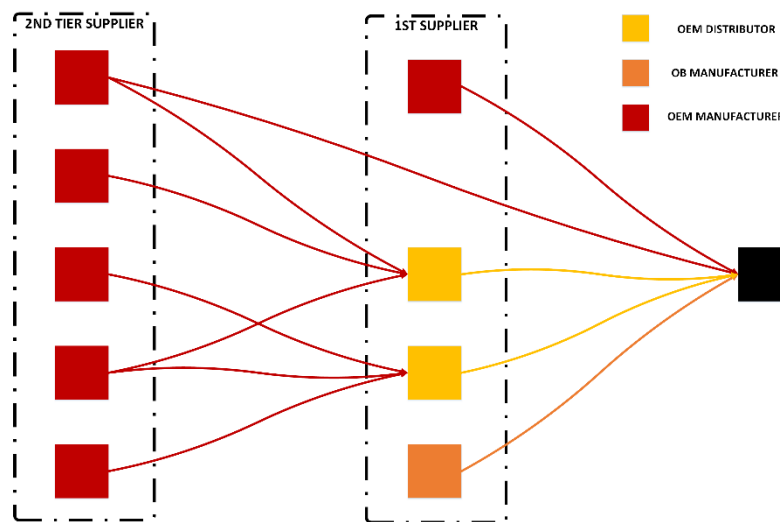


Figure 3.4: 1<sup>st</sup> and 2<sup>nd</sup> tier of ODE suppliers

### 3.4.2 Power structure

The distribution of the power between the suppliers and the organization depends on several factors. Firstly, there is a difference between OB manufacturers, OEM manufacturers and OEM distributors. The OB category deals with longer lead-times, but also factors such as art-work, packaging, and quality requirements, making the negotiations and discussions longer to take. When the organization wants to switch from one OB manufacturer to another one, firstly, the current stock needs to be phased out and the new stock from the new manufacturer needs to be phased in. This means that all the negotiations, agreements, discussions and setting up the item in the systems needs to be repeated. Secondly, switching to a new OB manufacturer may cause quality issues and therefore impact the brand name of the OB product. Thirdly, there are no return policies with these suppliers. All of these factors create a situation in which the supplier has more power within the relationship. However, there is a mutual dependency between the company and the OB manufacturer. Both of the exchange partners need to work closely together, since neither of them can force each other (Cox, 2001). While the supplier has more power, the supplier is still dependent on the case company. This creates a situation in which the supplier has more than just normal returns but needs to pass value to the buyer in the form of less than ideal returns (Cox, 2001). This means that the case company isn't able to achieve the functional improvements (Cox, 2004).

With the OEM manufactures the power is shifted towards these manufacturers, especially when they provide very unique products and hold a monopoly. This means that these manufacturers are not dependent on the case company for revenue and has many alternatives which creates a supplier dominance situation (Cox, 2001). When an OEM manufacturer increases their prices, all the OEM distributors will follow and also adapt a price increase. The case company needs to do business with these suppliers due to

(specific) customer demand. OEM manufacturers have the leverage of power and this allows these manufactures to have more than normal returns. The case company accepts the terms and prices offered by these suppliers just to be able to acquire the products and provide the service to their customers.

With OEM distributors, the organization is able to switch one distributor to another, since the products are identical and can be sourced from many distributors. These cases can be classified as buyer dominance situation in which the company has more power (Cox, 2001). This enables the company to persuade the supplier to perform better in terms of quality and cost improvements and ensures that the supplier only receives normal returns. Therefore, the organization is also doing business indirectly with OEM distributors instead of directly doing business with OEM manufacturers to utilize their power in the negotiations.

Besides the supply market characteristics, as mentioned above, the product characteristics have also an effect on the power structure within the relationship. The economic factors of the products play a key role in the distribution of power between the supplier and the organization. This means that the volume and/or monetary value of the purchases made by the organization is related to the leverage of the company on its supplier. The supplier focuses on the customers with the highest margin. When the organization represents a significant percentage of their turnover, the relative power of the organization is much higher in comparison to a lower percentage of turnover. With higher volumes, the organization can have leverage in the negotiations with suppliers and can tender to demand certain conditions and prices.

Lastly, the customer market characteristics play also an important role in the distribution of power within the relationship. The leverage over the supplier depends on the requirements from customers, especially the contract customers. These customers have special requests in terms of product requirements. This means that, when the organization switches from one product to another different product, it needs to go through all the contracts with customers to adjust the terms. This is especially the case with OB products, since these products are produced for the organization itself. However, this isn't the case with OEM products, since these products can be sourced from many suppliers and the case company doesn't need to adjust their IT systems and the contracts with customers. Another aspect is the brand factor. Certain customers are demanding certain brands and the organization is focused on fulfilling their demand by acquiring these products. This means that for this kind of products the organization has less leverage over the suppliers. Certain brand manufacturers have high power in the market, since they are the ones producing these products. When the organization needs to acquire these products, they are in a less favorable position in the transactional relationship with the supplier. Therefore, their dependency on the supplier depends on the brand/image factor of the product, but also certain product requirements demanded by the customer which makes it difficult to switch to another supplier. This is especially the case with OB products.

From the previous, we can answer our fourth sub-question: when the supplier has a dominant role in the relationship, the organizations accepts the offered prices and terms (Cox, 2001; Cox, 2004). However,

in cases where the organization has a dominant role, the supplier accepts the work rather than high profitability from the relationships. This is especially the case with the smaller suppliers. In cases where the organization has a dominant role, it can persuade the supplier to increase the operational efficiency, such as the performance of the supplier, the quality of the products, and pursue the supplier to offer the best prices, and therefore, reduce the cost of goods sold. When the supplier has a relatively high power, this affects negatively the organizational performance of the company, since the supplier isn't willing to cooperate with the supplier and isn't concerned with sharing the commercial value created relatively equally.

## 4 Solution Design

This chapter is dedicated to the solution design of this project. Within this chapter, the improvement proposal (“to-be” state) is given. From the analysis and diagnosis phase, it can be concluded that the case company measures its performance by financial and operational measures, but eventually the main focus is on increasing sales, net profit margin and number of customer accounts. Supplier Relationship Management (SRM) can affect the net sales, net profit margin and number of customer accounts (Lambert & Schwieterman, 2012). SRM can impact sales, cost of goods sold, total expenses, inventory investments, investment in fixed assets and other current assets positively.

There are several methods that can be used to implement SRM. According to Stevens (1989) integration of suppliers needs to view the supply chain from three perspectives: strategic, tactical and operational level. The same distinction has been mentioned by Cohen et al. (2005). Their study defines five disciplines that need to be followed to be able to adopt a supply chain management. The first discipline is related to the strategic level in which is viewing supply chain as a strategic asset. The next three disciplines are focused at tactical level, which includes the development of an end-to-end- process approach, designing the organization for performance, and building the right collaborative model. The fifth discipline is related to operational level to ensure performance improvements by defining and using metrics and performance measures. Park et al. (2010) has provided an integrative SRM framework which includes the following steps: shaping of the purchasing strategies, supplier selection, collaboration, supplier assessment and development, and continuous improvement. Lambert & Schwieterman (2012) developed a model for managing the SRM at strategic and operational level. Their model follows the distinction between strategic, tactical and operational level. The first two processes include viewing the SRM at strategic level which means reviewing the different purchasing strategies and identifying criteria for strategic categorization of the suppliers. The third process is the process of providing guidelines (tactical plans) for the degree of customization for different agreements with supply chain partners. The last two steps are related to the operational level, in which framework of metrics and guidelines needs to be developed for improvement benefits. Since all of these models require viewing the implementation from three perspectives, the solution design is structured following these three perspectives.

### 4.1 Strategic Objectives

Purchasing strategies can contribute to achieving competitive advantage by aligning with overall corporate strategy (Ellram & Carr, 1994; Chen & Paulraj, 2004; Van Weele, 2014). At strategic level, the focus should be on the development of the objectives and policies. For this purpose, a tool has been developed which can be used to propose different strategies. The tool is called “Supplier Relationship Management Tool V1” (see Figure 4.1 for the interface) and is based upon the portfolio approach (Kraljic, 1983; Park et al., 2010; Van Weele, 2014). The tool proposes different strategies in three steps: (1)

assessment of the strategic importance of the products, (2) the assessment of the attractiveness of the relationship with suppliers, and (3) proposition of different strategic approaches towards suppliers based upon step 1 and step 2. In the following subsection, each of these steps are covered.

## SUPPLIER RELATIONSHIP MANAGEMENT TOOL V1

As part of Master Thesis Project conducted by Engin Kopal

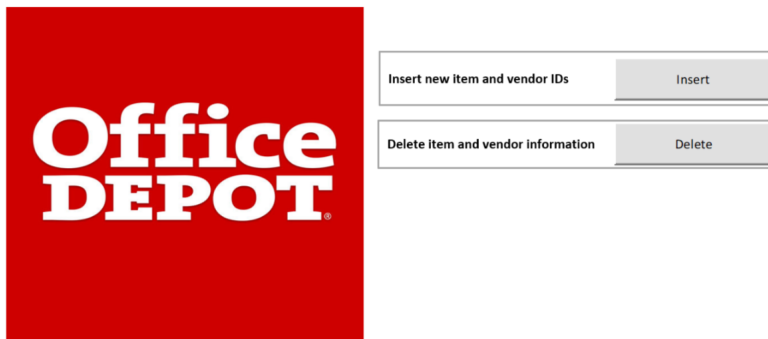


Figure 4.1: Supplier Relationship Management Tool V1 Interface

### 4.1.1 Strategic Importance

Portfolio Matrix is the most commonly used method to define purchasing objectives and policies (Gelderman & Van Weele, 2003). Each of the quadrants of the matrix requires a different approach towards suppliers and describes the ideal strategy (Olsen & Ellram, 1997) (see Figure 4.1 for the quadrants). While there are several other variants to the Portfolio Matrix of Kraljic with each building and extending this matrix by taking other factors into considerations, each of the models positions the products based upon two dimensions: the profit impact and the supply risk. See Table 4.1 for the different variants of the Kraljic Portfolio Matrix.

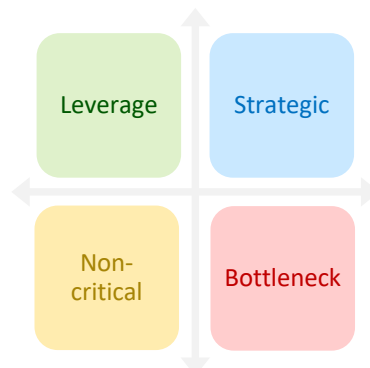


Figure 4.2: Kraljic Matrix

Table 4.1: Different classification dimensions for Portfolio Management

	<b>Classification Dimensions</b>	
	<b>Internal</b>	<b>External</b>
Kraljic (1983)	<b>Importance of purchase</b> Volume purchased, percentage of total purchase cost, impact on product quality and business growth	<b>Complexity of supply market</b> Availability, number of suppliers, competitive demand, make-or-buy opportunities, storage risks and substitution possibilities
Olsen and Ellram (1997)	<b>Strategic importance of the purchase</b> Competence factors <ul style="list-style-type: none"> <li>• Purchase influences the firm's core competencies</li> <li>• Purchase improves knowledge of buying organization</li> <li>• Purchase improves technological strength of buying organization</li> </ul> Economic factors <ul style="list-style-type: none"> <li>• Volume/monetary value of purchases</li> <li>• Value added of purchase</li> <li>• Criticality and leverage purchases gains with suppliers</li> </ul> Image factors <ul style="list-style-type: none"> <li>• Supplier image/ brand name</li> <li>• Environmental/ safety impact of purchase</li> </ul>	<b>Difficulty of the purchasing function</b> Product characteristics <ul style="list-style-type: none"> <li>• Novelty</li> <li>• Complexity</li> </ul> Supply market characteristics <ul style="list-style-type: none"> <li>• Supplier's power</li> <li>• Supplier's technical/ commercial competence</li> </ul> Environmental characteristics <ul style="list-style-type: none"> <li>• Risk</li> <li>• Uncertainty</li> </ul>
Gelderman & Mac Donald (2008); Van Weele (2014)	<b>Profit Impact</b> Volume purchased, expected growth in demand, percent of total purchase cost, impact on product quality, business growth	<b>Supply Risk</b> Market conditions, availability, scarcity, number of suppliers, competitive demand, make-or-buy opportunities, storage risks, substitution possibilities, on-time delivery, cultural differences, lack of logistical knowledge, supply interruptions, duty / customs regulations, shortage of qualified personnel, import complexity, payment conditions
Van Weele (2014)	<b>Profit Impact</b> Percentage of volume of total purchasing volume, share product in overall cost price, products contribution to total margin, cost savings possibilities through competitive bidding or volume agreements, price elasticity, rebate and bonus scheme	<b>Supply Risk</b> Branded product vs standardized product, substitution possibilities, specific quality or logistic requirements, degree to prescribed suppliers by customers of the organization, supplier's share in buyer's purchasing turnover, the structure of the market (free competition vs monopoly), the situation of the market (buyer's versus supplier's market), supplier production capacity utilization, supplier's financial position, supplier's switching costs.
Padhi et al. (2012)	<b>Profit Impact</b> Impact on profitability, criticality of purchase, value/ cost of purchase	<b>Supply Risk</b> Market, performance, and complexity risk

The selection of the variables for these dimensions is one of the issues of purchasing portfolio models (Gelderman & Van Weele, 2005). Since the strategic decisions based upon portfolio models are proven to be sensitive to the choice of dimensions and its variables, the selection of the dimensions and factors to assess the strategic importance of the products is based upon the empirical analysis at the diagnosis and analysis phase of the project. From this phase, it can be concluded that there are three factors which defines the profit impact of the purchases (see Table 4.2).

Table 4.2: The three factors to assess the profit impact

Factor	Definition
Competitive factors	The extend of which the purchased products contribute to the success of the organization.
Economic factors	Importance of the purchase in monetary value; the higher the value of the purchases, the higher the importance of the purchases.
Image factors	Certain products with brand names are important to be included in the assortment.

For the difficulty of managing the supply risk three factors are selected (see Table 4.3): product characteristics, supply market characteristics, and demand characteristics. The selection of these variables is based on the empirical analysis of this study. From this analysis, it can be concluded that different characteristics, such as short life cycle and (technological) complexity, creates difficulties in managing the supply of these products. Supplier's power due to its size, the number of suppliers available in the market, and the product substitution possibilities determines the relative supply risk. Seasonality causing a higher variability in the demand is also one factor which makes it difficult to manage the purchasing function at the case company.

Table 4.3: The three factors to assess the supply risk

Factor	Definition
Product characteristics	Complexity of the product and short-life cycles.
Supply market characteristics	Supplier's power and the lack of substitution possibilities.
Demand characteristics	Higher demand variability due to seasonality.

Each of the factors describing the strategic importance is rated using a scale from 1 (low) to 10 (high). These ratings are multiplied with the associated weighted factors by using AHP (see Appendix C). The output of the strategic importance step is the classification of the products into four different groups: strategic, leverage, bottleneck and non-critical items (see Figure 4.3)

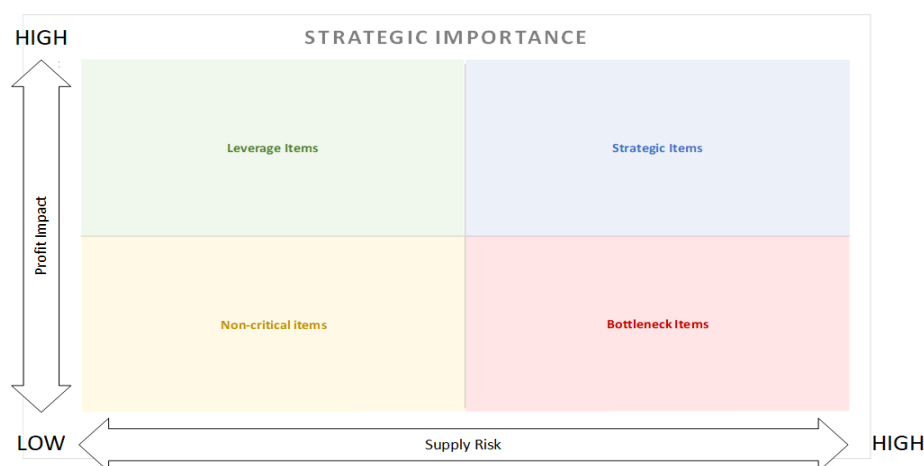


Figure 4.3: Strategic Importance Matrix



#### 4.1.2 Relationship Attractiveness

Another critique on purchasing portfolio models is that the suppliers' side of the buyer-seller relationship isn't considered by Kraljic's model (Gelderman & Van Weele, 2003; Van Weele, 2014). In order to develop collaboration, it is important to have a good match of the position of the item in the purchasing portfolio of the buyer and the perspective of the supplier (Van Weele, 2014). This means that the current relationship with the suppliers do play an important role. The Dutch Windmill (Van Weele, 2014) is one of the models which combines the supplier side portfolio and the buyer side portfolio. This model proposes different strategies based upon the dominance of the supplier within the segment of the products. Cox (2004) has a similar model with four quadrants called the Power Matrix. The positioning within this matrix is based upon the attributes of buyer power relative to supplier and the attributes of supplier power relative to buyer. Although power distribution does play a key role at defining purchasing strategies, portfolio strategies purely based upon power structures could be dangerous strategy, since conditions within the market can change and the power could shift from one partner to the other (Olsen & Ellram, 1997). The model of Olsen and Ellram (1997) is more comprehensive than the Power Matrix and the Dutch Windmill, since it considers more than just the dominance and power of the supplier and buyer (see Table 4.4). Therefore, the model of Olsen and Ellram (1997) will be used as a guideline to develop the dimensions to assess the attractiveness of the relationship with suppliers. Within their model, the positioning is based upon two dimensions: relative supplier attractiveness and the strength of the relationship. However, Olsen and Ellram (1997) state that the list of factors in their model are not complete and will vary among companies. It is important to discuss which factors are important within the organization. Therefore, the factors to assess the attractiveness of the supplier is chosen based upon the empirical analysis of this project (see Table 4.5). The dimension of supplier attractiveness is based upon several factors. The first factor is related to performance, such as the delivery performance of the supplier and the quality of the products being delivered. The second factor is related to economic factors, such as the rebates percentages, MDF, and the cost price of the purchased goods. The third factor is related to the strategic and organizational factors, which defines whether there is a fit between the buyer and the supplier.

Table 4.4: The Relationship Attractiveness Factors proposed by Olsen and Ellram (1997)

<b>Factors influencing the Relative Supplier Attractiveness</b>	<b>Factors describing the Strength of the Relationship</b>
Financial and economic factors: include an evaluation of the supplier's margins, financial stability, scale and experience, and the barriers to the supplier's entry and exit.	Economic Factors: include the dollar value of the purchase, the importance of the buyer in terms of the percentage of the supplier's sales being purchased by the buyer, and the cost of exiting that market.
Performance factors: include a traditional evaluation of delivery, quality, price, etc.	Character of the exchange relationship: characteristics of the exchange situation that create stronger bonds between the companies.
Technological factors: include an assessment of the supplier's ability to cope with changes in the technology and an assessment of the current and future depth and types of the supplier's technological capabilities, the supplier's current and future capacity utilization, the	Cooperation between buyer and supplier: describes the level of cooperation in development, the technical coordination, and the integration of management between companies.

supplier's design capabilities, the speed in development, and the supplier's patent protection.	
Organizational, cultural, and strategic factors: include an evaluation of the relationship's influence on the company's overall supply chain position.	Distance between the buyer and the supplier: described by five factors; (1) social distance, (2) cultural distance, (3) technological distance, (4) time distance, (5) geographical distance
Other factors: includes an assessment of the supplier's ability to cope with general changes in the environment.	

Table 4.5: Factors to assess the Relative Supplier's Attractiveness

Factor	Definition
Performance factors	Delivery and quality performance.
Economic factors	Rebates, MDF, and cost prices of the products.
Strategic and Organizational factors	The (strategic) fit between the exchange partners.

The strength of the relationship, which also refers to the attractiveness of the buyer within the relationship, is determined based upon different factors assessed during the empirical analysis of the project (see Table 4.6). Firstly, the economic factors, such as the volume or purchase value of the purchases influences the importance and attractiveness of the case company for the supplier. The character of the exchange relationship is another important factor that determines the attractiveness of the buying company. The empirical analysis shows that there is a difference in communication (levels) among suppliers. The communication level is higher with suppliers that treat the organization as an important customer. The third factor is related to the cooperation between the case company and the suppliers. Cooperation is defined by the willingness of the organization to cooperate with the case company. Certain suppliers have integrated delivery performance metrics (OTIF) as their own organizational objectives. The VIP (Vendor-In-Partnership) tool, which measures the performance of the supplier, is an important tool for the organization, however, certain suppliers are refusing to use this tool.

Table 4.6: Factors to assess the Strength of the Relationship

Factor	Definition
Economic factors	Purchases influencing the importance of the buyer for the seller.
Characteristic of exchange relationship factors	Number of communication links and communication levels.
Cooperation factors	Willingness to cooperate and integrate mutual objectives.

Each of the factors describing the attractiveness of the relationship is rated using a scale from 1 (low) to 10 (high). These ratings are multiplied with the associated weighted factors by using AHP (see Appendix C). The output of the relationship attractiveness is the classification of the current relationship

with suppliers into four different groups: lack of attractiveness, buyer's attractiveness, supplier's attractiveness, and mutual attractiveness (see Figure 4.4).

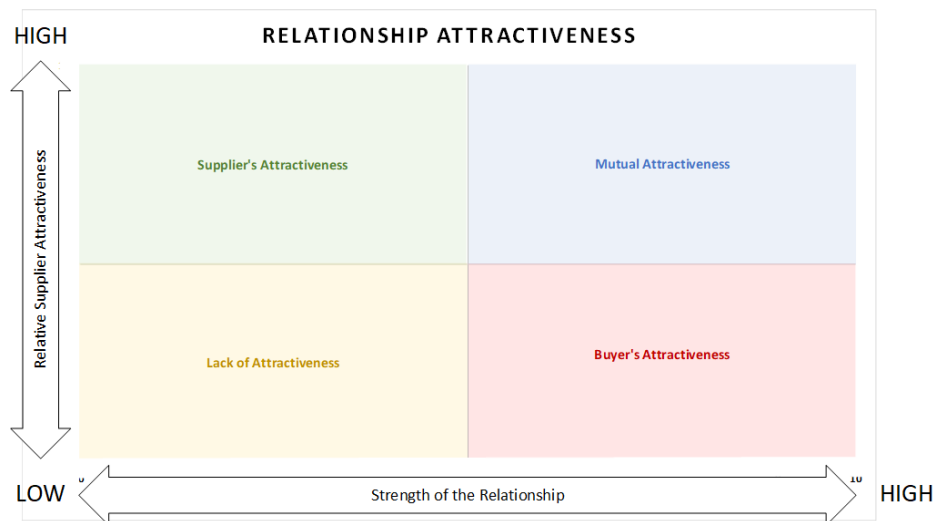


Figure 4.4: Relationship Attractiveness Matrix

#### 4.1.3 Supplier Relationship Management Strategies

The third step is the step of defining relationship strategies based upon the strategic importance of the products and the attractiveness of the supplier-buyer relationship. For this step, the Integrative SCM Framework by Park et al. (2010) has been used, which is a supplier evaluation methodology. While their framework has the purpose of evaluating the suppliers based on capability, performance, and collaboration relationships by dividing the suppliers into bad, excellent and prime groups, for the solution design of this project, their model will be used to define SRM strategies and not to evaluate the suppliers. Based upon the strategic importance of the products and the type of attractiveness from the relationship attractiveness analysis, three different types of strategic approaches towards suppliers are proposed by plotting into the Relationship Style Matrix (see Figure 4.5): transactional, collaborative, and strategic relationships.

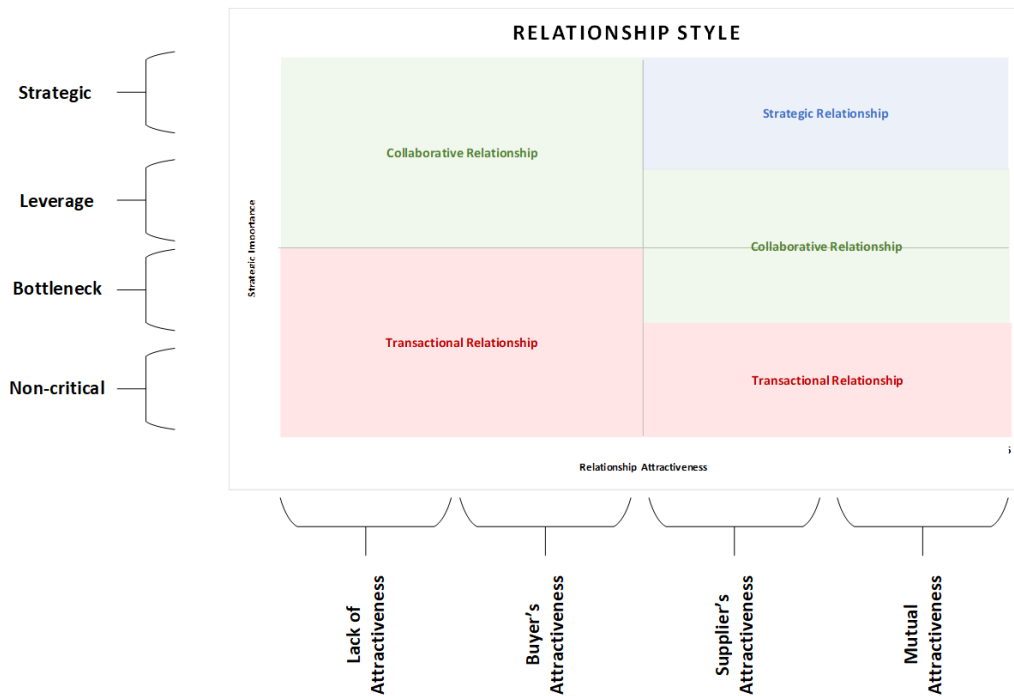


Figure 4.5: Relationship Style Matrix

The transactional relationship strategy is proposed for suppliers providing non-critical items. The focus for this type of relationship is to reduce cost of doing business with the supplier, such as ordering costs and invoicing costs. This strategy is also suitable for suppliers with relative low supplier attractiveness and providing leverage items. For the lack of attractiveness and buyer's attractiveness the organization should focus on finding alternative suppliers even if the strength of the relationship is being reduces. The payoff from a strong relationship in cases of buyer's attractiveness and lack of attractiveness is low for non-critical and leverage items due to low risk of supply and many alternative suppliers from which the products can be sourced.

The collaborative relationship is most suitable for bottleneck items, since these items are difficult to manage due to high risk of supply. The objectives for this type of relationship should be on to assurance of the supply even at additional costs by collaborating with suppliers. For example, consignment stock agreements can be made with suppliers or keeping extra safety stock. For leverage items with mutual attractiveness or supplier's attractiveness, the collaborative relationship approach is also appropriate. The focus should be on collaborating with this supplier to keep the strength of the relationship, but no considerable resources should be allocated to the relationship. One of the options is to dedicate more purchasing volumes and/or value to the supplier within this relationship style.

For the strategic items with lack of attractiveness or buyer's attractiveness, a collaborative strategy can be proposed. Since the strategic items is important for the organization, it is important to secure the supply of these items. Especially, when the strength of the relationship is high (buyer's attractiveness), it is more efficient to develop the current relationship rather than establishing new relationship with other

suppliers. Therefore, for the strategic items whereby the relationship attractiveness can be classified as mutual attractiveness, the organization should focus on building strategic partnership.

Each of these relationship strategies requires a different intensity of collaboration and cooperation between the supplier and the case company. Spekman et al. (1998) mentions that the level of intensity among trading partners can change from an open market negotiation whereby the negotiations with suppliers are based on price and the type of relationships are adversarial to an intensity level of collaboration whereby supply chain integration, joint planning, and technology sharing activities are executed. Lambert et al. (1996) defines three different types of relationships with three different types of integration levels: Type I, Type II, and Type III. Type I relationships is where organizations recognize each other as partners and coordinate activities and planning on a limited basis. The focus of the relationship is short-term and involves only one department or functional area within each organization. Type II relationships is where the organizations progress beyond coordination of activities to integration of activities involving multiple divisions and functions within the firm (intra-firm). The partnership has a long-term horizon and it is not expected to last forever. Type III relationships consist of organizations where there is a significant level of integration. Each organization views the other as an extension of its own firm. In this case, there is no “end date” for the partnership. The difference between these types of relationship depends on several factors which suggest a portfolio approach could applicable since the factors are related to the dimensions of importance of the purchases and difficulty of managing the purchasing:

1. Impact on the firm if the relationships were to end.
2. Volume of purchases from or sales to the trading partner.
3. Involvement of the trading partner in the core competency or primary product line of the firm.
4. Availability of other sources of supply, if the trading partner is a supplier.
5. Percent of market share sold to the trading partner, if the trading partner is a customer.

The Collaboration Spectrum of Cohen et al. (2005) can be used for differentiating various types of collaborative relationship by the intensity of coordination and cooperation. The spectrum defines four levels of collaboration: transactional, cooperative, coordinated and synchronized. Transactional collaboration aims for the efficient and effective execution of transactions between partners with rarely focusing on reducing supply chain management costs or increasing revenues. Cooperative collaboration has a higher level of information sharing such as the sharing of forecast, inventory availability, purchase orders, or order and delivery status. Coordinated collaboration means supply chain members working more closely together and rely more on each other’s capabilities with two-way communication. Within this type of collaboration, there is a higher level of negotiations and compromises, which requires a long-term commitment due to higher levels of resources spend. Synchronized collaboration has the highest level of collaboration, where the collaboration moves beyond supply chain operations to include other critical business processes forming strategic alliances to share both physical and intellectual assets.

While these frameworks define different intensities, none of them include a clearly defined joint activities and processes. The Partnership Framework by Douglas & Lambert (2008) defines components, which are managerial controllable elements of a partnership, and links the level of presence of these components to three types of partnership mentioned before: Type I, Type II, and Type III. The types are based upon drivers and facilitators, whereby the drivers are the expected pay-offs from integrating the relationship and the facilitators are the factors which increase the likelihood of partnership success. Their method differs from the traditional portfolio approach which has been used to develop the solution design. Therefore, for the solution design, the Partnership Component Levels (Douglas & Lambert, 2008) is used to link the three propositions by the Supplier Relationship Management tool (transactional, collaborative, and strategic partnership) to the different levels of component levels to be able to propose the right activities and processes needed to define the objectives and policies for each of the proposed relationship styles (see Table 4.7). Based upon the strategic proposition made by the Supplier Relationship Management Tool, the case company can focus on the right level of components for implementation to define the policies and objectives. This will help the organization achieve the structure and guidelines to define the relationship by having the right objectives and policies in place. The elements are chosen based upon company specific needs which is assessed by the empirical analysis conducted at the case company. From the empirical analysis it can be concluded that there are no structure and guidelines for planning and coordination activities. It is important to have the right focus for the planning activities defined to able to spend the appropriate level of resources to the organization. The case company lacks guidelines in defining the right and level of jointly planning initiatives. Furthermore, the communication between the case company and supplier isn't structured and communication is primarily conducted to be able to execute different necessary processes, such as ordering and delivery of the purchased goods. There is no clear indication of whether it is appropriate to include multiple business functions and management levels in the communication with the supplier. Currently, the communication is primarily the responsibility of the Procurement department. Supply Chain departments plays a much smaller role within the communication with the supplier. As mentioned before, each of the exchange partners focuses on their own share of value. It is important that the right risk-and-reward sharing is in place to be able to sustain the partnership (Park et al., 2010). The same holds for the commitment of the partners to each other. Each type of relationship requires a different level of commitment from the partners. Analyzing the contracts (MPA's and SOP's), there is no difference in the contract styles among suppliers. The contracts have the same timeframe and have the same level of specificity. The company is focused on making the contracts less specific in nature, however, different types of relationship need different styles of contracts (Douglas& Lambert, 2008). Lastly, it is important to consider the level of financial resources and people invested in the relationship. The case company has collaborative initiatives in place, such as consignment stock agreements, which require a large amount of financial investments.

Table 4.7: Strategic Objectives and Policies for transactional, collaborative and strategic relationships adopted from Douglas &amp; Lambert (2008)

Element	Strategic Policies & Objectives		
	Transactional Relationship	Collaborative Relationship	Strategic Relationship
<u>Planning</u>	<ul style="list-style-type: none"> <li>- Planning should be on ad-hoc basis.</li> <li>- Focus of the organizations should be on projects or tasks or sharing of existing plans.</li> </ul>	<ul style="list-style-type: none"> <li>- Planning should be regularly scheduled</li> <li>- Focus should be on processes.</li> <li>- Planning should be performed jointly by focusing on elimination of conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>- Planning should be systematically scheduled.</li> <li>- Focus should be on the relationship by performing the planning jointly at multiple levels within the organization.</li> </ul>
<u>Communication</u>	<ul style="list-style-type: none"> <li>- Communication is limited, one-way and is conducted on ad-hoc basis between individuals.</li> </ul>	<ul style="list-style-type: none"> <li>- Communication is partially scheduled and routinized, two-way unbalanced, conducted regularly, is honest and open, and done at multiple levels within the organization.</li> </ul>	<ul style="list-style-type: none"> <li>- Communication is planned, systematic, two-way balanced, and occurs at all levels of the organizations.</li> </ul>
<u>Sharing of Risk and Rewards</u>	<ul style="list-style-type: none"> <li>- Low tolerance for loss</li> <li>- Fairness of the reward and risk sharing depends on the transaction between the partners.</li> </ul>	<ul style="list-style-type: none"> <li>- Some tolerance for short-term loss.</li> <li>- Fairness of the reward and risk should be tracked.</li> </ul>	<ul style="list-style-type: none"> <li>- High tolerance for short-term loss.</li> <li>- Fairness is measured by the lifespan of the relationship.</li> </ul>
<u>Commitment</u>	<ul style="list-style-type: none"> <li>- Commitment of each partner is specific to the transaction or project.</li> </ul>	<ul style="list-style-type: none"> <li>- Commitment is for the long-term.</li> </ul>	<ul style="list-style-type: none"> <li>- Commitment is to partner's long-term success. The commitment to the relationship should be integrated across business functions and levels within the organizations.</li> </ul>
<u>Contracts</u>	<ul style="list-style-type: none"> <li>- Contracts should cover a short time frame and needs to be specific in nature.</li> </ul>	<ul style="list-style-type: none"> <li>- Contracts should cover a longer time frame and needs to be general in nature.</li> </ul>	<ul style="list-style-type: none"> <li>- Contracts should be for the long-term and are general and basic in nature.</li> </ul>
<u>Investments</u>	<ul style="list-style-type: none"> <li>- No or very low resources are invested.</li> <li>- Limited personnel committed to maintain the relationship</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate level of resources is committed to the partnership.</li> <li>- Extensive level of personnel committed.</li> </ul>	<ul style="list-style-type: none"> <li>- High level of resources is committed to the partnership.</li> <li>- Exchange of personnel and participation of personnel within each other's business functions.</li> </ul>

## 4.2 Tactical Plans

After determining the strategic decisions towards suppliers, the focus should be on the means to realize the objectives and policies for managing the supplier relationships (Stevens, 1989; Van Weele, 2014). This includes an action plan for implementing the strategic decisions and goals, which requires a cross-functional process approach to overcome functional silos (Lambert, Stock & Ellram, 1998; Cohen et al., 2005). According to Lambert and Enz (2016), there is only two cross-functional, cross-firm, process-based SCM frameworks exists which are described in sufficient detail implementation: the SCM framework (Lambert & Cooper, 2000) and The Supply Chain Operations Reference (SCOR) model. The SCOR model is a reference model with the purpose of describing the process architecture in a way that makes sense to key business partners and includes four components: processes, performance metrics, practices and people (Supply-Chain Council, 2012). The six SCOR processes are described in Table 4.8 (Lambert & Enz, 2017).

Table 4.8: The six SCOR processes

Process	Definition
<u>Plan</u>	Processes including the gathering of requirements, gathering of information on available resources, balancing requirements and resources to determine planned capabilities and gaps in demand or resources, and identifying actions to correct these gaps.
<u>Source</u>	Processes such as the issuance of purchase orders, scheduling of deliveries, receiving, validation and storage of products, and accepting of the invoice from the suppliers.
<u>Make</u>	Activities related to transforming products into finished goods to meet planned or actual demand.
<u>Deliver</u>	Deliver processes describe the activities aimed at the creation, maintenance, and fulfilment of customer orders.
<u>Return</u>	Activities dealing with returning or receiving returned products from customers and to suppliers for any reason.
<u>Enable</u>	Processes that describe the activities associated with the management of the supply chain, including management of business rules, performance management, data management, resource management, facilities management, contract management, supply chain network management, managing regulatory compliance and risk management.

The SCM framework was developed with the goal of achieving cross-firm process integration, because communication problems may occur when firms have different number of processes, different process definitions or different activities (Lambert & Cooper, 2000; Lambert Garcia-Dastugue & Croxton, 2005; Lambert & Enz, 2016) (see Table 4.9 for the different processes that needs to be implemented according to the SCM framework).

Table 4.9: The SCM framework processes

Process	Definition
<u>Customer Relationship Management</u>	Processes that provides the structure for how relationships with customers are developed and maintained.



<u>Supplier Relationship Management</u>	Processes that provides the structure to develop and maintain relationships with suppliers.
<u>Customer Service Management</u>	Processes that provide the face of the organization to the customer.
<u>Demand Management</u>	Provides the structure for balancing the requirements and demand of the customers with the supply chain capabilities, such as reducing demand variability.
<u>Order Fulfilment</u>	Processes that are necessary to define customer requirements, to design a network, and to enable the firm to meet customer request while minimizing the total costs.
<u>Manufacturing Flow Management</u>	Provides all the activities necessary to obtain, to implement and to manage manufacturing flexibility, and to move products through the supply chain.
<u>Product Development and Commercialization</u>	Processes that provide the structure for developing and bringing new products to the market jointly with customers and suppliers.
<u>Returns Management</u>	Processes related to returns, reverse logistics, gatekeeping, and avoidance that are managed within the firm and across the supply chain members.

Lambert, Garcia-Dastugue, and Croxton (2005) compared the SCOR model and the SCM framework for evaluation. The same analysis has been conducted by Lambert & Enz (2016) by comparing their strength and weaknesses.

SCOR model focuses on transactional efficiency, while the SCM framework is focused on relationship management (Lambert & Enz, 2016). The intra-organizational management can be based on transactional efficiency and on relationship management, but it is important to recognize the value of a relationship orientation, because only achieving transactional efficiency will limit the supply chain efficiency (Lambert & Enz, 2016).

The processes of the SCM framework is informed by the corporate strategy and the appropriate functional strategies. This is necessary to assure the alignment of functional activities and to make these activities responsive to the market. The processes of SCOR are developed based on the operations strategy (Bollstorff & Rosenbaum, 2007). While the operations strategy should be developed based on the corporate strategy and be aligned with the other functional strategies, the SCOR model does not explicitly consider this connection (Lambert & Enz, 2016).

The SCM framework is broad in its scope. Therefore, the participation of all the functions is critical within this framework (Lambert & Enz, 2016). The SCOR model is limited in its scope, since it does not attempt to describe all business processes or activities.

Both the SCOR and the SCM framework advocate cross-functional involvement and recognize that business processes will not replace corporate functions (Lambert & Enz, 2016). The difference between these models is that the difference of corporate functions included in each framework and the type of cross-functional involvement differs as well. The cross functional involvement within the SCOR mode is pursued primarily within the functions of logistics, production and purchasing. With the SCM framework, all functions are involved in the planning and implementation of supply chain management initiatives. Using

SCM framework increases the likelihood of success, because it involves all functions. The SCOR model lacks the explicit connection between functional strategies and corporate strategies (Barney & Griffin, 1992).

The linkage within the SCOR involves only the placing of orders, invoicing and the associated logistics activities, while the linkage within the SCM framework includes all the activities that enable maximization of the profitability of buyer-seller relationships including joint development of new products, collaboration to minimize waste, and coordinated planning of supply chain activities that grow the business (Lambert & Enz, 2016).

The drivers of value generation are different for each of the frameworks (Lambert & Enz, 2016; Lambert, Garcia-Dastugue, Croxton, 2005). The two frameworks use different approaches to measure how supply chain management can create value. According to Stern (1999), the value of a firm can be measured in terms of economic value added (EVA). The goal of the SCM framework is not only to measure cost reduction and increased asset utilization, but also to identify the revenue implications from closely managing relationships with key suppliers and customers. The SCOR model on the other hand is focused on cost reductions and improvements in asset utilization, since the objective of this model is operational efficiency. The benefit of SCM framework is that it also considers revenue generation as well as cost reduction. For long-term financial success, it is necessary to focus on revenue enhancement, because cost savings opportunities tend to diminish as improvements are made (Lambert & Enz, 2016). The strength of the SCM framework is that it starts with the corporate strategy and the related functional strategies.

For this purpose, the SCM framework has been used to develop a process-oriented and cross-functional structure to guide the case company in achieving the strategic goals in terms of supplier relationships management. Lambert & Schwieterman (2012) provided a methodology to implement the SRM process of the SCM framework. Using this methodology, a process flowchart has been developed for the case company (see Appendix D figure D.1). While the methodology of Lambert & Schwieterman (2012) consist of five Strategic Sub-Processes and eight Operational Sub-Processes, the Supplier Relationship Management Process flow consist of three main sub-processes. The first main sub-process is focused segmenting the suppliers to determine with which supplier the organization should take collaboration initiatives and develop product and service agreements (PSAs). The Supplier Relationship Management tool will help at operational level to identify and categorize suppliers into three categories: transactional, collaborative and strategic type of relationships. For the transactional relationship it is not necessary to have cross-functional teams interacting and collaborating with suppliers. The main focus should be on the collaborative and strategic type of relationships. Cross-functional teams, consisting of individuals from different departments, should collaborative with suppliers to increase revenues and reduce costs, thereby improving the performance of the organization and the supplier. The management of the supplier relationship give organizations the opportunity to build on the success of strategic purchasing by developing

partnership with key suppliers to reduce costs and create value for both parties with aim of long-term collaboration and shared success. Active participation is needed from every business function (Enz & Lambert, 2012). The collaborative type of suppliers will be segmented into one group and the strategic suppliers will be labeled as key supplier. In case of group of collaborative type of suppliers, each team manages a group of suppliers with the type of collaborative relationships. In case of key suppliers, each team is dedicated to a specific key supplier of the strategic relationship type. The output of this process is the segmentation of the suppliers and dedicating these suppliers to cross-functional SRM teams.

The next step is the development of the PSAs. These PSAs are based upon the Strategic Policies and Objectives as described in Table 4.7. For the key suppliers, the level of components (elements) are high, while for the segment of suppliers the level of the components is moderate.

The last step is the measurement of the performance and to generate supplier cost and profitability reports. The development of these reports enables the organization to measure the performance (Lambert et al., 2010).

### **4.3 Operational Control**

At operational level, the focus should be on having the appropriate control and performance measures (Stevens, 1989). Barrat (2004) states that the most important collaboration type is the internal collaboration. When organizations are pursuing external collaboration with suppliers and customers, these collaborations are detriments of efforts at internal collaboration (Fawcett & Magnan, 2002). This means that the case company should focus on the intra-organizational collaboration between the different departments of Merchandising, Procurement and Supply Chain. Organizations needs to take into account that internal integration must be aligned with external integration, in terms of developing closer relationships, integrating processes and sharing information with customers and suppliers (Barrat, 2002). Cohen et al. (2005) discusses the Supply Chain Maturity Model which defines four different stages. Companies with good supply chain management skills have higher levels of process maturity which leads to better supply chain performance

1. Functional Focus: At this stage, the (functional) departments at the organization focuses only on improving their own processes and their use of resources, with managers typically focusing on their individual department's costs and functional performance.
2. Internal Integration: Cross-functional performance measures are clearly defined, and each department or individual functions are held accountable for overall operational performance.
3. External Integration: The company has identified strategic customers and suppliers, as well as the key information it needs from them in order to support its business processes.

4. Cross-Enterprise Collaboration: Beneficial strategy and real-time performance targets are being set by collaborating with customers and suppliers.

This maturity model also clearly shows that first intra-organizational integration must be established, before external integration can be established with other members of the supply chain. The appropriate performance and control metrics should not only focus on the external collaboration with suppliers, but also on the internal collaboration between the key business functions responsible for the management of the supplier relationships.

As mentioned during the analysis and diagnosis phase, the department of Merchandising, Procurement and Supply Chain have all different objectives which makes it difficult to have internal collaboration related to supplier relationship management. While their functional performance metrics are related to three KPI's, these metrics are misaligned. Merchandising and Procurement department is focused on profitability, while the Supply Chain department is focused on efficiency of the operations. Profitability is derived from measures of sales, revenues and costs, while efficiency measures how well assets of a firm is employed to generate sales. Profitability does not provide the complete picture of how well a company is performing. DuPont Analysis can be used to analyze the efficiency and the profitability of the organization related to the return on assets (ROA) (Dehning and Stratopoulos, 2002). With this analysis, the DuPont ratio can be calculated and compared to the industrial average to reveal the company's overall financial performance relative to the industrial average. ROA measures how much profit a company generates in comparison to the capital assets employed and can be expressed as follow:

$$\text{Return On Assets} = \text{Net Profit Margin} \times \text{Total Assets Turnover} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

The cost component of the DuPont Analysis is related to the profitability factor and the assets component is related to the operational efficiency factor. The profitability factor includes financial measures to assess the ability to generate earnings as compared to the expenses and other costs (Investopedia, 2016). The efficiency factors include measures indicating how well the organization can employ the assets to generate sales. Based on the result of this analysis, the priorities of the performance factors (profitability and efficiency) can be determined using the Analytical Hierarchy Process (AHP). The case company can set targets for ROA by assessing industrial average. These targets will be the objective of the departments of Merchandising, Procurement and Supply Chain. Each of these departments needs to achieve the general target set for ROA and therefore aid each other to increase profitability and efficiency of the operations.

For the external collaboration with suppliers, the organization is currently using the VIP tool. This tool measures the supplier on four performance measures:

1. OTIF (On-Time-In-Full).

2. Discrepancies: number of discrepancies between the organization and supplier by assessment of the amount of orders from the supplier and the number of issues due to this supplier.
3. Delivery scheduling: measuring whether the order is delivered too early, too late, or damaged.
4. Stock variability: overall lead time variance for a given month.

While these performance measures are based on non-financial benefits, it is also important to quantify supplier relationship in terms of financial benefits, such as cost savings (Bhagwat & Sharma, 2007). Park et al. (2010) proposed an integrative framework in which they evaluate suppliers on the following factors: quality, cost, delivery, technology, management and collaboration. Lambert & Schwieterman (2012) developed a framework which shows how SRM can affect different financial and non-financial performance metrics. The appropriate control and performance measures for the case company should not only include the four non-financial performance measured by the VIP tool, but also include metrics for measuring rebates percentages, MDF's, and cost saving initiatives to reduce the cost price of the purchased goods. For this purpose, a Supplier Evaluation Tool has been developed, which measures the performance of the supplier by five different factors: COGS, MDF, rebates, delivery, quality, and collaboration (see Appendix E figure E.1 for the interface).

Furthermore, metrics should be in place which measures the collaboration with suppliers. For the collaborative and strategic partnership, targets should be set for each of the elements of planning, communication, risk-and-reward sharing, commitment and investment, since it is important to link the objectives of the organization to the supply chain metrics (Cohen et al., 2005). This means that the appropriate control and performance measures at operational level for the management of supplier relationship should firstly focus on the internal collaboration within the organization by considering efficiency and profitability measures, and secondly, focus on the external collaboration by considering not only non-financial, such as supplier delivery and collaboration performance, but also financial performance metrics, such as cost saving initiatives and sales generation possibilities. This answers our seventh sub-question.

#### **4.4 Supply Chain Strategies**

The ideal strategy for a certain item is determined by defining the strategic importance of the product. This includes an assessment of the strategic importance of the purchase and the difficulty of managing the purchasing function (supply risk). Each of the four quadrants, as an outcome of this assessment, proposes an ideal strategy to suppliers to increase the organizational performance of the company. The difference between left quadrant and the right quadrant depends on the associated supply risk. For the leverage and non-critical items, the supply risk is relatively low. However, for the strategic and critical items, the supply risk is relatively high.

For product with low demand and low supply risk, the basis of competition for the company should be on efficiency (Lee, 2002). In this case, the organization should focus on improving efficiency to be able reduce costs and compete on prices. One of the ways to achieve this is drop-shipment, which is shipping of the products from the supplier directly to the customer without storing it in distribution centers. This reduces costs, since steps are eliminated which do not add any value. Another focus should be on optimization techniques to be able to reduce the amount of inventory levels and sharing of information throughout the supply chain. This is for products with stable demand, a long product life cycle, low inventory costs, low profit margins, low stockouts and low obsolescence.

For products with low demand and high supply risk, the organization should focus on methods to prevent uncertainties affecting the demand fulfillment of their customers. This means adopting a risk-hedging supply chain strategy, in where the pooling of inventory is the most effective to achieve these goals. In this case the organization should focus on developing multiple supply sources so that there are back-up supplies available. While the risk of supply outages is being reduced, the costs to manage these multiple supply sources will be higher.

Having products with highly unpredictable demand and low supply risk, may result in having higher inventory levels. Especially for products with a short life cycle, such as technology products, the cost of having excess inventory is much higher due to the fact that these products can get obsolete quite shortly. Companies providing products with high unpredictable demand, should focus on responsive supply chains (Lee, 2002). This means that the organization needs to have a larger supply base to ensure reliable supply. This will make the organization responsive enough to cope with the unpredictable demand pattern of these products.

Products with highly unpredictable demand and a high level of supply risk need a strategy focused on being agile. The objectives for these agile supply chain strategies are a combination of the objectives of responsive and risk-hedging supply chains.

From the previous it can be stated that different strategies for managing the supplier relationships can be translated into four different supply chain strategies for managing the whole supply chain by the assessment of the demand patterns and the level of supply risk. This answers our eight sub-question.

## 5 Case Study

The solution design described in Chapter 4 has been applied for a selection of suppliers and product categories to propose strategies to increase organizational performance as defined at the case company. The focus is on the product categories 'Food & Catering', 'Cleaning, Hygiene & Workwear', 'Printing & Technology', 'Ink & Toner', and 'Paper, Envelopes & Labels'. During the empirical analysis suppliers were mentioned which were selected for the application of the solution design.

In section 5.1., the strategic importance of the product categories is analyzed. The relative relationship attractiveness between the case company and the suppliers is analyzed in section 5.2.. In section 5.3., the strategies are proposed for increasing the organizational performance by combining the strategic importance of the product category and the relationship attractiveness.

### 5.1 Strategic Importance of the purchases

Within this section the strategic importance of the product categories is analyzed. For this analysis, decision trees were developed to assess the level of strategic importance of the product categories and the difficulty of managing the purchases within these product categories (see Figure 5.1 and Figure 5.2). By using these decisions trees, the product categories were plotted into the strategic importance matrix (see Figure 5.3). Each question of the decision tree was answered by combining different data sources, such as qualitative data gathered from semi-structured interviews and quantitative data by calculating the consumption values.

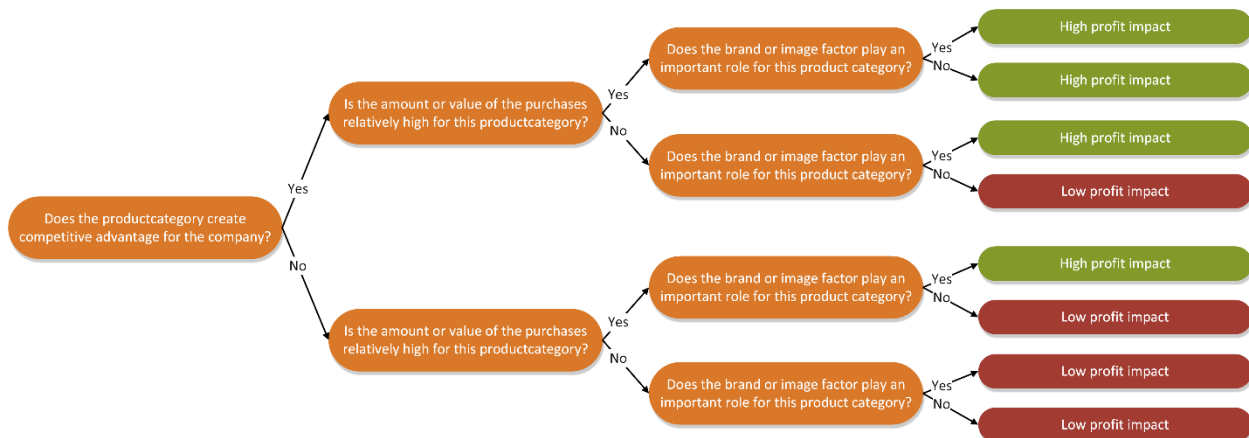


Figure 5.1: Decision tree for assessment of profit impact

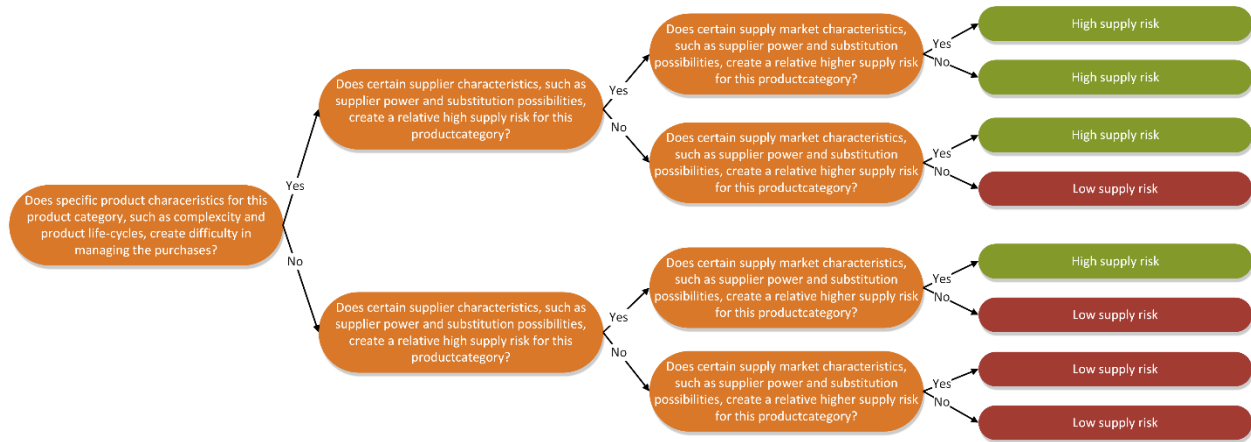


Figure 5.3: Decision tree for assessment of supply risk

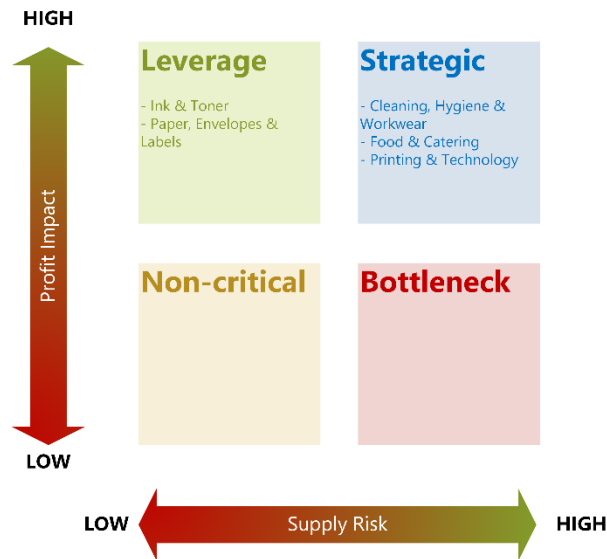


Figure 5.2: Strategic Importance Matrix

## 5.2 Supplier Relationship Attractiveness

In this section, the relationship attractiveness of the suppliers mentioned during the interview sessions is analyzed (see Table 5.1 containing information about the related product category and whether the supplier is a distributor (indirect) or a manufacturer (direct)). This analysis has been done using decisions trees, which were developed to assess whether there is a lack of attractiveness, mutual attractiveness, relative high supplier attractiveness, or relative high buyer attractiveness (see Figure 5.4 and Figure 5.5). By using these decisions trees, the suppliers as unit of this analysis were plotted into the relationship attractiveness matrix (see Figure 5.6). Each question of the decision tree was answered by combining different data sources, such as the information gathered from semi-structured interviews, the annual financial reports of the suppliers, and the calculation of the consumption values of the products provided by these suppliers.



Table 5.1: Selection of suppliers for case study

Supplier	Product Category	Channel
Supplier A	Food & Catering; Cleaning, Hygiene & Workwear	INDIRECT
Supplier B	Cleaning, Hygiene & Workwear	DIRECT
Supplier C	Cleaning, Hygiene & Workwear	DIRECT
Supplier D	Cleaning, Hygiene & Workwear	DIRECT
Supplier E	Food & Catering	INDIRECT
Supplier G	Food & Catering	INDIRECT
Supplier H	Ink & Toner; Printing & Technology	DIRECT
Supplier I	Ink & Toner	INDIRECT
Supplier J	Ink & Toner; Food & Catering; Printing & Technology	INDIRECT
Supplier L	Paper, Envelopes & Labels	DIRECT

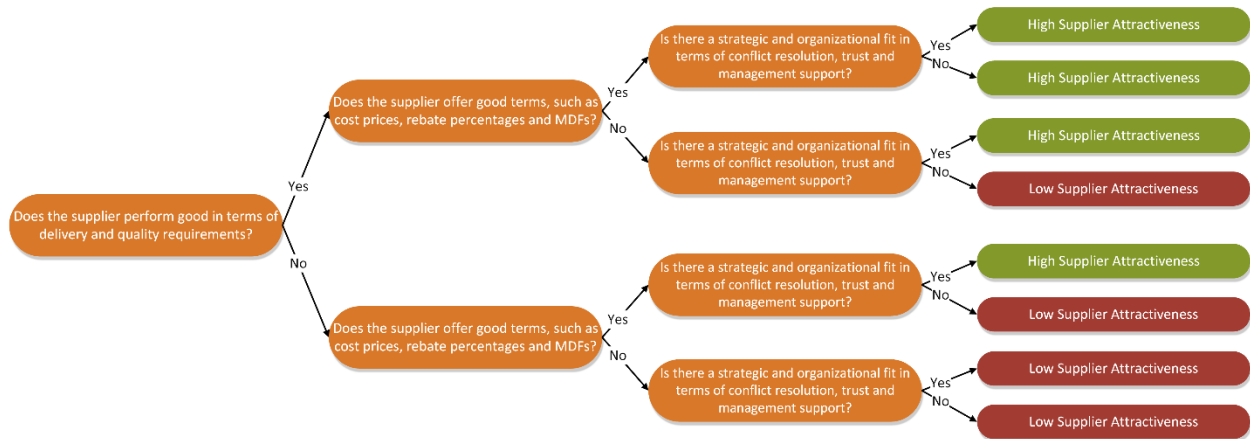


Figure 5.4: Decision tree for the assessment of Relative Supplier Attractiveness

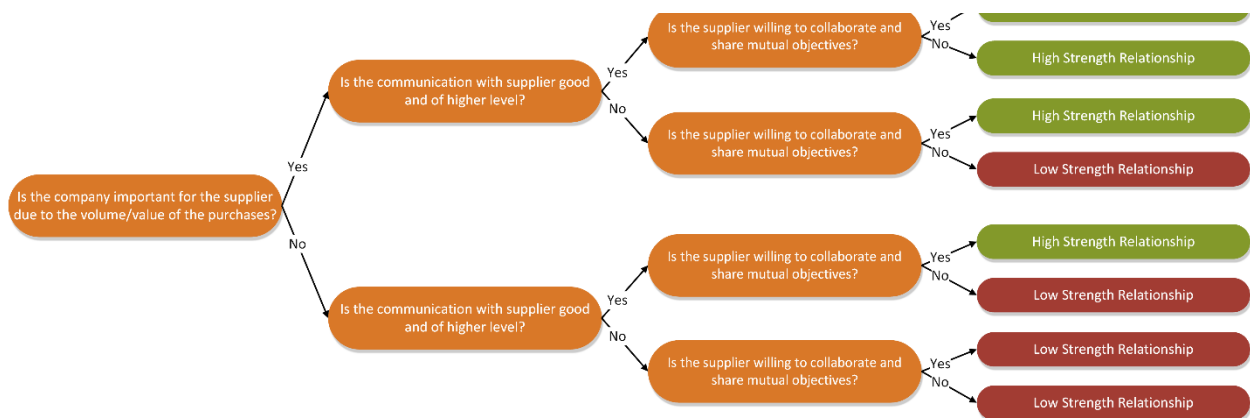


Figure 5.5: Decision tree for the assessment of Strength of the Relationship

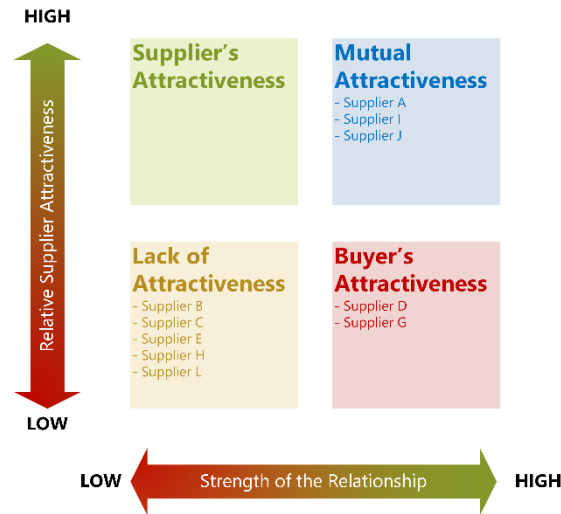


Figure 5.6: Relationship Attractiveness Matrix

### 5.3 Strategic Material Evaluation

The strategic material evaluation step classifies the suppliers based on the strategic importance of the product categories and the relationship attractiveness of the suppliers into three different types of relationship strategies for managing supplier relationships (see Figure 5.7). For this step, a decision tree was developed (see Figure 5.8). In the following sub-sections, each of the relationships styles for the selected suppliers is covered.

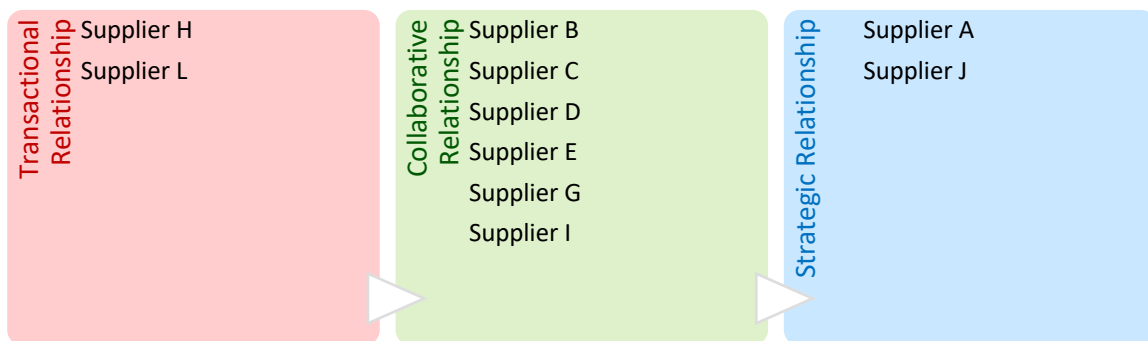


Figure 5.7: Strategic Material Evaluation assessment

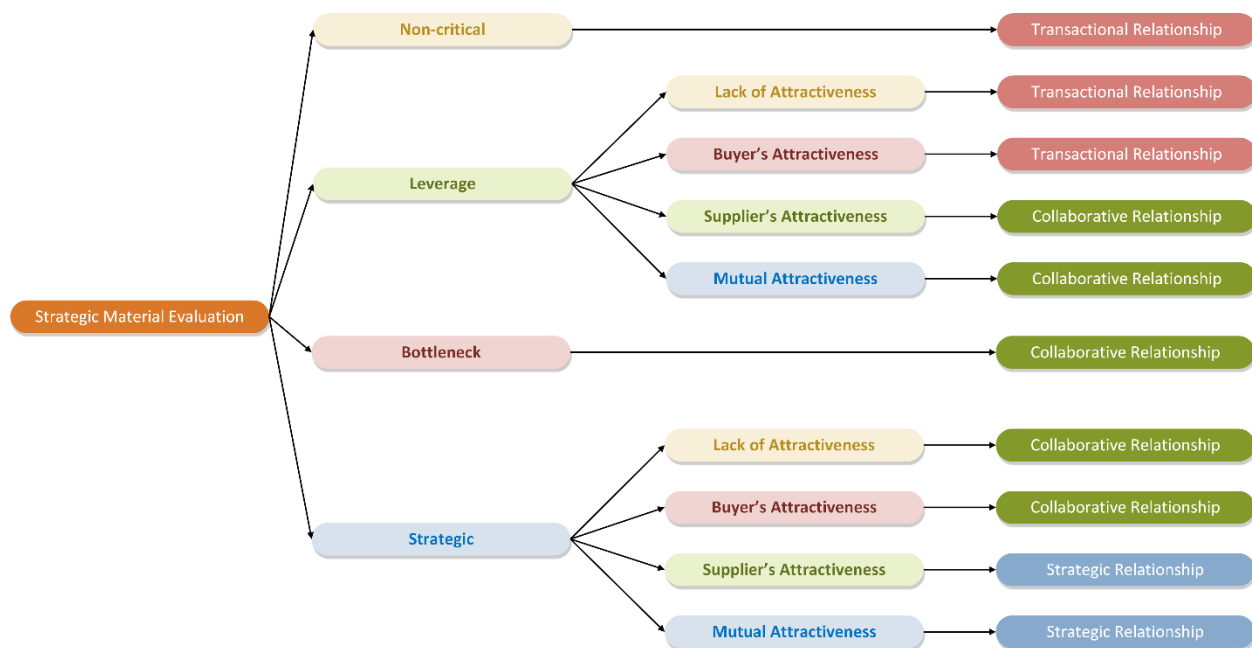


Figure 5.8: Decision tree for the assessment of the relationship style strategies

### 5.3.1 The transactional relationship styles

For suppliers H and L, a transactional relationship style is proposed. Both of the suppliers are OEM manufacturers. While the ideal strategy for the leverage product category is to exploit buying power and to maintain a partnership of convenience (Gelderman & Van Weele, 2003), the analysis of the current relationship with these suppliers reveals a lack of attractiveness. The most efficient strategy is therefore to maintain a transactional relationship or to find alternative suppliers. Resources should not or only in low level committed to these relationships with suppliers. The contracts should cover a short-time frame and need to be specific in nature.

### 5.3.2 The collaborative relationship styles

For suppliers B, C, D, E, and G a collaborative relationship style is proposed. This means that the focus should be on securing the supply of these items. Especially in case of buyer's attractiveness, it is more efficient to develop the current relationship rather than establishing new relationships with other suppliers.

This means that for supplier D and G, the organization should develop the current relationship with the supplier by collaborating. For suppliers B, C, and E, the organization needs to evaluate the willingness of the supplier to build collaborative relationship to secure the supply of the products. If the supplier isn't

willing to collaborate, the focus should be on finding other suppliers. If the supplier is willing to build a collaborative relationship, the focus should be on eliminating of conflicts and issues which may cause inefficiencies, such as higher costs. The collaboration activities should include a communication plan, which needs to be schedules and done at multiple levels at the organization. The commitment should be for the long-term and the contracts should be more general in nature. Furthermore, the collaboration should entail planning activities which need to be performed jointly by focusing on the elimination of conflicts. Communication plans needs to be developed and multiple business levels should be included in the communications. Initiatives to reduce costs and to improve asset utilization should be agreed upon and implemented. Furthermore, the focus should also be on the customer side by implementing action plans to improve customer service.

### **5.3.3 The strategic relationship styles**

For suppliers A, I, and J, a strategic partnership is proposed. These suppliers are willing to cooperate with the case company. For these suppliers, a more detailed PSA should be developed including systematic and balanced communication plans for all the business functions to create intra-organizational and inter-organizational collaboration. The sharing of risk and rewards should be discussed and agreed upon. All the business functions and management levels of the case company and the supplier should commit to the relationship and need to be included in the communication plans. The action plans should include initiatives to reduce cost and increase asset utilization, improving customer service, marketing objectives and to increase profit growth or reduce the variability in profit.

## 6 Conclusion

This chapter is dedicated to the conclusions and recommendations of this research project. In the first section, the main research questions and the sub-questions is answered. The second section covers the limitations of this research. After discussing the limitations, the recommendations are giving. The last section is dedicated to topics for further research.

### 6.1 Conclusions

At the analysis and diagnosis phase the first four sub-questions were answered. The organizational performance of the company can be defined as net sales, net profit contribution and the number of customer accounts. The relationship with suppliers is of the adversarial arm's-length relationship in which basic information is being shared with the supplier to be able to execute different tasks and processes by the exchange partners. The supplier and the case company are primarily acting on their own interest by focusing on maximizing only their own share of the value from the relationship. There are several characteristics of the products affecting the relationship with suppliers. For the OB products and the OEM products the type of relationship can be classified as an arm's-length relationship. However, for the OEM products, the organization is trying to collaborate with supplier in several cases. For products with higher consumption values (economic characteristics), the organization can successfully adopt their current approach of a competitive strategy towards their suppliers. This is especially for the cases with relatively low supply market complexity. However, the complexity of the products increases the risk of supply. In these situations, the organization tries to collaborate with supplier to be able to manage the purchasing function. The same holds for general uncertainty and risk associated with the products, such as seasonality factors. There are several factors influencing the position of the case company in their relationship with suppliers. With OEM and OB manufacturers, the company as relatively low power due to monopoly positions or high switching costs. The OEM manufacturers hold a monopoly since they are the original owners of the products. For the OB manufacturers the switching costs are relatively higher due to long lead-times and there are no return policies. The economic factors do play a key role in the distribution of power. The volume and the monetary value of the purchases is related to the bargaining power of the case company and the ability to get the best price and deals from the supplier. The supplier focuses on the customers with the highest margin. When the supplier has a dominant role in the relationship the organizations accepts the offered prices and terms, which negatively affects the organizational performance of the company. However, in cases where the case company has a dominant role, the supplier accepts the work rather than high profit from the relationships. This means in cases of low power compared to the supplier the share of value in terms of profitability and efficiency is much lower for the organization than for the supplier.

At the plan of action phase, the last four sub-questions were answered. Different strategies can be proposed to increase the organizational performance using the Supplier Relationship Management Tool V1. Firstly, by analyzing the strategic importance of the purchases, the products can be classified using a portfolio approach into four different categories: non-critical, bottleneck, leverage and strategic items. Secondly, by analyzing the relationship attractiveness, strategies for managing the supplier relationship can be proposed. These strategies are categorized into three groups: transactional, collaborative and strategic relationships. Each of these groups require a different supplier relationship management strategy. The translation of these strategies into tactical plans for implementation can be done by adopting a process approach. For this purpose, a process has been developed for managing the supplier relationships based upon the three different strategies for supplier relationship management: transactional, collaborative, and strategic relationship styles. The appropriate control and performance measures at operational level for increasing the organizational performance has been defined. It is important to note that the most important collaboration type is the internal collaboration before pursuing external collaboration with suppliers to increase the organizational performance. This means creating alignment between the Merchandising, Procurement and Supply Chain department. For this purpose, the DuPont Analysis can be used, which includes profitability and efficiency factors. Management can create alignment by setting overall targets and weights to these factors using the AHP method. For the inter-organizational collaboration with suppliers, the appropriate control and performance measures are defined by a supplier evaluation tool within the Supplier Relationship Management Tool V1. The strategic material evaluation step can be used to translate the strategies for managing the supplier relationship into strategies for managing the whole supply chain. This includes an additional step of assessing the demand patterns. Based upon the supply risk and demand pattern, four different strategies can be proposed: efficient, risk-hedging, responsive, and agile supply chain strategies.

Based upon the answers on the sub-research question, the main research question can be answered. ODE can increase their organizational performance by implementing SRM. This means that the case company needs to differentiate their strategies for supplier relationships. Currently, the organization is adopting a competitive strategy and is focused on primarily maximizing their own share of value generated from doing business. There are collaboration initiatives, however, there are no clear structured guidelines and processes in place to manage these collaboration activities. A traditional way of doing business is being pursued, which is an arm's-length relationship with suppliers. SRM can affect the performance of the organization measured by the economic value added (Lambert & Schwieterman, 2012). However, the company needs first evaluate the strategic importance of their purchases. By using the Supplier Relationship Management Tool V1., the ideal strategy and the current relationship with suppliers can be assessed which leads to three different types of effective strategies for managing the supplier relationships: transactional, collaborative, and strategic. This tool has been developed by combining different frameworks and

methodology, and by using the empirical analysis to make it company specific, since the dimensions and factors isn't comprehensive and may vary among firms. It is important to translate these strategies into tactical plans. There are no complete methodologies or frameworks which gives a complete guide towards implementing an SRM protocol. Therefore, the solution design contains a detailed and whole process for managing the relationship on operational level by not only defining the objectives at strategic level, but also developing the operational steps for managing these different types of relationship style to improve the performance of the organization. This required a thorough empirical and theoretical analysis to find the models and frameworks, which lead eventually to a combination of different methodologies. The solution design can be used to define strategic objectives and policies, implement these by using the developed tactical plan, and to control and measure the execution of the processes of SRM.

## **6.2 Limitations**

There are several limitations for this master thesis product. The first limitation is related to the data collection process. For this study, semi-structured interviews were conducted. However, there was a limitation on the number of data subject regarding the different product categories. Since the focus of this project is on supplier relationship management, the sourcing and supply management activities are important to be analyzed. These activities are carried out by the Procurement department and Supply Chain department. Since, only three procurement managers were able to be part of this research, for the case study part, only those product categories falling under their responsibility were analyzed: 'Food & Catering', 'Cleaning, Hygiene & Workwear', 'Printing & Technology', 'Ink & Toner', and 'Paper, Envelopes & Labels'. Another limitation may be the confidentiality aspect. This means that there is a possibility that the subjects with whom the interviews were conducted may have answered the questions in a manner to prevent any negative consequences. A third limitation is due to data and information availability. For example, not all annual financial reports are made public by suppliers. This makes it difficult to assess in an objective manner the relationship attractiveness with suppliers.

Furthermore, due to time limitations for this project, the analysis has been conducted at product category level, while each of these categories can be subdivided in different product category levels. Each of the products within these sub categories may require a different approach in the assessment of the strategic importance of the purchases. While certain product categories may be of high importance for the case company due to their strategic importance, it is important to consider that each of these categories have different SKU which may require different strategies.

## **6.3 Recommendations**

This project reveals new insights for the organization on how the supplier relationships can be managed. However, the first recommendation for the company is on the effective management of the intra-organizational collaboration within the SCRUM teams between the business functions of Merchandising,

Procurement and Supply Chain. This means that the objectives of these departments need to be aligned and the departments need to include each other in the decision-making processes, since these departments are responsible for the purchasing function within the organization. The conflict of interest due to prioritizing own departmental targets and objectives causes misalignment affecting the organizational performance objectives of the case company. Furthermore, it is important to consider that the SCRUM teams are merchandising driven; merchandising managers are responsible for the SCRUM teams and can prioritize their objectives, which may conflict the targets set for the departments of Procurement and Supply Chain. The consequence is that Merchandising managers may focus on only generating sales, even at expense of costs associated with the purchases, such as inventory and COGS. For example, making the product available for ordering by the customer, while the product is out of stock. Since backorders are still considered as sales, the Merchandising department may not want to label the product 'out-of-stock'. This will increase the number of backorders and therefore create problems for the Supply Chain department in achieving their own targets.

Secondly, for the inter-organizational collaboration with suppliers the Supplier Relationship Management Tool V1 has been developed. This tool can be used to analyze on strategic level the best strategy and approach to suppliers. However, the tool is based on subjective analysis whereby users must rate the factors using a scale from 1 to 10. The next step for this tool is to quantify the factors to be able to do an objective analysis by using quantitative data. This will take time, since the factors to assess the strategic importance of the product and the relationship attractiveness needs to be translated into quantifiable factors.

Thirdly, the organization is focused on a competitive strategy towards their suppliers which is a traditional way of doing business with each other. While this arm's-length relationship may be suitable for some cases, the organization adopts this strategy towards all their suppliers. This means the organization is trying to stay in the leverage quadrant of the portfolio or tries to give the impression that they are in a leverage position and has the power in the negotiations. Looking at the power structure of the relationship with the supplier, it seems that the most important factor affecting the distribution of the power is the value of the purchases bought from the supplier. The higher this value is, the more leverage the organization has on their suppliers due to the fact that in these cases the organization represents a large percentage of their turnover. In these cases, the supplier finds ODE very attractive to do business with and is even willing to share the value generated from doing business with each other unequally. However, the performance of the company is in decline which means that the organization is reducing the number of products purchased from the supplier. This will lead to a decrease in power. Therefore, the organization should use a more cooperative approach to secure the best terms and agreements with suppliers. By collaborating with suppliers, it is possible to find other opportunities to generate sales, because the organization wants to sell



as much as possible and this will lead to more purchases from suppliers. This can create a win-win situation with even more value generated to share (un)equally among the partners.

Furthermore, while the company focuses on having a wide assortment, it is important to consider per subcategories the importance of the item within the assortment. While certain product categories may have a strategic importance for the company and therefore need a different approach towards suppliers, this doesn't necessarily mean that every item within this category needs the same approach. Differentiation per SKU is needed.

The last recommendation is to adopt the concept of total costs of ownership (TCO). This concept differs in two ways looking at the cost of doing business with suppliers (Ellram, 1993). First, it considers cost as a broad spectrum. Secondly, it also includes life cycle costs associated with the product during its entire life-time. This concept can act as a performance measurement to evaluate suppliers.

#### **6.4 Further Research**

Based upon the conclusions and recommendations of this project, future research can be aimed towards quantifiable portfolio approaches whereby quantitative data can be used to assess the ideal strategy for managing the purchasing function. Secondly, further research can be conducted on change management. This entails the management of eliminating functional thinking and creating co-responsibility for the overall organizational performance of the organization instead of focusing on own objectives and targets. Another future research could be on the TCO concept and its effect on the transactional relationship with suppliers.

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# Appendix A Ishikawa diagrams

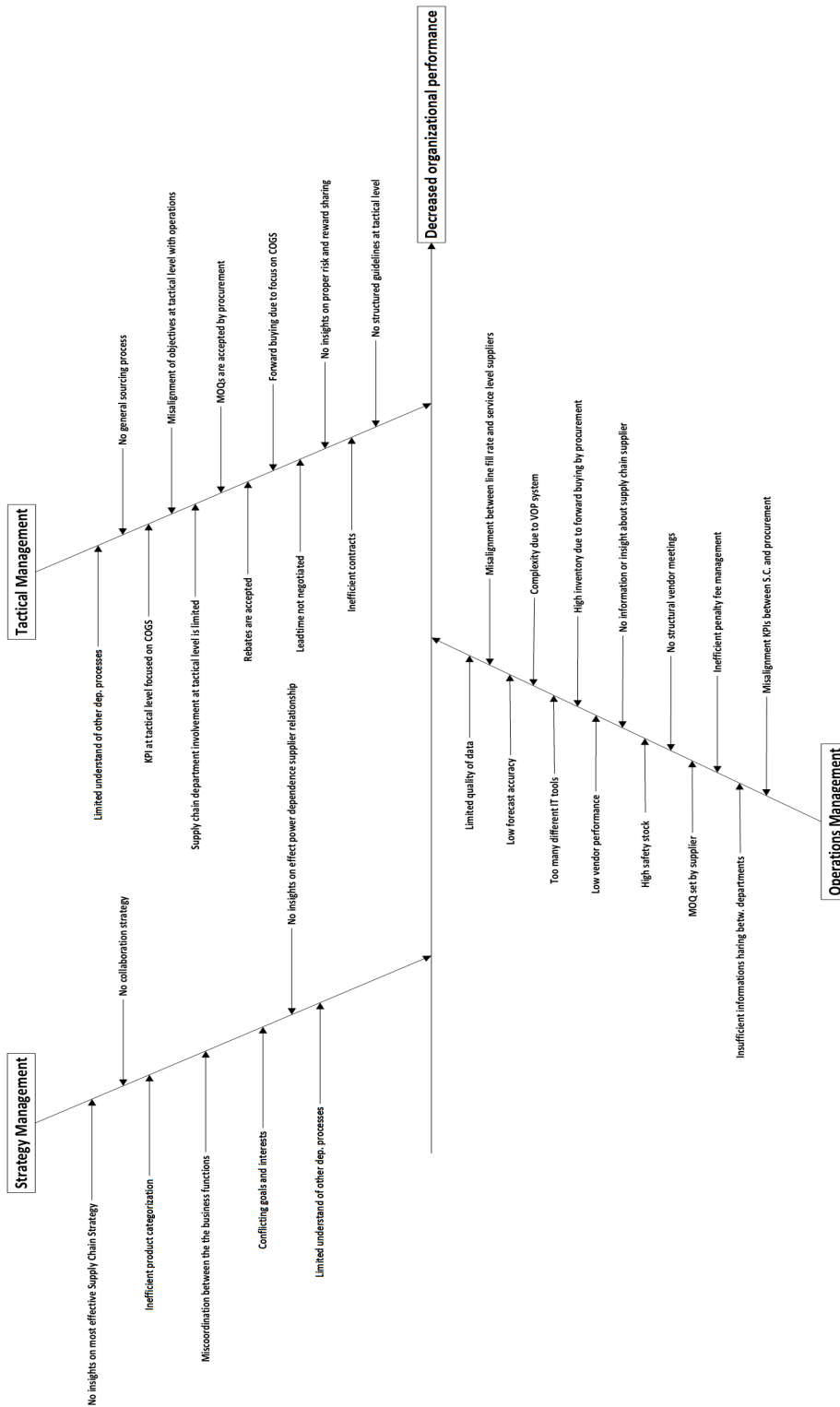


Figure A.1: The preliminary cause-and-effect diagram (Ishikawa, 1999)

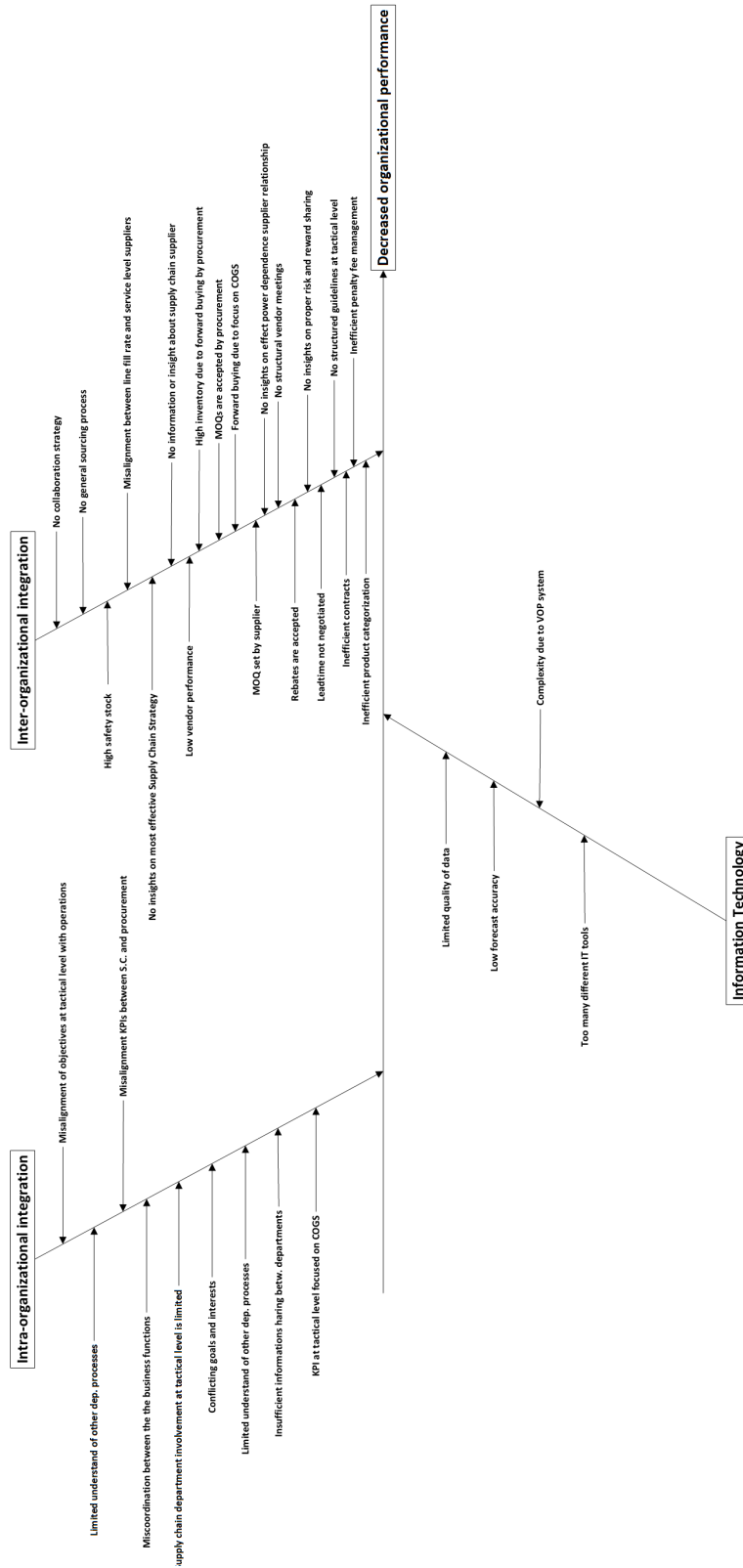


Figure A.2: The adjusted cause-and-effect diagram (Ishikawa, 1999)

# Appendix B Interview Template

## Interview Questions

### Information interviewer

- Name, background..., of the interviewer
- Topic of the master thesis project
- Purpose of the master thesis project
- Deliverables of the master thesis project
- Mention ethical standards

### Information interviewee

- What is your function within the organization?
- Are you working in a SCRUM team? If yes, which one and what is your role within this SCRUM team? If no, is there any association with any SCRUM team? Which one and what is the role?
- Do you have a role in the collaboration with suppliers? If yes, what is your role?

### Organizational Performance Objectives

1. What are the performance metrics/objectives related to your function and/or department?
2. How is the current performance based on these metrics?
3. What are the potential causes of this performance?
4. How does the relationship with suppliers affect this performance?
5. How does the organization create value for their customers and what kind of role do the supplier play?

### Internal collaboration

6. Can you describe the purchasing/buying steps or processes from sourcing the product to delivering the product to the customer and the role of your department within these steps?
7. What kind of information is being shared between the departments and what is the frequency?
8. How is the alignment of objectives and goals between the different departments?
9. How is the alignment of decision-making processes between the different departments?
10. What kind of effect has this on the relationship with suppliers?

### Power structure

11. How is the power distribution between the organization and the suppliers and is there a difference between the suppliers? What kind of effect has this for the transactional relationship with suppliers in terms of prices and performance of suppliers?
12. What makes a certain supplier attractive and/or important to do business with?
13. What makes it difficult and/or costly to switch to an alternative supplier?
14. How are the prices and quality requirements set with suppliers?



### **Collaboration with suppliers**

15. How is the alignment between the objectives of the organization and the suppliers?
16. How is the relationship with suppliers?
17. What kind of activities are carried out to manage the relationship with suppliers and what kind of effect has this on profits and the efficiency of operations (financial and operational performance)?
18. What kind of (commercial) information is being shared with the suppliers?
19. What is in general the length of the transactional relationship with suppliers?
20. Do conflicts and problems occur with suppliers, and what is the reason and the effect?
21. In case of problems and conflicts, how does the supplier react or the organization react?

### **Product characteristics**

22. What kind of strategies or strategic tools are in place for purchasing/sourcing activities?
23. What makes a product(type/category) important?
24. What makes a product difficult to manage?
25. How can a certain characteristic of the product affect the relationship with suppliers?

## **Explanation Interview Questions**

### **Organizational Performance**

Having products with highly unpredictable demand and low supply risk, may result in having higher inventory. Questions associated with the topic of organizational performance is to answer the first sub-research question: “How is organizational performance defined at Office Depot EU B.V.? Within this section questions are asked to assess and validate the current organizational performance of the organization. As mentioned before, the main question is “How can ODE increase their organizational performance by managing the relationship with their suppliers?”

### **Collaboration with suppliers**

The questions related to the topic of collaboration with suppliers is to answer the sub-research question: “How is the current relationship with suppliers and how does this affect the organizational performance?”. Trent (2005) have provided a model in which he defines different win and lose situations for suppliers and buyers leading to four different types of relationship with each a different effect on the organizational performance of the supplier and buyer in terms of functionality and costs. Cox (1999) have defined a model in which 4 different types are mentioned with each modelling a different pursue of objectives and organizational performance. In his model he makes a distinction between adversarial and non-adversarial collaboration and between arm’s length and collaborative relationship, leading to four different types of relationship and having different effects on the performance of the company.

### **Product characteristics**

The topic of product characteristics is associated with answering the third sub-research question: “What is the effect of the product characteristics on the relationship with suppliers?”. According to Van Weele (2014), organizations needs to understand its product to achieve strategic purchasing. Portfolio models are widely used to classify the products in different categories, based upon several company specific

characteristics, to manage the supplier relationship. This means each type of product has a different effect on the management of supplier relationship. The portfolio model needs understanding of the importance of the purchased products and the risk of the supply of this product. This is determined by several external and internal dimension (company-specific). These questions are to assess the key factors and dimensions which can be used for applying a portfolio analysis tool.

### **Power structure**

Questions related to the topic of power structure is associated with the fourth sub-research question:” What is the position of ODE in their relationship with suppliers in terms of power-balance and how does this affect their organizational performance?”. Cox (2001) defined a model in which he defines four types of structure with different power-balance between suppliers and buyers. Another framework of Cox (2004) shows different combinations and levels of value appropriation, power and relationship management styles. In each of the model the effect and cause of the power-distribution for the performance of the supplier and the buyer is shown. Third framework of Cox (2004) defines possible outcomes in terms of organizational performance for buyers and sellers from transactional exchange. He defines how different power-structure between suppliers and buyers is related to each of these possible outcomes. These questions are to assess the key factors which define the distribution of the power between the supplier and the organization.

### **Internal collaboration**

Questions related to the topic of internal collaboration is aimed at validating several causes mentioned in the preliminary interviews. From these interviews it was suggested that the internal collaboration between the departmental functions is causing problems affecting the organizational performance. Literature has been reviewed to assess the role of internal collaboration within the scope of SRM. According to Fawcett & Magnan (2002) internal collaboration affects the external collaboration with suppliers and customers. It is important to master internal collaboration before trying to work with external partners (Cohen et al., 2005).

## Appendix C Analytical Hierarchy Process

The AHP is a multi-criteria decision-making tool developed by Saaty (1980). It is used to make decisions by choosing those factors that are important by arranging these factors after selection in a hierarchic structure descending from an overall goal to criteria, sub criteria and alternatives in successive levels (Saaty, 1990). This helps to provide an overall view of the complex relationships and to help to assess whether the issues in each level are of the same order of magnitude. For this thesis, in selecting criteria, such as metrics and measures to define organizational performance, the AHP will be used, since the main benefit of this method is that criteria can be prioritized and chosen, which fits best with the business operations at an organization. This method has many applications, such as performance assessment (Jagdev et al., 2004) and supplier selection (Partovi et al., 1990). A typical AHP includes the following steps (Saaty, 2008):

1. Define the problem and determine the kind of knowledge sought.
2. Structure the decision hierarchy from the top with the goal of the decision, then the objectives from a broad perspective, through the intermediate levels (criteria on which subsequent elements depend) to the lowest level (which usually is a set of the alternatives)
3. Construct a set of pairwise comparison matrices. Each element in an upper level is used to compare the elements in the level immediately below with respect to it.
4. Use the priorities obtained from the comparison to weigh the priorities in the level immediately below. Do this for every element. Then for each element in the level below add its weighed values and obtain its overall or global priority. Continue this process of weighing and adding until the final priorities of the alternatives in the bottom most level is obtained.
5. Elicitation of pairwise comparison judgements

### *Structuring the Decision Hierarchy*

The structuring of the decision hierarchy allows the structuring of a decision into a hierarchy descending from an overall objective or goal to various criteria and sub-criteria. According to Saaty (1990), the structuring of the hierarchy consists of the following steps:

1. Identify the goal in terms of what is the decision-maker is trying to accomplish. This is the main objective of the decision-making process.
2. Identify the sub-goals, if the main goal is composed of sub-goals.
3. Identify the criteria that must be satisfied to meet the (sub) goals.
4. Identify the sub-criteria, if the criteria are composed of sub-criteria.

5. Identify the actors or stakeholders of the decision-making process.
6. Identify the alternatives or outcomes.

Figure 2 provides a typical hierarchy (Saaty, 1994). At the top the overall goal or objective, at the intermediate levels the criteria (and sub-criteria), and at the lowest level of the hierarchy the alternatives or selection choices are illustrated. The overall purpose is to compare the criteria, sub-criteria and alternatives with each other by creative thinking, recollection and using people's perspectives (Saaty, 2001). According to Zahedi (1986) the structure of the hierarchy depends on the type of decisions that needs to be made and the number of the levels within the hierarchy depends on the complexity of the problem. This means that the hierarchical structure may vary from one situation to another.

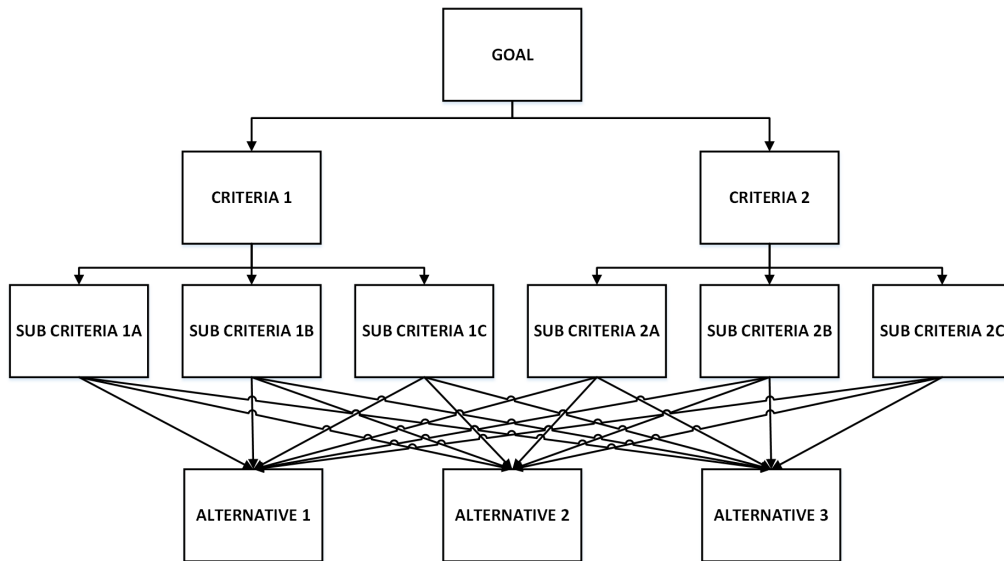


Figure C.1: Decision Hierarchy (Saaty, 1994)

### ***Pairwise Comparison***

The next step is to prioritize by pairwise comparisons of the elements of the same level (Saaty, 1990). At this step, the elements are arranged into a matrix and judgments of people are used to elicit the relative importance of the elements with respect to the overall goal by using the judgment scale (Saaty, 1990).

Each criterion or alternative  $i$  is compared to each criterion or alternative  $j$ , by assessing whether  $i$  is equal, more or less important than  $j$  using the judgement scale as presented in table 5 (Saaty, 1990). This will result into a square and reciprocal matrix for  $n$  number of elements:

$$A = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{pmatrix}$$

With the following assumptions:

- (i)  $a_{ii} = 1$  for  $i = 1, \dots, n$
- (ii)  $a_{ij} > 0$  for  $i = 1, \dots, n$  and  $j = 1, \dots, n$
- (iii)  $a_{ij} = \frac{1}{a_{ji}}$  for  $i = 1, \dots, n$  and  $j = 1, \dots, n$
- (iv)  $a_{ij}a_{jk} = a_{ik}$  for  $i = 1, \dots, n$  and  $j = 1, \dots, n$  and  $k = 1, \dots, n$

The first assumption (i) satisfies the property of homogeneity. The second assumption (ii) is the condition of a positive matrix. The third assumption (iii) is the property of reciprocity, which is the condition of a reciprocal matrix. The fourth assumption (iii) is the property of transitivity. If a decision-maker is consistent, then the pairwise comparison matrix satisfies all of these properties (assumptions). The number of comparisons depends on the number of elements, denoted as  $n$ , and is equal to:

$$\frac{n(n-1)}{2}$$

Assuming a consistent decision maker, with entry  $a_{ij}$  denoting the importance of element  $i$  compared to the element  $j$ ,  $w_i$  is the weight of objective  $i$ , with the following assumptions:

- (v)  $w_i > 0$  for  $i = 1, \dots, n$
- (vi)  $\sum_{i=1}^n w_i = 1$  for  $i = 1, \dots, n$

This will give the following pairwise comparison matrix in case of a consistent decision-maker:

$$A = \begin{pmatrix} \frac{w_1}{w_1} & \frac{w_1}{w_2} & \dots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & \frac{w_2}{w_2} & \dots & \frac{w_2}{w_n} \\ \frac{w_3}{w_1} & \frac{w_3}{w_2} & \dots & \frac{w_3}{w_n} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \dots & \frac{w_n}{w_n} \end{pmatrix}$$

We denote the weight vector as follow:

$$w = [w_1 \quad w_2 \quad \dots \quad w_n]^T$$

This weight vector is the priority vector of the decision-maker. The goal of applying the AHP method is to obtain this priority vector from the pairwise comparison. We obtain the weight vector by the following equation, which is the eigenvector of  $A$  with corresponding eigenvalue  $\lambda = n$ :

$$Aw = \lambda_{max}w$$

Where  $\lambda_{max}$  is the principal eigenvalue of  $A$ , which is the maximum of the eigenvalues of  $A$  :  $\max(\lambda_1, \lambda_2, \dots, \lambda_n)$ .

We find the eigenvector of  $A$ ,  $\lambda_{max}$ , by the Saaty's Method, which is a method of normalized arithmetic averages. After constructing the pairwise comparison matrix, we normalize this matrix; matrix  $A$  is transformed to matrix  $B$ , which has the following form:

$$B = \begin{pmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{pmatrix}$$

Where the elements of matrix  $B$ ,  $b_{ij}$ , is calculated as follow:

$$b_{ij} = \frac{a_{ij}}{\sum_{i=1}^n a_{ij}}$$

The eigenvector  $w$  is calculated by calculating the arithmetic averages from the normalized comparison matrix according to the following formula:

$$b_{ij} = \frac{\sum_{j=1}^n b_{ij}}{n}$$

The maximum eigenvector is calculated as follow:

$$\lambda_{max} = \frac{1}{n} \sum_{i=1}^n \frac{(Aw)_i}{w_i}$$

After calculating the eigenvector and eigenvalue, the next step is the judgement matrix consistency verification to check whether the judgements that are entered are consistent enough to apply AHP analysis. Since the numeric values are based on subjective preferences, some inconsistencies cannot be avoided in the final matrix, which means that a certain degree of inconsistency is acceptable. Therefore, by comparing the consistency index (CI) to the random consistency index (RI), the consistency ratio (CR) can be calculated. The RI is the consistency index that would be obtained if the assigned judgment values were totally random. The calculated RI values for the matrixes of different sizes with  $n$  elements are provided in table 3 (Saaty, 1980).

Table C.2: Judgement scale with RI values (Saaty, 1990)

N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R	0,0	0,0	0,5	0,9	1,1	1,2	1,3	1,4	1,4	1,4	1,5	1,4	1,5	1,5	1,5
I	0	0	8	0	2	4	2	1	5	9	1	8	6	7	9

The Consistency Index (CI) is calculated as follow:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

The consistency ratio (CR) is calculated as follow:

$$CR = \frac{CI}{RI}$$

If  $CR \leq RI$ , then it is assumable that the judgments matrix is reasonably consistent to be able to continue the process of decision-making using the method of AHP.

After calculating the overall priorities (the weight vector), the next step is the calculation of the local priorities, which is the derivation of the relative preferences of the alternatives with respect to each criterion. It is important to note that pair-wise comparisons generate a set of matrices with relative rankings for each level of the hierarchy. The number of matrices depends on the number of elements  $n$ . After the construction of each matrix, obtaining each pair-wise comparison, and calculating the maximum eigenvalue and the global weights of the global priorities of the criteria, the next step is to calculate the local priorities associated with each alternative. This step involves the rating of each alternative by multiplying it by the weights of the (sub-)criteria and aggregate to get local ratings with respect to each criterion. This means that each alternative is compared to each other for each criterion.

The next step is to derive the final overall priority for each alternative taking into account the preference of alternatives for each criterion and the different weight for each criterion. The overall priority of an alternative is calculated by, firstly, multiplying its priorities with regard to each criterion with the priority of the corresponding criterion, and secondly, summing these up:

$$P_i = \sum_{j=1}^n x_{ij}p_j$$

# Appendix D Supplier Relationship Management Process

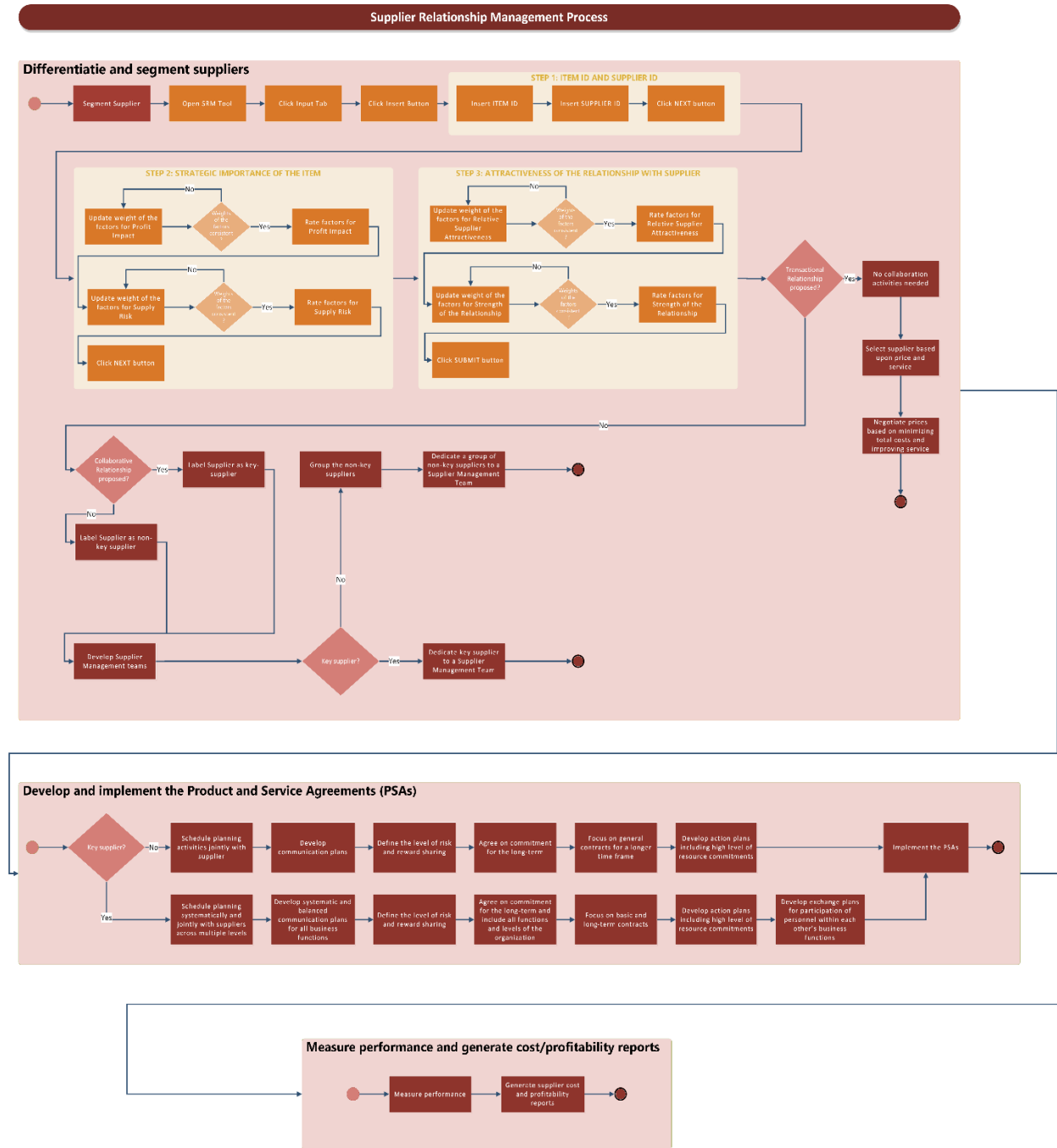


Figure D.1: Process for managing the supplier relationships



# Appendix E Supplier Evaluation Tool Interface

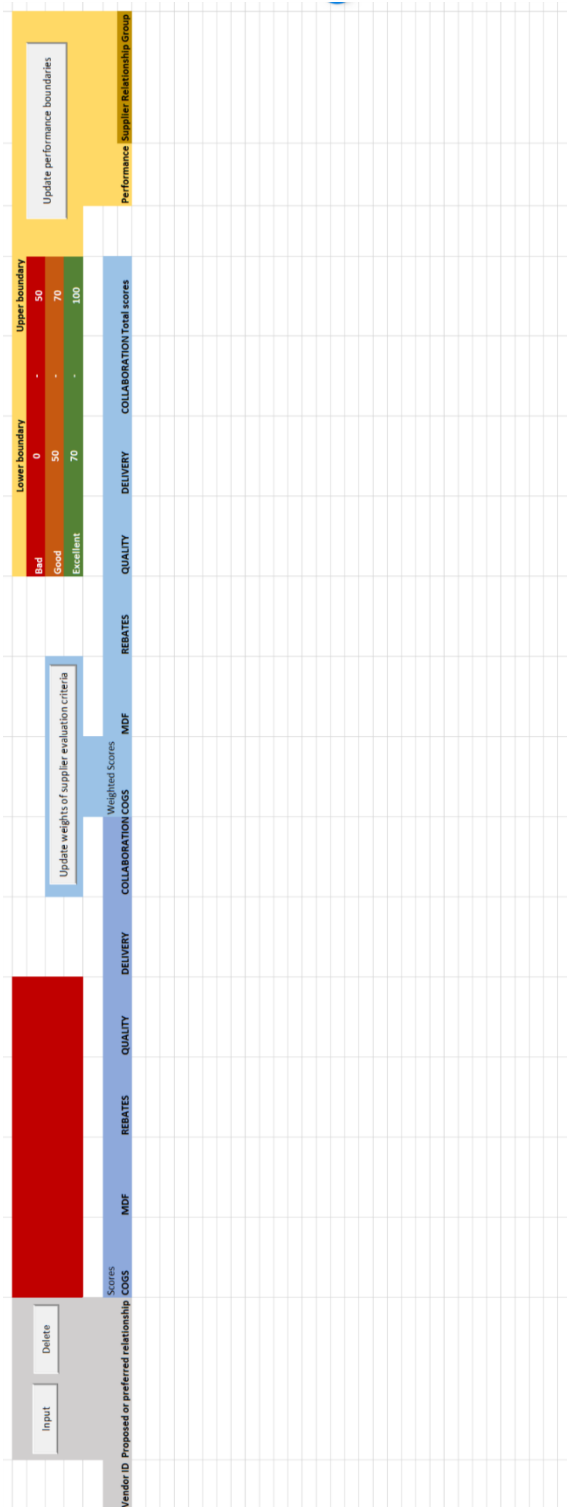


Figure E.1: Supplier Evaluation Tool.