

SUSTAINABLE PROCUREMENT

Configuring the buyer-
supplier relationship and
buyer and supplier
capabilities to facilitate
sustainable procurement

Wageningen University

MSc Thesis Management Studies

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July, 2015

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CONFIGURING THE BUYER-SUPPLIER RELATIONSHIP AND BUYER AND SUPPLIER
CAPABILITIES TO FACILITATE SUSTAINABLE PROCUREMENT

JULY, 2015

MSc Thesis Management Studies - 33 ECTS

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ABSTRACT

Companies must actively manage their supply base to ensure sustainability, as they can be considered no more sustainable than their suppliers. It is widely recognised that companies aiming for corporate sustainability must involve their suppliers and implement sustainable sourcing at the purchasing function, as this is the starting point of the flow of materials into the company. Consistent with research calls, this research aimed at contributing to the scientific knowledge on how buyer-supplier relationships, combined with the right buyer and supplier capabilities, can facilitate sustainable procurement in the Dutch Food and Beverages (F&B) industry. A single industry approach was chosen in line with research calls, as industry specific circumstances could influence sustainable procurement. Furthermore, this research considered the adoption of all three dimensions of the Triple-Bottom Line (TBL) of sustainability, thereby adding to the current literature.

The links between buyer capabilities, supplier capabilities, the buyer-supplier relationship and sustainable procurement were analysed. To assess sustainable procurement performance, a sustainable procurement maturity model was developed. Based on literature, it is argued that the buyer-supplier relationship, combined with the right capabilities at the buyer and supplier, can facilitate sustainable procurement. The empirical results rely on survey data of 62 Dutch F&B companies on which a principal component analysis and cluster analysis were conducted. The findings show a positive relationship between both the buyer and supplier capabilities and sustainable procurement performance, indicating that the higher the capabilities, the higher the maturity level of sustainable procurement. The capabilities a buyer needs are: integration of sustainable procurement, purchasing skills and a positive attitude towards sustainability of employees. The capabilities suppliers need are: access to resources from the buying company, a positive attitude towards sustainability of employees and sustainable resources deployment. For the buyer-supplier relationship, loyalty, strictness of guidance, joint dependency and the intensity of communication all showed a positive relationship with the level of sustainable procurement. Remarkably, for connectivity, which encompasses information technology aspects, a negative relationship was found, indicating that the willingness to share information is far more important than connectivity in order to achieve sustainable procurement. To conclude, a relationship in which the buyer and supplier are dependent upon each other, with loyalty and a high intensity of communication, but especially with a high strictness of guidance, could facilitate high levels of sustainable procurement. In addition, the buyer and supplier need to have the right capabilities as identified during this research.

KEYWORDS: sustainable procurement, buyer-supplier relationship, Dutch Food and Beverages industry, sustainable procurement maturity, sustainability capabilities.

PREFACE

During the past eight months I have been working on my master thesis, of which this report is the result. This master thesis is part of the Master programme Management, Economics and Consumers studies at the Wageningen University.

Having an interest in sustainability and supply chain management, I started searching the literature for knowledge gaps in this area. During my preliminary research, I found sustainable procurement to be an interesting and underexplored field. I was especially triggered by the quote of Krause et al. (2009: p.18): “a company is no more sustainable than its supply chain”, which led me to realise that the purchasing department of a company is essential in securing sustainability, as it is the entrance point of raw materials into a company. Since the relation between buyer-supplier relationships and sustainable procurement was rather unexplored, I decided it would be an interesting and challenging topic for my master thesis.

Over the time, my supervisors have been a great help. I would like to thank Jacques Trienekens and Geoffrey Hagelaar for their valuable time, discussions and constructive feedback. My meetings with them gave me valuable insights and the confidence to succeed. Moreover, they provided me with the necessary resources to conduct my research. Secondly, I would like to thank Stefano Pascucci, for his guidance and support in dealing with SPSS. Additionally, a third word of thanks to all the respondents for their time and cooperation in my research project, for without them this research project would not have been finalised. Finally, I would like to express my gratitude to my family and friends for their support and stimulating me to go that extra mile.

I hope you will enjoy reading and find it as interesting as I do.

Suzanne van der Werff

Wageningen, July 2015

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EXECUTIVE SUMMARY

Since a company can be considered no more sustainable than its suppliers, companies must actively manage their supply base to ensure sustainability. Indeed, it is widely recognised that companies aiming for corporate sustainability must involve their suppliers and implement sustainable sourcing at the purchasing function, as this is the starting point of the flow of materials into the company. Consistent with research calls, this research aimed at contributing to the scientific knowledge on how buyer-supplier relationships can facilitate sustainable procurement in the Dutch Food and Beverages (F&B) industry. A single industry approach was chosen in line with research calls, as industry specific circumstances could influence sustainable procurement. The research objective led to the central research question: *'Which configuration of buyer-supplier relationships facilitates sustainable procurement?'.* It is important to gain insights into how buyer-supplier relationships can facilitate sustainable procurement, as the implementation of sustainable procurement remains low in practice and the lack of empirical research into this topic has left researchers undecided on what is important in the buyer-supplier relationship to achieve sustainability. This research considered the adoption of all three dimensions of the Triple-Bottom Line (TBL) of sustainability, thereby adding to the current literature.

In order to answer the central research question, the research started with a literature study to identify which aspects of the buyer-supplier relationship could influence sustainable procurement. Additionally, the capabilities of the buyer and the supplier that could influence sustainable procurement were also studied using literature. From the literature it became clear that power and dependency, trust and commitment, information exchange and communication, geographical distance and codes of conduct were important aspects of the buyer-supplier relationship to take into account. In order to reach sustainable procurement, both the buyer and the supplier also need to have certain capabilities. The literature study revealed that corporate culture, know-how and expertise of sustainability, good supplier management and stakeholder management were capabilities of the buying company that could support sustainable procurement. The capabilities the supplier needs to achieve sustainable procurement according to literature were also the corporate culture and know-how and expertise, as well as access to external resources.

In order to determine which configuration of the buyer-supplier relationship and buyer and supplier capabilities truly led to good sustainable procurement, a sustainable procurement maturity model was developed based on literature to serve as a tool to assess sustainable procurement performance. The maturity model consisted of three parts, each representing a different aspect of the TBL of sustainability, divided over four maturity levels (i.e. beginning, improving, succeeding and leading). After the literature study, an empirical research was conducted based on the developed theoretical framework. Based on an extensive literature review an online survey instrument was created, of which most variables had proven reliability and validity, as they have been used and tested in literature before. The empirical research yielded an effective response rate of 28.9%, with 62 usable respondents from the Dutch F&B industry.

In order to reduce the number of variables in the analysis, a principal component factor analysis (PCA) was conducted using SPSS 22. The resulting aspects of the buyer-supplier relationship that have an influence on sustainable procurement were connectivity of information systems, strictness of guidance, joint dependency, intensity of communication and loyalty. The identified buyer capabilities were the integration of sustainable procurement, purchasing skills and the attitude of employees. For the supplier capabilities, access to resources from the buying company, attitude of employees and sustainable resources deployment were identified as influencing sustainable procurement. After the PCA, the data was analysed to cluster the companies (N=62) based on the 14 created variables. A four-cluster solution was found, providing configurations of buyer-supplier relationships, buyer and supplier capabilities and a resulting sustainable procurement performance level. The four clusters were interpreted and termed as: 'market relationship', 'one-sided sustainability', 'inconclusive sustainability' and 'sustainability leader'.

The analysis of the results showed a positive relationship between the buyer capabilities and sustainable procurement performance, indicating that the higher the buyer capabilities, the higher the maturity level of sustainable procurement. A similar relation was found for the supplier capabilities. For the buyer-supplier relationship aspects, loyalty, strictness of guidance, joint dependency and the intensity of communication all also showed a positive relationship with the level of sustainable procurement. However, for connectivity a

negative relationship was found, indicating that connectivity is not necessarily needed in order to achieve sustainable procurement.

With regard to the central research question, it can be concluded that the buyer-supplier relationship can indeed facilitate sustainable procurement. A relationship in which the buyer and supplier are dependent upon each other, with loyalty and a high intensity of communication, but especially with a high strictness of guidance, could facilitate high levels of sustainable procurement. Additionally, next to a facilitating buyer-supplier relationship, the buyer and supplier also need to have the right capabilities as identified during this research. For the buyer these were the integration of sustainable procurement, purchasing skills and the attitude of employees. For the supplier capabilities, access to resources from the buying company, attitude of employees and sustainable resources deployment are needed.

A remarkable outcome of this research was the negative relation between connectivity and sustainable procurement. It seems that the willingness to share information is far more important than the connectivity. Moreover, this research showed that companies are purposefully increasing asset specificity, through intense communication, providing resources to suppliers and creating strict guidance, but thereby also increasing the sustainable procurement. Concluding, this research revealed configurations of buyer-supplier relationships and buyer and supplier capabilities related to a certain sustainable procurement level, as found in the Dutch F&B industry. As this research is the first study aimed at identifying how buyer-supplier relationships could facilitate sustainable procurement, directions for further research and guidelines for practitioners are provided. Companies in the Dutch F&B industry are recommended to invest in both the relationship and their own capabilities to ensure sustainable procurement.

1. INTRODUCTION

The first chapter of this research report provides an introduction to the research. Next to the context of the research area, the conceptual and the technical research designs are discussed. Finally, an overview of the structure of the report is provided.

1.1 INTRODUCTION TO THE RESEARCH

These days, sustainability is an important issue for organisations, as it has the potential to improve a company's competitive performance, but simultaneously the potential to harm its reputation (Hoejmoose and Adrien-Kirby, 2012). Moreover, concerns about sustainability are voiced by activists, academics and the general public (Caniëls et al., 2013), thereby forcing companies to act sustainable. As companies integrate sustainability, they should incorporate a triple bottom line (TBL) approach, thereby simultaneously considering the economic, environmental and social effects of their business activities (Elkington, 1998). However, researchers have tended to treat social and environmental sustainability issues separately with regard to supplier management and supply chain management practices (Carter and Easton, 2011). Only few papers have considered all three aspects of sustainability simultaneously and therefore, there is a lack of an integrated approach of the TBL in the scientific literature (Hollos et al., 2012; Tate et al., 2012; Hoejmoose and Adrien-Kirby, 2012; Igarashi et al., 2013; Pimenta and Ball, 2014). Hence, this research will consider all three dimensions of the triple-bottom line.

Many of the manufacturing company's operations are outsourced to suppliers, to the extent that nearly 60 percent of the value of products from manufacturing companies is purchased from suppliers (Tate et al., 2012). This shows the buying company is to a large extent dependent on its suppliers for its products, and thus also for its corporate sustainability. As a result, external stakeholders such as non-governmental organisations (NGOs) expect the buying company to assure socially and ecologically sound production at their suppliers' sites (Foerstl et al. 2010). As Krause et al. (2009: p.18) state: "a company is no more sustainable than its supply chain". Therefore, companies must actively manage their supply base to ensure sustainability. Tate et al. (2012) confirm this, as they state a company's sustainability can be seen as a function of the suppliers it chooses, the requirements that it provides to suppliers and the development activities it engages in with suppliers. In this light, it can be stated that the purchasing function of a company plays a strategic role in achieving corporate sustainability. Indeed, it is widely recognised that companies aiming for corporate sustainability must involve their suppliers and implement sustainable sourcing at the purchasing function, as this is the starting point of the flow of materials into the company (e.g. Schneider and Wallenburg, 2012; Crespín-Mazet and Dontenwill, 2012; Miemczyk et al., 2012; Tate et al., 2012; Foerstl et al., 2010).

Sustainable procurement is a field that has received growing attention within the academic community the last decade (Walker et al., 2012; Krause et al., 2009). Nevertheless, the existing literature is diverse and researchers have acknowledged the complexity and dynamic nature of sustainable procurement (Hoejmoose and Adrien-Kirby, 2012). Some topics have received considerably more attention than others, such as internal and external drivers for sustainable procurement, the impact on performance and barriers for the implementation of sustainable procurement (Hoejmoose and Adrien-Kirby, 2012). Surely, most attention has been given to green procurement issues (Carter and Easton, 2011), or in other words: the environmental aspect of sustainability.

Since the academic field is still in its infancy, many research gaps exist (Hoejmoose and Adrien-Kirby, 2012; Sarkis et al., 2011). For example, scholars have highlighted the need for more research into buyer-supplier relationships and especially into how they can foster sustainability (Grimm et al., 2014; Duffy et al., 2013; Oruezabala and Rico, 2012). Additionally, there have been research calls for studying stakeholder management (Miemczyk et al., 2012). Stakeholders can pressure companies to adopt a sustainability strategy and up till now it is unclear how non-economic stakeholders can support or hinder sustainability. Furthermore, there is a need for more research into sustainable supplier selection (Igarashi et al., 2013) and sustainable supplier development (Sucky and Durst, 2013; Miemczyk et al., 2012; Sarkis et al., 2011). The inclusion of sustainability in these supplier management processes has the potential to improve sustainability, but the operationalization is often challenging. Scholars have also addressed the need for more research into internal cross-functional cooperation (Schneider and Wallenburg, 2012), because the purchasing function needs to coordinate with

other business functions to account for all important stakeholders beyond suppliers to meet the corporate sustainability requirements. Finally, more research is needed into the integration of the triple bottom line (Pimenta and Ball, 2014; Tate et al, 2012; Hollos et al., 2012), since the understanding of how companies can integrate all three dimensions of the TBL is limited. This is due to the fact that scholars often focus on a single aspect of sustainability in their research.

The research gaps on several aspects of sustainable procurement also create challenges for companies. As Genovese et al. (2013) state, managers face significant obstacles and barriers in the implementation of sustainable supplier selection models. Schneider and Wallenburg (2012) also highlight the importance of providing managers with success factors to consider when implementing sustainable procurement. Therefore, this research will focus on the first research gap of how buyer-supplier relationships can support sustainable procurement. Furthermore, the capabilities of both the buyer and the supplier are also addressed, as they could influence the relationship and the level of sustainable procurement reached. The lack of empirical research into the area of buyer-supplier relationships and how they can foster sustainability has left researchers undecided on what is important in the buyer-supplier relationship to achieve sustainability (Grimm et al., 2014; Duffy et al., 2013; Oruezabala and Rico, 2012). Some scholars state effective collaboration for sustainability between buyers and suppliers requires strong relationships (e.g. Duffy et al., 2013; Caniëls and Gelderman, 2007), whereas others advocate the use of power to force suppliers to act sustainable (e.g. Hoejmoose et al., 2013; Awaysheh and Klassen, 2010). Additionally, it is unclear which capabilities of the buying company and the supplier could further support the buyer-supplier relationship and the level of sustainable procurement reached. Therefore, these will also be taken into account in this research. As the implementation of sustainable procurement remains low in practice (Schneider and Wallenburg, 2012; Genovese et al., 2013), it is important to gain insight into the link between buyer-supplier relationships and sustainable procurement. Additionally, the ability of managers to recognise and form relationships to improve sustainability can be considered a valuable asset that results in an advantage for making responsible and profitable decisions (Pagell et al., 2010). Thus, it is important to gain insights in these relationships. In order to assess which configuration of buyer-supplier relationships and buyer and supplier capabilities lead to sustainable procurement, a measure of sustainable procurement performance is needed. This research will develop a maturity model of sustainable procurement in order to assess sustainable procurement performance.

The focus of this research is on the Dutch food and beverages (F&B) industry. Prior research has often considered multiple industries simultaneously, but there has been a call for industry specific applications (Carter and Easton, 2011; Tate et al., 2012; Schneider and Wallenburg, 2012; Hollos et al., 2012; Sucky and Durst, 2013). Sustainability practices vary per industry, due to the differences in external pressure and the relevancy of the three sustainability aspects (Tate et al., 2012). For example, the sustainable procurement profile of chemical companies will focus to a larger extent on environmental issues, whereas the labour-intensive textile industry will mainly focus on social issues (Carter and Easton, 2012; Schneider and Wallenburg, 2012). Additionally, certain companies in an industry can act as sustainability leaders and set industry norms (Walker et al., 2008). Competitors within the industry can thus cause that companies are increasingly engaging in sustainable procurement to gain or maintain a competitive advantage (Giunipero et al., 2012; Starik and Marcus, 2000; Rao and Holt, 2005). Thus, industry specific circumstances could influence the integration of sustainable procurement practices in companies and are therefore relevant to take into account when considering the buyer-supplier relationship. Following these arguments, this research will adopt a single industry approach.

Food processors worldwide are under pressure to adopt sustainability. Amongst others, this is due to the growing population, shifting patterns of consumption and an increasing competition for water, energy and land (Vermeulen et al., 2012). Indeed, food supply chains are subject to distinctive social, economic and environmental issues, such as rural livelihoods, food security issues and land use (Touboulis et al., 2014). The F&B industry is thus well suited to investigate the adoption of the TBL in sustainable procurement. Moreover, Hollos et al. (2012) state that customers and other stakeholders are inclined to punish companies, especially those selling branded products to the end consumer, if they fail to comply with accepted sustainability standards. Therefore, the issue of sustainability is of great importance in the F&B industry. Since the Dutch F&B industry has increasingly been contributing to the sustainability of food chains the last decade (Grekova et al., 2014), it provides an example for F&B companies in other countries. Additionally, supply chain cooperation is intense in the Dutch F&B industry, due to high pressure on prices and profit margins from retailers (Grekova et

al., 2014). Therefore, the Dutch F&B industry is a suitable industry to gain more insights into how buyer-supplier relationships and buyer and supplier capabilities can support sustainable procurement.

1.2 CONCEPTUAL RESEARCH DESIGN

This section addresses the research objective, the research framework, the research issue and definitions of important concepts.

1.2.1 RESEARCH OBJECTIVE

The research objective provides an overall idea of the knowledge that will be generated in this study (Verschuren and Doorewaard, 1999). The objective of this research is to further develop the theory on sustainable procurement by providing an understanding of how buyer-supplier relationships can facilitate sustainable procurement in the Dutch F&B industry. Consistent with research calls, this research aims to gain insights into the emerging links between sustainable procurement and supplier management (Oruezabala and Rico, 2012). Next to exclusive buyer-supplier relationship aspects, the capabilities of the buying company and the supplier will also be addressed, as these are expected to influence the link between sustainable procurement and the buyer-supplier relationship.

This research is an exploratory theory-developing research, because there are gaps in current literature on buyer-supplier relationships with regard to sustainability. Specifically, this research will explore how buyer-supplier relationships, in combination with buyer and supplier capabilities, can facilitate sustainable procurement, which has not yet been studied in the literature. Additionally, this research focusses on the adoption of the triple bottom line of sustainability, thereby also adding to the current literature.

1.2.2 RESEARCH FRAMEWORK

A research framework is a schematic representation of the research objective and describes the steps that need to be taken in order to achieve the objective (Verschuren and Doorewaard, 1999). The research framework of this research can be found in Figure 1. It serves as a tool to clarify the research process.

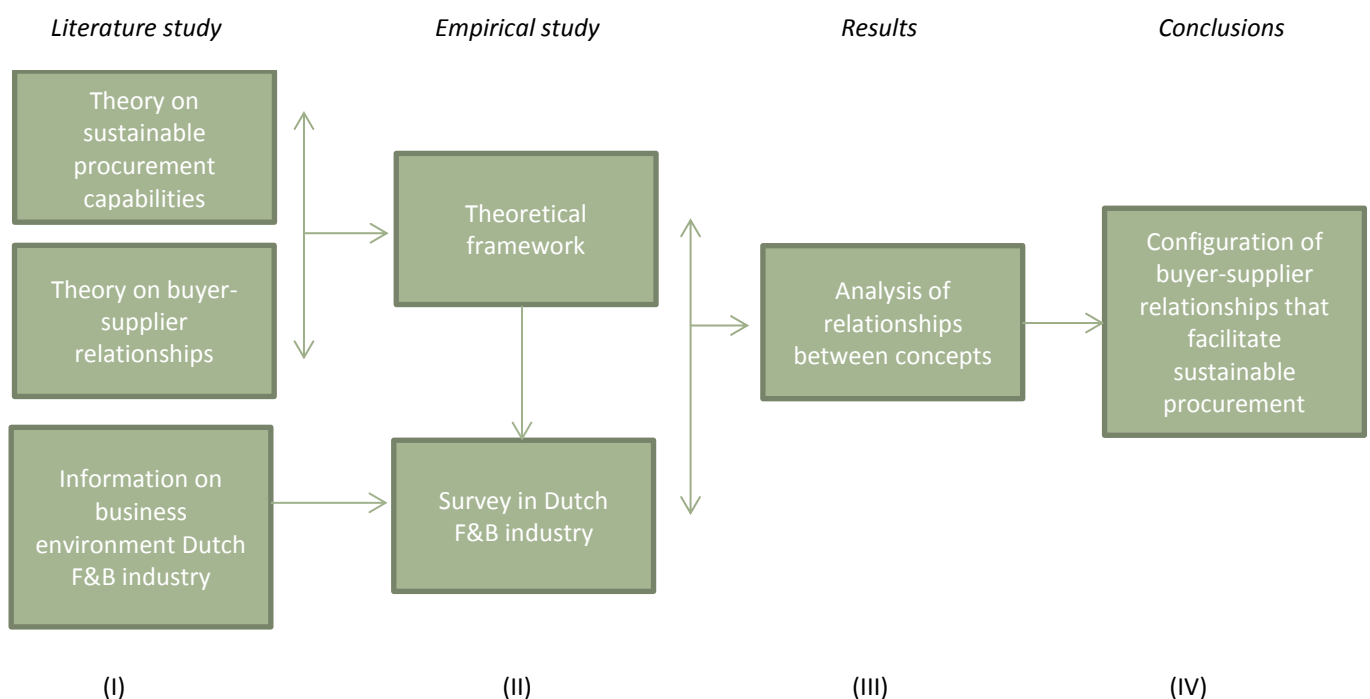


Figure 1: Research framework

The research framework presented in Figure 1 consists of four sections, represented by (I), (II), (III) and (IV). These will be explained below:

- (I). The first section represents the literature study. Based on scientific literature on capabilities of the buyer and supplier that are needed for sustainable procurement and on buyer-supplier relationships, various propositions regarding the impact of buyer-supplier relationships on sustainable procurement will be formed. The insights gained from the literature study will be used to build the theoretical framework. Additionally, information on the business environment of the Dutch F&B industry will be gathered to create an understanding of possible industry specific influencing factors.
- (II). The empirical research comprises of data gathering via surveys. In order to identify how buyer-supplier relationships can facilitate sustainable procurement, the data that will be gathered has to show contrast between non-sustainable and more sustainable practices. Therefore, a self-developed maturity model of sustainable procurement will be used to assess each respondents' sustainable procurement performance.
- (III). The results from the empirical study will be combined and analysed in order to test the proposed propositions and to identify relations between the main concepts of this study.
- (IV). The data analysis will finally lead to an overview of the relation between certain buyer-supplier relationship configurations and levels of sustainable procurement. Then, it can be concluded which configuration of buyer-supplier relationships facilitates sustainable procurement.

1.2.3 RESEARCH ISSUE

This paragraph addresses the research issue of this study, which consists of the central research question and several sub-questions. The central research question is: *'Which configuration of buyer-supplier relationships facilitates sustainable procurement?'*

Five sub-research questions are formulated to answer this central research question:

1. Which maturity levels of sustainable procurement can be identified?
2. Which capabilities of the buying company, related to the buyer-supplier relationship, influence sustainable procurement?
3. Which capabilities of the supplier, related to the buyer-supplier relationship, influence sustainable procurement?
4. Which aspects of buyer-supplier relationships can influence sustainable procurement?
5. Which aspects of the Dutch F&B business environment influence the buyer-supplier relationship with regard to sustainable procurement?

The first four sub-research questions are needed to create the theoretical framework of factors of buyer-supplier relationships that could have a positive influence on sustainable procurement. The maturity levels are needed as a tool to assess sustainable procurement performance. The capabilities, such as knowledge and access to resources, of both the buyer and the supplier are expected to influence both the relationship and the maturity level of sustainable procurement. Additionally, it is important to understand how certain aspects of buyer-supplier relationships, such as trust, commitment or power, can influence sustainable procurement. Therefore, all these aspects are addressed in the first four sub-research questions. The fifth sub-research question is also important, as aspects of the business environment in the Dutch F&B sector, such as pressure from stakeholders or competitors, can influence the sustainable procurement strategy and the relationship between a buyer and a supplier. All five sub-research questions together provide an answer to the central research question. The answer of the central research question leads directly to the realisation of the research objective, which is to provide an understanding of how buyer-supplier relationships can facilitate sustainable procurement in the Dutch F&B industry.

1.2.4 DEFINITION OF CONCEPTS

In order to provide a clear understanding of this research, the following concept is defined:

Sustainable procurement: the simultaneous pursuit of economic, environmental and social development objectives through the purchasing process (adapted from Walker et al., 2012).

1.3. TECHNICAL RESEARCH DESIGN

The technical research design covers the decisions regarding the research material and the research strategy, thereby elaborating on what needs to be done to find sound answers to the research questions (Verschuren and Doorewaard, 1999). First, the research strategy will be discussed, followed by the research material.

1.3.1 RESEARCH STRATEGY

A research strategy contains the decisions about the way in which the research project is carried out (Verschuren and Doorewaard, 1999). This study will consist of a mix of two different research strategies, namely desk research and empirical research.

DESK RESEARCH

A desk research is entirely based on existing literature and/or materials gathered by others (Verschuren and Doorewaard, 1999). In order to execute the literature study of this research, a desk research strategy will be used. Since this research will use knowledge produced by others, a so called literature survey will be used to develop the theoretical framework. Additionally, the survey instrument will be developed using literature.

EMPIRICAL RESEARCH

In empirical research, the researcher gathers data him or herself and arrives at a judgement based on the analysis of these data (Verschuren and Doorewaard, 1999). An important decision related to which empirical research strategy will be used is the choice between depth or breadth. On the one hand, a survey could serve as a strategy to obtain general knowledge and a wide overview. On the other hand, a case study strategy could be used to gain profound insight into one or a few aspects (Verschuren and Doorewaard, 1999). In this research, insights from the literature study helped determine that it would be more valuable to opt for breadth and generalisation via surveys. Since the field is still in its infancy, it is considered more valuable to find out whether certain buyer-supplier relationship configurations can lead to certain sustainable procurement performance on a larger scale. Indeed, a survey is used when the researchers try to gain an overall picture of a comprehensive phenomenon (Verschuren and Doorewaard, 1999).

The empirical research will try to create contrast between buyer-supplier relationships that are characterised by non-sustainable and more sustainable practices. This will be done through assessing the maturity level of sustainable procurement of each company. The contrast in the sample will allow the researcher to identify which aspects of the buyer-supplier relationship are truly important for sustainable procurement.

1.3.2 RESEARCH MATERIAL

This paragraph addresses the different data and knowledge sources which will be used. Furthermore, the ways in which these data and knowledge will be gathered will be discussed. According to Verschuren and Doorewaard (1999), there are five sources of information, namely individual people, the media, reality, documents and literature. In this study two different information sources will be used, namely individual people and literature.

INDIVIDUAL PEOPLE

There are three ways in which people can act as an information source, namely as a respondent, as an informant and as an expert. A respondent supplies data about him or herself, whereas an informant provides data about other people, situations, objects or processes he or she knows about. Finally, an expert provides knowledge (Verschuren and Doorewaard, 1999).

This research uses people working in the Dutch F&B industry as an information source. Specifically, people working in the procurement department of their company will be used, as they will have the most knowledge of the company's relationship with their suppliers and the level of sustainable procurement. However, also general managers may be used, when they have sufficient knowledge of the topics at stake. The people used act both as respondents and informants, because they will provide data on their own behaviour and that of their company, their suppliers and their colleagues. In order to access this information source, polls or questionnaires can be used, or interviews can be conducted (Verschuren and Doorewaard, 1999). As has been stated in the research strategy, this research will use a survey to access the information.

LITERATURE

Literature can be used as a knowledge source or as a data source. In case of a data source the literature contains objective descriptions of reality which can be combined with other data to produce new insights. This research will use literature as a knowledge source, containing theoretical insights in which connections between phenomena can be found (Verschuren and Doorewaard, 1999). In order to gather relevant literature, search methods will be used by using key words in the search indexes of Scopus and ISI Web of Science. Additionally, the snowball principle will be applied. In this method, several major publications will be chosen from which, based on their content, new literature sources will be gathered (Verschuren and Doorewaard, 1999).

1.4 STRUCTURE OF THE REPORT

This final section of the first chapter discusses the structure of the report. In the second chapter of this report, the sustainable procurement maturity model and thereby the first sub-research question will be discussed. The third chapter will address the second sub-research question, which is about the buyer capabilities that can influence sustainable procurement. Subsequently, the fourth chapter presents the capabilities of the supplier that can influence sustainable procurement, thereby discussing the fourth sub-research question. In the fifth chapter of this report, the fourth sub-research question is discussed, containing the aspects of the buyer-supplier relationship that could influence sustainable procurement. The sixth chapter presents the theoretical framework and the formulated propositions. Chapter 7 contains the methodology of this study, in which the Dutch F&B business environment, the fifth sub-research question, is also addressed. Subsequently, the eighth chapter contains the results of the empirical research. Finally, Chapter 9 presents the conclusions and discussions of this research.

2. MATURITY LEVELS OF SUSTAINABLE PROCUREMENT

In order to assess the impact of buyer-supplier relationships on sustainable procurement, an operationalization of sustainable procurement is needed. This chapter will measure sustainable procurement performance based on maturity levels a company can choose or work on, in order to answer the first research question: 'Which maturity levels of sustainable procurement can be identified?'. First, this chapter will give an overview of maturity models from literature, on which the maturity model of this research is based. Subsequently, a comprehensive description of the maturity levels of sustainable procurement will be provided.

2.1 MATURITY MODELS

Maturity models can provide some sort of a performance indication, as they can be used to objectively evaluate a company's state with regard to sustainability (Müller and Pfleger, 2014). As companies have different approaches towards sustainability and sustainable procurement (Formentini and Taticchi, 2014), maturity models can be used to categorise the different approaches. Several scholars have recently used the maturity model defined by Baumgartner and Ebner (2010) (e.g. Amini and Bienstock, 2014; Müller and Pfleger, 2014). They created a four-level maturity grid, in which level 1 stands for a rudimentary level, where the company might begin to consider sustainability and where (if any) only mandatory regulations are adhered to. In the second level, the company complies with sustainability-related regulations and even goes slightly further. This could be because the company aims at communicating its sustainability commitment to society, in order to differentiate itself from the competitors and to increase its credibility. Level 3 represents a satisfying consideration and maturity of sustainability, which is often above the industry average. Companies are focussed on the external presentation of sustainability to increase their credibility in society, but also aim at positively influencing the basic conditions of corporate sustainability in society. Finally, level 4 represents an outstanding effort towards sustainability and a sophisticated maturity. These companies show a highly developed sustainability commitment in order to become a market leader in sustainability issues (Baumgartner and Ebner, 2010). In this highest level, the company includes customers, suppliers and partners in sustainability practices, is recognised as a sustainability leader in the industry and drives industry standards (Müller and Pfleger, 2014). Similar to the four levels of Baumgartner and Ebner (2010), Okongwu et al. (2013) and the Industrial Research Initiative (IRI, 2014) also identified four levels of sustainability maturity. Since these have been defined in a similar way as the levels of Baumgartner and Ebner (2010), it seems four levels cover the different approaches companies can have towards sustainable procurement. This research will adopt the terminology of the four sustainability maturity levels of the Industrial Research Initiative (IRI, 2014), namely:

1. Beginning level;
2. Improving level;
3. Succeeding level; and
4. Leading level.

As this research is focussed on the adoption of the Triple Bottom Line (TBL) in sustainable procurement, all three elements of sustainability will have to be assessed to determine the maturity level. Baumgartner and Ebner (2010) defined a sustainability framework with these three sustainability aspects based on popular concepts and papers of sustainability. Amini and Bienstock (2014) also developed a corporate sustainability framework with four levels of sophistication, which incorporates diverse and concrete issues of corporate sustainability. The work of Okongwu et al. (2013) too provides valuable insights into how the different aspects of sustainability can be defined based on four levels of maturity. Finally, the sustainability maturity model of the Industrial Research Initiative (IRI, 2014) provides concrete measures of four maturity levels. Based on all these frameworks, companies can be assessed and their maturity level can be determined.

2.2 THE MATURITY LEVELS OF SUSTAINABLE PROCUREMENT

This paragraph will elaborate on the maturity levels of sustainable procurement as used in this research. As this research considers the adoption of all three dimensions of sustainability, this section will address maturity levels for each dimension. The economic dimension of sustainability encompasses more general aspects of a company that are important in order to remain in the market. Moreover, good results in the generic economic

aspects are likely to lead to good financial and sustainability results of the company (Baumgartner and Ebner, 2010). The first aspect of the economic dimension looks at how the generated economic value is shared with the various stakeholders (Okongwu et al., 2013) and what prices are paid to suppliers. This aspect of economic value distribution is adapted from the maturity model for supply chain sustainability from Okongwu et al. (2013) and from the corporate sustainability maturity model of Van Marrewijk (2005), and can be seen in Table 1. Additionally, the intangible assets of human capital and knowledge are summarised in the aspect of knowledge management. Baumgartner and Ebner (2010) defined knowledge management as the activities and approaches to keep sustainability related knowledge in the organisation. The operationalization of this aspect has been adapted from Baumgartner and Ebner (2010) and can be seen in Table 1. Furthermore, the aspect of sustainability reporting is included as an indicator of economic sustainability, as both Baumgartner and Ebner (2010) and the Industrial Research Initiative (IRI, 2014) also incorporated this in their maturity models. The operationalisation is based on these two maturity models. Finally, as both Baumgartner and Ebner (2010) and Amini and Bienstock (2014) incorporated the aspect of innovation and technology as an economic aspect, this is also taken into account. The operationalization of the effort in sustainability oriented innovation and the use of the best available technologies are based on Amini and Bienstock (2014) and Baumgartner and Ebner (2010), and can also be found in Table 1.

The environmental dimension of sustainability is concerned with the impact of corporate activities on the environment (Baumgartner and Ebner, 2010). Three of the environmental aspects considered in this maturity model are adopted from the sustainability maturity model of the Industrial Research Initiative (IRI, 2014). These aspects are Life Cycle Assessment (LCA) process, material and part selection and manufacturing impact. These aspects have also been recognised as important by both Baumgartner and Ebner (2010) and Okongwu et al. (2013). The operationalisation is adopted from IRI (2014) and can be found in Table 2. Furthermore, the aspect of supplier management is included. As sustainable procurement is about the pursuit of sustainability through the purchasing process, supplier management for environmental objectives has to be taken into account. For the operationalisation, aspects of both the sustainability maturity model of the Industrial Research Initiative (IRI, 2014) and the corporate sustainability maturity model of Van Marrewijk (2005) are adopted.

Finally, the social dimension can be split up into two categories: internal for employees and external for relationships with suppliers (Okongwu et al., 2013; Baumgartner and Ebner, 2010). With regard to the internal aspect, Okongwu et al. (2013) incorporated aspects such as training, health and safety, human rights and child labour. Baumgartner and Ebner (2010) have split up the internal aspect into several aspects. Since health and safety is important in both studies, this will be taken into account. Furthermore, employee management will be taken into account for the internal social aspects, as this incorporates the important aspects of diversity and the company's policy on human resource management. The operationalisation of health and safety has been adapted from both Baumgartner and Ebner (2010) and Van Marrewijk (2005). The operationalisation of employee management has been adopted from Van Marrewijk (2005). For the external aspects, corporate citizenship is taken into account, because this is integrated by Okongwu et al. (2013), Baumgartner and Ebner (2010) and Van Marrewijk (2005) in their maturity models. Baumgartner and Ebner (2010) defined corporate citizenship as being a good corporate citizen on a national and regional level through participation or creation of sustainability related activities for the local community, conservation of subsidiaries in the country, establishment of economic power of a country and an orientation on future generations without exploiting the present. Finally, supplier management will be taken into account. This includes the extent to which the purchasing function considers social aspects like diversity and human rights in their supplier management and has been adapted from IRI (2014) and Carter and Jennings (2004). All social aspects can be seen in Table 3.

2.3 CONCLUSION

This chapter has discussed maturity models of sustainable procurement, in order to answer the first research question: 'Which maturity levels of sustainable procurement can be identified?'. In total, four maturity levels of sustainable procurement have been identified and created. As each maturity level can be considered a different level of performance, it can be argued that each maturity level thus requires a certain buyer-supplier relationship that supports that level of sustainable procurement. Additionally, both the buying company and the supplier may need certain capabilities that support a maturity level of sustainable procurement. Therefore, the following chapters will discuss these capabilities and subsequently the features of buyer-supplier relationships that can facilitate sustainable procurement.

Table 1: Maturity levels of economic sustainability aspects (adapted from Amini and Bienstock (2014), IRI (2014), Okongwu et al. (2013), Baumgartner and Ebner (2010) and Van Marrewijk (2005)).

Aspect	Economic value distribution	Sustainability reporting	Knowledge management (KM)	Innovation and technology
Beginning	<ul style="list-style-type: none"> - Prices paid to suppliers are based on the integral cost price. - Company focusses on cost reduction. - Economic value (in forms of dividends) is distributed only to shareholders. 	<ul style="list-style-type: none"> - No consideration of sustainability issues either in a distinct sustainability report or in the annual report. 	<ul style="list-style-type: none"> - No systematic approach towards knowledge management (KM). 	<ul style="list-style-type: none"> - Conformity with laws and regulations regarding technology. - Innovation activities are not sustainability related.
Improving	<ul style="list-style-type: none"> - Prices paid to suppliers are based on the market price/ value. - Bonuses and rewards given to employees. 	<ul style="list-style-type: none"> - Most relevant sustainability issues are respected in corporate communication channels (internal). 	<ul style="list-style-type: none"> - Specific sustainability related KM activities (e.g. IT based KM activities such as databases, IT infrastructure) are conducted in order to generate, transfer and save sustainability related knowledge. 	<ul style="list-style-type: none"> - Some awareness of relationship between innovation and sustainability. - Best available technologies are partially used.
Succeeding	<ul style="list-style-type: none"> - Prices paid to suppliers are a fair price, i.e. higher due to higher sustainability level of supplier and/or product. - The company spends money on the development of supply chain partners (especially local suppliers). 	<ul style="list-style-type: none"> - Company makes public a few internal reporting efforts. - Company begins to consider engaging external reporting agencies. - Goals and measures are defined and communicated. 	<ul style="list-style-type: none"> - Broad approach and activities towards sustainability related KM, integrating intangible assets (resource: human capital). - Various activities are set regarding organizational learning. 	<ul style="list-style-type: none"> - Innovation activities begin to involve multiple stakeholders and there is a higher effort in sustainable innovation than industry averages. - The company invests in best available technology.
Leading	<ul style="list-style-type: none"> - Prices paid to suppliers are based on the perceived value, i.e. a price premium is paid which reflects the value of the sustainability of the supplier and the product - The company expands its scope in spending money to all supply chain partners and includes fair trade across the supply chain. 	<ul style="list-style-type: none"> - Company continues previous internal reporting and public disclosure efforts. - Company engages external reporting agency and shares publically sustainability challenges and milestones. 	<ul style="list-style-type: none"> - A systematic and comprehensive approach and activities towards sustainability related KM (from planning to improvement) is implemented. - Company focusses on organizational learning. 	<ul style="list-style-type: none"> - Significantly higher effort in sustainable innovation than industry average. - Best available technologies are proactively used. - Multiple stakeholders are involved.

Table 2: Maturity levels of environmental sustainability aspects (adapted from IRI (2014) and Van Marrewijk (2005)).

Aspect	Life Cycle Assessment (LCA) process	Material and part purchasing	Manufacturing impact	Supplier management
Beginning	<ul style="list-style-type: none"> - The company understands LCA concepts, but has not conducted any LCAs. 	<ul style="list-style-type: none"> - Company meets regulatory compliance of environmental aspects in purchasing materials. - All materials and parts are assessed to ensure regulatory compliance. - The company begins to consider the sustainability of materials. 	<ul style="list-style-type: none"> - Company meets regulatory compliance of the environmental impact of manufacturing. - The impact of product design on manufacturing choices and the resulting environmental impact is understood and considered in order to meet regulatory compliance. 	<ul style="list-style-type: none"> - Supplier policies do not necessarily incorporate environmental aspects. - Company focusses on economies of scale.
Improving	<ul style="list-style-type: none"> - The company has investigated relevant environmental aspects for the products that are being considered for LCAs. - The company has conducted LCAs of some products (using industry averaged data). - The company has considered LCA results as a part of new product development (NPD) processes, product line rationalisation and purchasing decisions. 	<ul style="list-style-type: none"> - Materials with hazardous properties for the environment are identified (in conjunction with supply chain). - Company is considering materials and parts with reduced environmental impact in design process. - Alternatives assessment performed on hazardous materials and parts for the environment. - Environmentally friendly materials are only used in the design when readily available. - Engineering team proactively identifies more sustainable materials; engineering and procurement specifications require use of materials with reduced environmental impact. 	<ul style="list-style-type: none"> - Company is beginning to assess environmental impact of manufacturing and taking steps to reduce waste/energy consumption. - Company begins to investigate more sustainable manufacturing practices. - Product designers begin to design new products to reduce manufacturing impact. 	<ul style="list-style-type: none"> - Supplier assessment includes a review of a suppliers' sustainability and their environmental policies.
Succeeding	<ul style="list-style-type: none"> - Use of industry standard product category rules for LCA. - Improved accuracy of LCA by using real supply chain data. - LCA covers cradle to grave analysis. - Product lines are rationalised on basis of LCA / New projects are prioritized based on LCA data. 	<ul style="list-style-type: none"> - Reduced environmental impact and sustainability of materials and parts is a mandatory design criteria in NPD processes. - LCA results are used to identify materials with overall reduced environmental impact. - Materials and parts are selected to reduce environmental impact of manufacturing and other downstream life cycle stages. - New products are made with 	<ul style="list-style-type: none"> - Reduced environmental impact of manufacturing is a mandatory design criteria in NPD processes. - Company has implemented newer, more sustainable manufacturing practices. - LCA results are used to assess overall environmental impact of manufacturing. - Product design is optimized to reduce the environmental impact of manufacturing, using manufacturing 	<ul style="list-style-type: none"> - Auditing and benchmarks are implemented in order to understand and manage the impact of the suppliers on the corporate sustainability goals. - Supply chain is managing activities that drive improvement to the Corporate CSR goals. - Supplier selection is based upon a suppliers' environmental and sustainability policies and efforts. - Company shares green technology and helps supplier meet company needs.

		<p>environmentally friendly and sustainable materials.</p> <ul style="list-style-type: none"> - Company works closely with supply chain to improve the sustainability of materials and parts and develop alternatives when needed. 	<p>methods/ technologies with lower impact.</p>	
Leading	<ul style="list-style-type: none"> - LCA results are required as part of NPD process. - LCA results are used in purchasing decisions. - LCA covers cradle to cradle analysis. - LCAs are registered and approved by third party (product category rules for your industry). - Contributions to LCA inventory databases for your industry. - Contribute to product category rules for your industry. - Company uses LCA data as a control variable to feedback and to improve process/product for future offerings. 	<ul style="list-style-type: none"> - Where ever possible, material choices are environmentally friendly and sustainable. - Material and part selection is based on LCA results to minimize environmental impact and maximize sustainability - Company is an industry leader in proactive R&D efforts (directly or in conjunction with supply chain) to develop sustainable materials with minimum environmental impact. - Company is leader in development of new sustainable materials and will collaborate with competitors to bring better material options to market. 	<ul style="list-style-type: none"> - Company is active in working with equipment manufacturers to develop more sustainable processes. - Company is an industry leader in innovation in design for manufacturing to reduce life cycle environmental impact. - Company works with suppliers to reduce environmental impact of their manufacturing. 	<ul style="list-style-type: none"> - The impact of suppliers to the corporate sustainability goals are well understood and improvement activities are implemented. - The company engages in supplier development activities to improve their environmental/sustainability performance. - Suppliers are aligning with global initiatives or compacts, NGOs, etc. - Company shares green technology with suppliers and participates with suppliers in co-development activities to create sustainable improvements.

Table 3: Maturity levels of social sustainability aspects (adapted from IRI (2014), Baumgartner and Ebner (2010), Van Marrewijk (2005) and Carter and Jennings (2004)).

Aspect	Internal			External
	Health and safety	Employee management	Supplier management	Corporate citizenship (CC)
Beginning	<ul style="list-style-type: none"> - Health and safety is respected to the extent of legal obligation. - Health and safety are not actively focused on. - Inventory of common problems and systematic response. 	<ul style="list-style-type: none"> - Homogenised labour force. - Employee management comes down to an administrative Personnel & Organisation department. 	<ul style="list-style-type: none"> - Supplier policies do not necessarily incorporate social aspects. - Company focusses on economies of scale. 	<ul style="list-style-type: none"> - Corporate citizenship is not focused on in the organization. - Company occasionally gives to charity.
Improving	<ul style="list-style-type: none"> - Measures towards health and safety are set when specific dangerous situations or accidents occur. - Deployment of measures is more of reactive character rather than systematically planned. - Cost-benefit analysis of possible improvements. 	<ul style="list-style-type: none"> - Diversity only receives attention when it increases results. - Human resource department is mainly concerned with optimization and satisfaction of employees. 	<ul style="list-style-type: none"> - Supplier assessment includes a review of a suppliers' sustainability and their human rights and health and safety policies. 	<ul style="list-style-type: none"> - Certain corporate citizenship projects are initiated or supported (mostly in monetary terms). - CC projects are supported provided they are high visibility projects and will boost the company's sustainability reputation. - The link between CC projects and the corporate business is rarely given.
Succeeding	<ul style="list-style-type: none"> - Health and safety is systematically planned and deployed in most areas of the company. - Activities are set to avoid health and safety risks in long term. - Management system on safety and health is in place, including socio-psychological dimensions. 	<ul style="list-style-type: none"> - Policies for emancipation of women, coloured and disabled persons. - Employee management can be seen as human potential management, concerned with competence development. 	<ul style="list-style-type: none"> - Supplier selection is based upon a suppliers' social and sustainability policies and efforts. - The purchasing function visits suppliers to ensure that they are not using sweatshops or child labour. - The purchasing function considers buying from minority/women-owned business enterprise suppliers. 	<ul style="list-style-type: none"> - Corporate citizenship is systematically planned and conducted (monetary and nonmonetary commitment). - The link between CC projects and the corporate business is mostly given. - The company supports neighbourhood development projects. - The company helps develop local suppliers.
Leading	<ul style="list-style-type: none"> - Health and safety approach supports organizational goals towards sustainability. - It is systematically planned and deployed throughout the company. - Activities are set to avoid health and safety risks in long-term and are consequently improved. - Pro-active policy, linked with people management (HRM) and custom made arrangements for individual employees. 	<ul style="list-style-type: none"> - Women and minorities in management positions (on condition that they qualify for the position). - Employee management is about human capital management, aligning individual and collective interests. 	<ul style="list-style-type: none"> - The purchasing function buys from minority/women-owned business enterprise suppliers. - The purchasing function has a formal minority/women-owned business enterprise supplier purchase program. - The purchasing function asks suppliers to pay a 'living wage' greater than a country's or region's minimum wage. 	<ul style="list-style-type: none"> - Corporate citizenship is systematically planned and conducted (monetary and nonmonetary commitment) and focused on long-term commitment. - Most employees are integrated into the process. - The company has a 'together win'-approach with society. - The company helps develop suppliers throughout the whole supply chain.

3. CAPABILITIES OF THE BUYING COMPANY

In order to ensure corporate sustainability, companies must actively manage their supply base. As Krause et al. (2009: p.18) stated: “a company is no more sustainable than its supply chain”. Indeed, it is widely recognised that a company’s sustainability also depends on the sustainability of its suppliers (e.g. Crespín-Mazet and Dontenwill, 2012; Schneider and Wallenburg, 2012; Tate et al., 2012; Foerstl et al., 2010). Therefore, it can be stated that the purchasing function of a company plays a crucial role in achieving corporate sustainability. This chapter will study the capabilities of the buying company that influence its sustainable procurement and the buyer-supplier relationship. Thereby, this chapter will answer the second research question: ‘Which capabilities of the buying company, related to the buyer-supplier relationship, influence sustainable procurement?’

This chapter will first address the different processes of supplier management. When a company aims for sustainability, different procurement processes can be used to achieve sustainability. These processes and the needed capabilities for each of these processes will be discussed. Subsequently, the corporate culture will be discussed, as this can support but also form a barrier for sustainable procurement. Additionally, stakeholder management will be addressed, because it is very important that a company understands the role and influence of stakeholders on the relationship and sustainable procurement. Finally, this chapter will go into the know-how and expertise that is needed to implement sustainability.

3.1 SUPPLIER MANAGEMENT

Sustainable procurement can be defined as the pursuit of economic, environmental and social development objectives through the purchasing process. The purchasing process can be split up into three key processes, namely supplier selection, supplier development and supplier evaluation (Reuter et al., 2010). In order to reach sustainability objectives, companies must actively manage their supply base. Therefore, the purchasing function of a company plays a crucial role in achieving corporate sustainability. As companies want to invest in sustainability, they need to decide how to adapt their supplier management in order to reach sustainability.

Manufacturing companies are increasingly sourcing from a global supply base, thereby exposing themselves to risks that require active management (Reuter et al., 2010). As Foerstl et al. (2010: p.119) state, the purchasing department is “the foremost interface to an increasingly global supply base”, and therefore plays an important role in the mitigation of sustainability risks. Indeed, it is widely recognised that the purchasing function plays a crucial role in ensuring corporate sustainability and mitigating sustainability risks (e.g. Ageron et al., 2012; Foerstl et al., 2010; Carter and Rogers, 2008; Seuring and Müller, 2008). Due to the impact suppliers can have on the sustainability performance of a company (Ageron et al., 2012), supplier management is a crucial issue for companies aiming to maintain a strategically competitive position (Govindan et al., 2013). Since the incorporation of sustainability criteria in the purchasing process is stated to increase complexity (Handfield et al., 2002), good supplier management thus seems an important capability needed for the buying company. With regard to sustainable procurement, Hollos et al. (2012) state companies have two options to increase the sustainability of their suppliers, namely (1) to only select and accept suppliers that meet certain sustainability criteria, or (2) to cooperate with existing or new suppliers to achieve the desired levels of sustainability. The first option is mainly related to the key procurement process of supplier selection, whereas the second option is related to the process of supplier development. The other key procurement process of supplier evaluation is also important, because it is essential to evaluate suppliers to ensure their performance positively affects the sustainability of the buying company (Handfield, 2000). Next, all three key processes of supplier management will be discussed. Additionally, attention will be paid to the incorporation of sustainability criteria, as it is important to identify which capabilities a company needs in order to manage each sustainable procurement process. Related to this, risk management will be discussed, as sustainable procurement demands the incorporation of sustainability risks in purchasing decisions.

SUSTAINABLE SUPPLIER SELECTION

In general, the supplier selection process comprises several tasks (De Boer et al., 2001). The process starts with identifying the needs of the buying company, which are then translated in measurement criteria for potential

suppliers. Subsequently, a selection of all available suppliers is made that meet the criteria, followed by the final choice for a supplier from this group of qualified suppliers (Igarashi et al., 2013). According to Govindan et al. (2013), this supplier selection process can be applied to a large variety of suppliers, ranging from raw material acquisition to end-of-life service providers.

Although many multi-criteria decision making approaches, such as data envelopment analysis and integrated analytic hierarchy process, have been developed for the supplier selection process, only minor attention has been paid to incorporating sustainability criteria in these models (Bai and Sarkis, 2010). Traditionally, suppliers were selected merely on the basis of economic criteria. The studies of Ho et al. (2010) and Liao and Kao (2011) show that quality, price and delivery performance were the most popular criteria considered by decision-makers for supplier selection. However, both environmental and social sustainability criteria should also be applied to the supplier selection process in addition to the conventional criteria in order to achieve corporate sustainability. As the incorporation of sustainability criteria increases the complexity of the purchasing process (Handfield et al., 2002), companies start to work more intensively with fewer suppliers by reducing and restructuring the supply base (Wagner and Johnson, 2004). For example, not all suppliers might be able to upgrade to the new sustainability requirements and will have to be replaced. Additionally, companies could also reduce the supply base through changing the product by cutting component numbers (Wagner and Johnson, 2004), thereby increasing the sustainability of the product if non-sustainable components are left out. However, in order to effectively change the supply base into a more sustainable supply base, a company must first have good supplier management practices in place, as including sustainability criteria will increase the complexity of the process (Handfield et al., 2002).

Wagner and Johnson (2004) note that the bargaining power of buying companies decreases as they reduce their supply options because of sustainability objectives. As a result, companies expose themselves to higher supply risks (Krause et al., 2009; Beske and Seuring, 2014). Especially for critical items, the buying company should strengthen the relationship with its suppliers to circumvent the risks associated with the higher dependence on fewer suppliers. Since several scholars acknowledge that companies with higher levels of sustainability experience competitive advantages (e.g. Hollos et al, 2012; Carter and Rogers, 2008), it can be concluded that incorporating sustainability criteria in the supplier selection process can be worth the increased complexity and risk. In terms of capabilities, the buying company has to be able to deal with the increased complexity of incorporating sustainability criteria in the supplier selection process, and thus needs to have good supplier management and knowledge of sustainability.

SUSTAINABLE SUPPLIER DEVELOPMENT

Supplier development can be defined as “any activity undertaken by a buying firm to improve either supplier performance, supplier capabilities, or both, and to meet the buying firm’s short- and/or long-term supply needs” (Krause et al., 2000: p.34). When a company finds its suppliers lacking in performance and not meeting strategic goals and future needs, it can engage in supplier development programs to help suppliers develop their capabilities and improve their performance (Blome et al., 2014; Modi and Mabert, 2007; Krause et al., 2000). Several scholars have highlighted the potential of supplier development as a competitive advantage (Miemczyk et al., 2012; Reuter et al., 2010), because it is a set of capabilities that are complex, socially created, path-dependent and unique (Blome et al., 2014). Moreover, the process of sustainable supplier development is considered essential for a company that aims to be sustainable. Merely relying on sustainable supplier selection alone, resulting in the exclusion of those suppliers that do not meet the sustainability standards, is not considered sustainable by company’s stakeholders (Reuter et al., 2010).

It is possible to identify three main aspects of supplier development (Sucky and Durst, 2013; Wagner, 2006). First, supplier development can be distinguished by the role of the buying company (Sucky and Durst, 2013). Here, a distinction is made based on the resources the buying company commits to a specific supplier (Wagner, 2006). The literature has categorised the supplier development activities based on the role of the buying company in several ways, but has remained inconclusive. The categorisation of Monczka et al. (1993, as stated in Wagner, 2006), between indirect and direct supplier development activities, seems most accepted in the literature (Sucky and Durst, 2013). Here, direct supplier development involves a direct investment of the buying company’s resources in the supplier. This could include training, education and temporarily dedicating

personnel to the supplier (Krause et al., 2000). Indirect supplier development uses the external market to improve supplier performance and can include the use of multiple suppliers to develop competitive pressure, the use of certifications, in-depth evaluations and feedback, or inducing suppliers to improve their performance based on a desire for increased business with the buying company (Krause et al., 2000; Wagner, 2006). A study of Wagner and Johnson (2004) showed that buying companies often favour direct supplier development, because of the higher expected increase of supplier performance.

The second main aspect of supplier development is related to the motivation of the buying company (Sucky and Durst, 2013; Wagner, 2006). According to Krause et al. (1998), supplier development activities can be reactive or strategic. Reactive development activities are initiated as a response to specific and often urgent problems at the supplier, whereas strategic activities have a planned, forward-looking and systematic approach (Sucky and Durst, 2013; Krause et al., 1998). This strategic form has also been termed proactive supplier development (Sucky and Durst, 2013). Finally, the third main aspect concerns the suppliers to be developed, or the nature of the suppliers (Sucky and Durst, 2013; Wagner, 2006). Here, a distinction can be made between the development of a new supply source or the development of current suppliers. In case of the development of a new supplier, supplier development is stated to take a narrow perspective (Hahn et al., 1990). This creation of a new supply source has also been called reverse marketing (Leenders and Blenkhorn (1988), according to Wagner, 2006). In case of the development of existing suppliers, companies are stated to take a broad perspective (Hahn et al., 1990).

Whenever a buying company wants to invest in sustainable supplier development activities, it needs to have certain capabilities. Wagner and Johnson (2004) and Krause and Ellram (1997) identified several success factors of supplier development, such as the relationship climate and dynamics, knowledge transfer and supplier motivation. Other scholars have also identified the buyer-supplier relationship as an important facilitator for the long-term development of supplier capabilities (e.g. Simpson and Power, 2005; Handfield et al., 2000). According to Wagner and Johnson (2004), the buyer-supplier relationship has to be characterised by trust and cooperation and a constant, open and informal communication and information flow. The buying company thus has to be able to guarantee such a flow of information. Additionally, the buying company has to motivate the supplier to stay actively involved in the development program, through financial incentives and the promise of increased business (Wagner and Johnson, 2004). Moreover, the buying company should increase the supplier's capability to act on its own, whilst ensuring that the effect of the development program will last after the buying company stops actively supporting the supplier (Wagner and Johnson, 2004). These capabilities are all related to the capability of good supplier management. Moreover, these scholars (e.g. Simpson and Power, 2005; Wagner and Johnson, 2004; Handfield et al., 2000) confirm that buyer capabilities and the buyer-supplier relationship together determine sustainability. The final capability needed is more specific for sustainability, as the buying company needs to have knowledge on relevant sustainability practices in order to transfer this to suppliers in development programs (Blome et al., 2014; Sucky and Durst, 2013).

SUSTAINABLE SUPPLIER EVALUATION

Supplier evaluation provides information on whether the supplier's actual performance is meeting the expectations of the buying company (Handfield, 2000). Based on the evaluation, the buying company can determine whether the suppliers are capable of meeting current and future business needs (Prahinski and Benton, 2004) and whether the performance of suppliers positively affects the strategic goals of the buying company. Moreover, sustainable supplier evaluation enables companies to improve their sustainability performance by identifying improvement opportunities which could reduce negative environmental and/or social impacts of their supplier's activities (Govindan et al., 2013). As with the sustainable supplier selection process, a comprehensive sustainability evaluation of suppliers calls for an increased number of criteria, thereby increasing the complexity of the process (Bai and Sarkis, 2010). Therefore, also for sustainable supplier evaluation the company needs to have relevant knowledge of sustainability practices and good supplier management practices in place.

Although evaluation is an essential process to ensure the performance of suppliers positively affects the sustainability of the company (Handfield, 2000), Prahinski and Benton (2004) showed that supplier evaluation alone is unlikely to result in performance improvement, unless it is supported by some sort of supplier

development program. Especially for sustainable procurement, merely evaluating supplier will not result in a better sustainability performance of the suppliers. As mentioned before, Hollos et al. (2012) identified two options companies have to increase the sustainability of their suppliers, namely (1) only selecting and accepting suppliers that meet certain sustainability criteria, or (2) cooperating with existing or new suppliers to achieve the desired levels of sustainability. In their study on supplier management, Reuter et al. (2010) also identified that companies often view supplier management as existing of two processes: supplier selection and supplier development. They found aspects of the evaluation process, such as on-site audits, to be incorporated in the supplier selection process. In line with these results, Vachon and Klassen (2008) and Hollos et al. (2012) also stated that sustainable procurement exists of two processes, namely supplier selection and supplier development. As other researchers have also tended to include the process of evaluation into the procurement processes of selection and development (e.g. Bai and Sarkis, 2010; Modi and Mabert, 2007; Krause et al., 2000), this research will only consider sustainable supplier selection and sustainable supplier development as key supplier management processes towards achieving corporate sustainability.

RISK MANAGEMENT

Several scholars have identified sustainability risks as a motivation for companies to engage in sustainable procurement activities (e.g. Meehan and Bryde, 2011; Seuring and Müller, 2008; Cousins et al., 2004). Examples of such risks are scarcity of natural resources, hazards in the natural environment and worker and public safety (Cousins et al., 2004; Shrivastava, 1995). In order to effectively manage the supply risks associated with sustainability issues, risk management has to be incorporated in the procurement processes (Ageron et al., 2012; Koplin et al., 2007). Especially the risk of reputational harm drives companies to establish codes of conducts for suppliers (Reuter et al., 2010) and to integrate risk management in the supplier selection and evaluation process (Micheli et al., 2009). Proactive engagement in sustainable practices can even lower the risk of the introduction of new and costly regulations (Porter and van der Linde, 1995). Furthermore, collaborating with suppliers as a form of supplier development is expected to improve a company's performance and to provide an efficient risk management tool (Ageron et al., 2012). Additionally, incorporating risk management in sustainable procurement via the adoption of standards, supplier base reduction and increased cooperation can reduce the complexity and uncertainty related to supply (Beske and Seuring, 2014). However, acting upon the risks of sustainability issues can also results in more risks. As mentioned previously, Krause et al. (2009) and Beske and Seuring (2014) mention more risks may be incurred as a company reduces the number of suppliers it considers because of sustainability objectives. Therefore, it is important that companies pay considerable attention to risk management, in order to ensure their competitive position (Ageron et al., 2012; Foerstl et al., 2010). By systematically addressing sustainability issues, companies can become aware of and manage new risks (Shrivastava, 1995). The incorporation of sustainability risks in the procurement processes is thus an important capability needed for sustainable procurement.

3.2 CORPORATE CULTURE

In identifying the capabilities of the buying company that support sustainable procurement, the literature on drivers and barriers of sustainable procurement provides valuable insights. One of the key drivers of sustainable procurement is top management support (Giunipero et al., 2012). Top managers are not only responsible for the company's activities and strategy, but also influence the culture of the company (Carter and Jennings, 2002). Schneider and Wallenburg (2012) confirm this, as they found top management can positively influence sustainable procurement through introducing a corporate sustainability strategy or by "providing a compelling role model and enforcing corporate culture and values in all relevant corporate decisions" (p. 248). The corporate culture of a company can thus be seen as an important capability that can support sustainable procurement.

In this research, corporate culture encompasses aspects related to how the company works. The corporate culture is thus influenced by more than just top management. Employees can also influence the corporate culture and thereby the company's sustainable procurement maturity level (Hoejmose and Adrien-Kirby, 2012; Park and Stoel, 2005; Carter and Jennings, 2002). Their personal commitment, beliefs and initiatives can positively influence the corporate culture, which in turn can support sustainable procurement (Walker et al., 2008). Additionally, the corporate history of a company, such as a tradition of working on sustainability issues,

is likely to support sustainable procurement (Andersen and Skjoett-Larsen, 2009). According to Andersen and Skjoett-Larsen (2009), having a historical track of being engaged in sustainability issues, choosing ethically sound suppliers and having long-term relationships with suppliers supports sustainable procurement.

Nevertheless, it must be noted that the corporate culture can also have a negative effect on sustainable procurement. One of the key barriers of sustainable procurement that appears frequently in the literature is related to the costs of sustainability. A corporate focus on costs can be seen as part of the corporate culture and can negatively influence sustainable procurement (Hoejmosen and Adrien-Kirby, 2012). Companies can be reluctant to invest in sustainability, due to the uncertainty of the benefits that might be gained (Hoejmosen and Adrien-Kirby, 2012), or because they believe it will add costs and not immediately deliver benefits (Giunipero et al., 2012). As Curkovic and Sroufe (2007) showed, since many of the benefits of sustainable procurement are intangible, companies tend to not evaluate these in their cost assessment. As a result, companies perceive sustainable procurement as being relatively costly compared to the perceived benefits. If such a corporate focus on costs is integrated in the corporate culture, this influences the ethical behaviour of the purchasing managers (e.g. Cambra-Fierro et al., 2008; Zhu et al., 2007) and thereby also influences sustainable procurement. Next to a corporate focus on costs, other aspects of the corporate culture can also hinder sustainable procurement. Cooper et al. (2000) identified several aspects of the corporate culture that acted as barriers for sustainable procurement. Amongst others, mid-level managers who are only concerned with their own personal gain instead of sustainability and a lack of support and enthusiasm for sustainability amongst employees were identified as aspects of the corporate culture that hinder sustainable procurement.

CROSS-FUNCTIONAL COOPERATION

One other important aspect of the corporate culture that could be identified from the literature on drivers of sustainable procurement is cross-functional cooperation. According to Fawcett and Magnan (2002: p. 344), internal cross-functional cooperation is “the crux of supply chain management initiatives”. As with the implementation of any strategy, a corporate sustainability strategy including sustainable procurement should be internally aligned (Schneider and Wallenburg, 2012). This alignment of functional and corporate strategies requires that managers need to understand both the business strategy and the objectives of the purchasing department. For the purchasing manager to have a clear understanding of the business strategy, he/she must be either involved in the business strategic management process or informed about the business strategy by a member of the top management team (González-Benito, 2007). This cross-functional cooperation thus requires time and effort from both top managers as well as purchasing managers, but it is considered to be of vital importance for business success (González-Benito, 2007). Indeed, Boks (2006) has also identified cross-functional cooperation as a key success factor for the integration of sustainability considerations. In fact, a lack of consensus and clarity from top management on the corporate sustainability strategy is even considered as a barrier for sustainable procurement (Giunipero et al., 2012). This lack of clear communication of the sustainability strategy has also been identified by Cooper et al. (2000) and Seuring and Müller (2008) as a challenge for sustainable procurement. Thus, when implementing a corporate sustainability strategy and subsequently sustainable procurement, the different functions within a company have to be aligned. This alignment of the procurement strategy with a company’s overall strategy has also been called ‘strategic purchasing’ (Carr and Pearson, 1999).

Based on their literature review, Schneider and Wallenburg (2012: p.253) propose that: “The implementation of sustainable sourcing driven by corporate management requires, and consequently results in, an intensified cross-functional cooperation and internal alignment of the purchasing department”. According to González-Benito (2007), such a cross-functional cooperation and internal alignment would result in the participation of purchasing managers in the strategic planning process and strong knowledge of the strategic objectives on the part of purchasing professionals. Moreover, other corporate functions could increase the amount of stakeholders the procurement department considers in their strategic objectives and they could influence what and how procurement is buying (Schneider and Wallenburg, 2012). Krause et al. (2009) confirm this, as they state suppliers are selected and retained or eliminated from a company’s supply base by various managers from across the company. Another form of cross-functional cooperation could be that purchasing managers are included in the process of new product development (Petala et al., 2010). This way, based on their knowledge of the existing sustainable supply market, they could influence the components and the layout of a product.

It can be concluded that corporate culture is an important capability of the buying company that can either hinder or support sustainable procurement. For example, if top management promotes sustainability in the corporate culture, this can support sustainable procurement, but when top management focusses on costs, this is also transmitted to the employees and inhibits sustainable procurement. Additionally, a corporate culture in which cross-functional cooperation is normal, results in better aligned functional and corporate strategies, which in turn supports sustainable procurement.

3.3 STAKEHOLDER MANAGEMENT

From the literature on drivers and barriers of sustainable procurement, also stakeholder management could be identified as an important capability needed for the buying company. Stakeholder pressure can be seen as a key driver of sustainable procurement (Hoejmose and Adrien-Kirby, 2012), because stakeholders could harm the reputation of a company. Indeed, based on their literature review, Schneider and Wallenburg (2012: p.243) state: “extant literature stresses the general importance of considering different stakeholders when implementing sustainable sourcing”. Tate et al. (2012) also identified in their literature review that stakeholder theory was the most frequently used theoretical lens to study sustainable procurement. Stakeholders can be defined as “any group or individual who can affect or is affected by the achievement of the organisation's objectives” (Freeman, 1984: p. 46). Stakeholder theory addresses how the differing needs of stakeholders influence organizational outcomes (Tate et al., 2012). With regard to sustainable procurement and the corporate sustainability strategy of a company, many stakeholders can be identified. According to Miemczyk et al. (2012), these stakeholders can include consumers, governments, NGOs, shareholders, activists, competitors, suppliers and even individual managers. However, the two main stakeholder pressures for engaging in sustainable procurement practices are government legislation and societal pressure (Hoejmose and Adrien-Kirby, 2012; Worthington et al., 2008). Walker et al. (2008) and Bowen et al. (2001) identified that government regulation and legislation is a major driver for environmental efforts, as companies have to adjust their internal processes to comply with legislation. The other key stakeholder pressure comes from society. According to Walker et al. (2008), the societal pressure includes the increased public awareness of sustainability issues, consumer demand for sustainable products and the influence of NGOs. Giunipero et al. (2012) found that customers, local communities and NGOs encourage companies to consider sustainability impacts in their decision making. Since consumers eventually only buy products that meet their demand, they indeed have a large influence on the success of a company (Roberts, 2003).

Miemczyk et al. (2012) stated that individual companies may experience difficulties with implementing sustainable procurement if they do not understand the role and influence of stakeholders. Indeed, several scholars have identified stakeholder management as a key success factor of sustainable procurement (e.g. Crespín-Mazet and Dontenwill, 2012; Schneider and Wallenburg, 2012; Van Tulder et al., 2009). Of all relevant stakeholders, especially NGOs have gained an increased importance in literature (Crespín-Mazet and Dontenwill, 2012). Several scholars have noted an evolution from the coercive influence of NGOs on companies towards more partnerships and cooperation (e.g. Crespín-Mazet and Dontenwill, 2012; Perez-Aleman and Sandilands, 2008). NGOs can help to develop a company's resources by providing expertise (Crespín-Mazet and Dontenwill, 2012), or help to identify sustainable suppliers (Miemczyk et al., 2012). Including stakeholder management in sustainable procurement can thus be beneficial for a company, but it also induces changes for the procurement processes (Pagell et al. 2010). Since the achievement of sustainability involves managing multiple stakeholders simultaneously, all with different ambitions and objectives (Miemczyk et al., 2012), including stakeholder management increases the complexity of the procurement processes. Crespín-Mazet and Dontenwill (2012) stated the purchaser's function might increasingly involve identifying and engaging stakeholders, which requires time to build trust, to learn to interact and to increase commitment. Furthermore, according to Pagell et al. (2010), purchasers have to determine relevant stakeholder weights and prioritise them accordingly. Although stakeholder management adds complexity to the procurement process, its importance has widely been recognised (e.g. Ageron et al., 2012; Crespín-Mazet and Dontenwill, 2012; Schneider and Wallenburg, 2012; Tate et al., 2012; Van Tulder et al., 2009). Especially since companies may experience difficulties with implementing sustainable procurement if they do not understand the role and influence of stakeholders (Miemczyk et al. 2012), the capability of the buying company to properly assess stakeholder weights, prioritise them accordingly and engage stakeholders in the purchasing process is an essential capability needed.

3.4 KNOW-HOW AND EXPERTISE

As has already been stated in section 3.1 on supplier management, the buying company needs to have knowledge on relevant sustainability practices in order to implement sustainable procurement and transfer this to its suppliers (Blome et al., 2014; Sucky and Durst, 2013). Indeed, the buying company needs know-how and expertise in the area of sustainability, as Beske et al. (2014) found buying companies often have to provide the necessary knowledge to their suppliers to make sustainable production possible. Moreover, the buying company needs to have know-how and expertise in the area of sustainability in order to properly assess the knowledge possessed by its suppliers (Beske et al., 2014). This is important for both sustainable supplier selection and sustainable supplier development, as the buying company needs to understand the situation at the supplier in order to act upon it. Indeed, knowledge of a supplier's business allows the buying company to better understand the sustainability impact of their practices (Simpson and Power, 2005). Additionally, this knowledge allows the buying company to select only those suppliers that either meet the criteria or are expected to be developable in order to meet the sustainability demands (Reuter et al., 2010). The know-how and expertise of the buying company are thus important capabilities needed for realising sustainability.

Andersen and Skjoett-Larsen (2009) found knowledge enhancing mechanisms to be of great importance in the embedding of sustainability in an organisation. They stated knowledge enhancing mechanisms "serve to enhance and maintain the knowledge of the actors involved in working with CSR in supply chains and thereby increase their abilities and skills" (Andersen and Skjoett-Larsen, 2009: p.81). In order to increase their own knowledge, buying companies could cooperate with others, for example NGOs (Reuter et al., 2010). Gold et al. (2010) see this access to knowledge as a major incentive to build partnerships and cooperate with other parties. Although increasing their knowledge through cooperation may be resource-consuming for the buying company, it is often considered very valuable (Carter and Rogers, 2008). After all, relevant knowledge of sustainability allows the buying company to initiate quick and proper follow-up actions in case of supplier misconduct (Reuter et al., 2010) and is needed in order to implement sustainable procurement.

3.5 CONCLUSION

This chapter has discussed several capabilities of a buying company which could affect its sustainability and the buyer-supplier relationship, in order to answer the second research question: 'Which capabilities of the buying company, related to the buyer-supplier relationship, influence sustainable procurement?'.

The first capability that was discussed was that of supplier management. As the complexity of supplier management will only increase when sustainability issues are incorporated, it is essential that the company has good supplier management capabilities on beforehand. There seem to be two main options for a buying company to increase its sustainability, namely sustainable supplier selection or sustainable supplier development. In terms of capabilities, the buying company has to be able to deal with the increased complexity of incorporating sustainability criteria in the supplier selection process, as well as the increased supply risk due to the reduced supply base and the reduced bargaining power. For sustainable supplier development, the buying company has to be able to motivate the supplier, to transfer knowledge and to guarantee a constant, open and informal communication and information flow. Here, the buyer-supplier relationship has been identified as an important facilitator for the long-term development of supplier capabilities. Furthermore, by incorporating sustainability risk management in supplier management, companies can become aware of and manage new risks. Additionally, the integration of risk management in procurement can result in proactive engagement in sustainability practices, thereby improving a company's performance and reducing the risk of the introduction of new and costly regulations.

The second capability identified was the corporate culture. The corporate culture encompasses aspects related to how the company works and can thereby also have a large influence on the level of sustainable procurement that can be reached. For example, if top management promotes sustainability in the corporate culture, this can facilitate sustainable procurement, but when top management focusses on costs, this is also transmitted to the employees and inhibits sustainable procurement. Additionally, a corporate culture in which cross-functional cooperation is normal will result in better aligned functional and corporate strategies, which in turn also facilitates sustainable procurement.

The third capability which was discussed was stakeholder management. It has been argued that companies may experience difficulties in implementing sustainable procurement if they do not understand the role and influence of stakeholders (e.g. Crespín-Mazet and Dontenwikk, 2012; Miemczyk et al., 2012). The capability of the buying company to properly assess stakeholder weights, prioritise them accordingly and engage stakeholders in the purchasing process is thus an essential capability for sustainable procurement. Finally, the fourth capability was the know-how and expertise of sustainability that is needed. In order to implement sustainability and set sustainability criteria, but also to help suppliers, the company needs to have sufficient knowledge of sustainability.

It must be noted that some capabilities may have a larger influence on the level of sustainable procurement that can be reached than on the buyer-supplier relationship itself. Yet, they are still of great importance. In the quest for more collaborative relationships to support sustainable procurement, Plane and Green (2012) showed that challenges lie in terms of access to appropriately skilled employees, or in other words, the capabilities of the company. So, whereas sustainable procurement requires a supporting buyer-supplier relationship on the one hand, on the other hand the buyer also needs to have these capabilities to achieve a certain level of sustainability.

4. CAPABILITIES OF THE SUPPLIER

As has been mentioned previously, a company's sustainability also depends on the sustainability of its suppliers (e.g. Crespín-Mazet and Dontenwill, 2012; Schneider and Wallenburg, 2012; Tate et al., 2012; Foerstl et al., 2010). Therefore, it is important to examine the capabilities of the supplier, as they can have an impact on the sustainability performance. Indeed, sustainable procurement takes two parties to ensure sustainability (Gadde and Snehota, 2000). It is important to consider the interests and resources of both the buyer and the supplier, as they together determine the sustainability. The previous chapter has already discussed important capabilities of the buying company which could influence sustainable procurement. This chapter will study the capabilities of the supplier, thereby answering the third research question: 'Which capabilities of the supplier, related to the buyer-supplier relationship, influence sustainable procurement?'

In their survey among suppliers, Caniëls et al. (2013) found that 35 percent of the respondents indicated to have difficulties with complying to sustainability requirements from buying companies. This chapter will first address the access to resources, as this has been indicated to be one of the main reasons why suppliers have difficulties with complying to sustainability requirements (e.g. Grekova et al., 2014; Caniëls et al., 2013; Lee and Klassen, 2008). Subsequently, this chapter will address the know-how and expertise of the supplier and finally the influence of the corporate culture on sustainability. Compared to the previously discussed capabilities of the buying company, some different capabilities will be addressed for the supplier. This is due to the fact that in the Dutch F&B industry, food processors are increasingly pressured to increase their sustainability, whilst simultaneously guaranteeing affordable prices for consumers (Grekova et al., 2014). Since the buying companies are thus challenged to act upon sustainability, the initiative for more sustainability is also assumed to come from them. Indeed, Lee (2008) also stated that the recognition of the importance of sustainability by suppliers comes from supply chain pressure, instead of the societal pressure that challenges the buying company. As a result, this research investigates buyer-supplier relationships and sustainable procurement from the perspective of the buying company. This implies that other capabilities than those previously discussed for the buying company are more relevant to study for the supplier. For example, as the sustainability initiative is likely to come from the buying companies, they are expected to have access to the resources needed. However, suppliers often lack the resources needed (Lee, 2008) and therefore, the access to resources is an important capability needed for the suppliers, but less relevant for the buying company.

4.1 ACCESS TO RESOURCES

Improving a company's sustainability requires investments from resources, but there are always limitations to the investments a company can make. Moreover, every investment competes with other opportunities (Gadde and Snehota, 2000). Since Lee and Klassen (2008) stated that supplier companies often have limited resources available to invest in sustainability, this lack of financial resources may pose significant challenges for ensuring sustainability. In their study on participation of suppliers in greening supply chains, Caniëls et al. (2013) found that suppliers' compliance with sustainability criteria was indeed dependent on the availability of human, technical and financial resources. Grekova et al. (2014) have also recognised a lack of resources and the availability of a sustainability budget as potential constraints for sustainability. Additionally, suppliers that serve multiple buyers are unlikely to make buyer specific investments in specific sustainability activities, unless they have a long-term relationship with the buyer and guaranteed future business opportunities (Caniëls et al., 2013). Indeed, Klassen and Vachon (2003) also reported the importance of a close and collaborative relationship for the supplier to invest resources in sustainability.

In their study, Lee and Klassen (2008) found external resources to be a solution for the lack of financial and technical resources available. They found more direct involvement and support from the buying company could provide an effective means to transfer resources and to compensate for the suppliers' deficient internal resources. However, as Gadde and Snehota (2000) mentioned, in some situations the potential relationship benefits can be exceeded by the needed investment of resources. In this case, the buying company is most likely not willing to provide support to compensate for the suppliers' deficient internal resources. In addition to the buying company, Lee and Klassen (2008) found supporting organisations outside the supply chain to be a critical resource that suppliers could access and utilise for improvement of their sustainability. This includes for example NGOs or governments which deliver support and help to develop more cost-effective sustainability

solutions (Lee and Klassen, 2008). From their study, it could be concluded that although the availability of financial and technical resources is necessary to ensure sustainability, the access to external resources was more important in the development of capabilities that ensure sustainability (Lee and Klassen, 2008).

Dubois and Pedersen (2002) also recognise the importance of external resources and see opportunities for accessing resources at the suppliers' other relationships. They argue that as a supplier usually serves more than one buying company, the resources that can be accessed are a function of all the buyer-supplier relationships a supplier has (Dubois and Pedersen, 2002). To clarify, as sustainability investments directed towards a single buying company will also benefit their other customers, Dubois and Pedersen (2002) argue the supplier can also gain resources from these customers. In sum, it can be concluded that resources are essential for the sustainability of the supplier, but that a lack of resources could be overcome when the supplier has access to external resources.

4.2 KNOW-HOW AND EXPERTISE

Similar to the capabilities needed for the buying company, the supplier also needs the relevant know-how and expertise to be able to reach a certain sustainability level. Caniëls et al. (2013: p.140) pointed out: "A large group of suppliers might lack technical know-how to comply with sustainability requirements, let alone that they are able to actively engage in ... initiatives". Lee and Klassen (2008) also recognised suppliers often lack the know-how and expertise needed to deal with sustainability issues. For example, they struggle with integrating new sustainability insights into business processes, such as product development, and with the use of analytic tools, such as life-cycle assessment. The lack of relevant knowledge thus seems to inhibit sustainability. Indeed, Caniëls et al. (2013) found that relevant knowledge and know-how were positively related to suppliers' participation in sustainability initiatives. The know-how and expertise of the supplier are thus important capabilities needed for realising sustainability.

As stated in section 3.4, knowledge enhancing mechanisms are considered of great importance in the embedding of sustainability in an organisation (Andersen and Skjoett-Larsen, 2009). Andersen and Skjoett-Larsen (2009) distinguished between internal and external knowledge enhancement. Internal knowledge enhancement can be achieved through employee training courses and sharing of experiences, which can for example increase the knowledge of employees, the awareness of the importance of sustainability and the consequences for non-compliance. External knowledge enhancement can be achieved through frequent communication and dialogue with the buyer and visits from and to buyers, thereby creating a common understanding of how sustainability should be dealt with. This external knowledge enhancement has also been recognised by other scholars as important for ensuring sustainability (e.g. Caniëls et al., 2013; Lee and Klassen, 2008; Simpson and Power, 2005; Krause et al., 2000).

According to Lee and Klassen (2008), when suppliers receive support from the buying company involving information sharing, training and consultancy, they obtain explicit knowledge and skills related to sustainability. This enabled a suppliers' sustainability improvement. Indeed, it has been shown that inter-organisational learning and communication are crucial in enhancing awareness of the benefits of sustainable activities and in increasing the compliance capabilities of suppliers (Caniëls et al., 2013). It can be concluded that relevant know-how and expertise are capabilities a supplier needs to ensure sustainability. Previous research has provided several ways in which this knowledge can be increased. However, it must be noted that most require the active involvement of the buying company. It thus seems that whenever a supplier does not have the required know-how, a buying company is forced to either use some form of sustainable supplier development or to select a more capable supplier.

4.3 CORPORATE CULTURE

As has been recognised in the previous chapter, the corporate culture of a company can be seen as an important capability that can either support or hinder sustainability. Similar to the buying company, a suppliers' sustainability is likely to vary depending on top management support, whether or not there is a corporate history of working with sustainability issues and the attitude of employees. A culture sensitive to sustainability issues in combination with a positive attitude of employees will support sustainability (Caniëls et

al., 2013). Additionally, Spekman and Carraway (2006) highlight the importance of the willingness to learn from others. In the same light, Caniëls et al. (2013) argue the willingness of suppliers to participate in sustainability initiatives of the buying company should also be taken into account. Although suppliers may lack the resources to invest in sustainability, they might still be very willing to participate in sustainability initiatives (Caniëls et al., 2013). This willingness to learn and participate is related to a buyer-supplier relationship where learning is valued and information is shared openly, thereby creating a sense of harmony and potentially increasing the capabilities of both parties (Spekman and Carraway, 2006). As a willingness to learn and participate has been argued to be a pre-condition for collaboration and engagement (Spekman and Carraway, 2006), this is very important in light of sustainability.

However, Gadde and Snehota (2000) showed that sustainability initiatives of the buying company are not always feasible, as suppliers may lack the motivation and interest for engaging in the initiatives. Caniëls et al. (2013) confirm this, as they state that in contrast to manufacturing companies, which sometimes need to fulfil governmental sustainability requirements, smaller supplier companies are often not forced by legislation to include sustainability issues in their practices. This could indicate a difference in motivation between the buying company and the supplier. Moreover, Simpson et al. (2007) found that when buying companies invested in their relationship with suppliers to increase sustainability, this actually resulted in less sustainability. Due to the high commitment from the buying company, the suppliers felt there was a decreased chance of penalties for non-compliance. Of course, this would probably only be the case when the supplier lacks motivation and interest to engage in sustainability issues, but it has to be taken into account. High involvement from the buying company can also increase supplier motivation (Simpson and Power, 2005; Rao, 2002; Geffen and Rothenberg, 2000). Geffen and Rothenberg (2000) found that when the buying company did not get involved in the suppliers' activities, there was a higher level of frustration and failure of the integration of sustainability. Similarly, Simpson and Power (2005) state a joint approach between the buying company and the supplier to sustainability goals may be an effective way to ensure sustainability. Such a joint approach and active involvement from the buying company can increase the motivation and willingness of a company to engage in sustainability, thereby creating a corporate culture that can support sustainability. Overall, it can be concluded that the willingness of the supplier to engage in sustainability can support sustainable procurement, but that the lack of motivation or interest can also hinder sustainable procurement. Thus, similar to the capability of the buying company, the corporate culture is also an important capability of the supplier that has to be taken into account.

4.4 CONCLUSION

This chapter has discussed several capabilities of the supplier that could influence its sustainability and the buyer-supplier relationship, in order to answer the third sub-research question: 'Which capabilities of the supplier, related to the buyer-supplier relationship, influence sustainable procurement?'. As sustainable procurement takes two parties to ensure sustainability, it is important to also study the suppliers' capabilities.

The first capability that was identified was the access to resources. Different from the initiative taking buying company, the supplier is often the party that has to comply to sustainability requirements. As investing in sustainability requires resources and suppliers often lack the internal resources, the access to (external) resources is an important capability needed for suppliers. Scholars have identified potential external resources for suppliers, ranging from the buying company to NGOs or other customers of the supplier. Next to the access of resources, also know-how and expertise are important capabilities needed in order to be sustainable. Similar to the buying company, the supplier also needs relevant know-how in order to improve its sustainability. A lack of know-how could be resolved by internal actions like employee training courses, or by external knowledge enhancement through communication and supplier development activities from the buying company. Finally, the corporate culture has also been identified as an important capability needed for the supplier. Similar to the buying company, a suppliers' sustainability is likely to vary depending on top management support, whether or not there is a corporate history of working with sustainability issues and the attitude of employees. Furthermore, the willingness to learn and participate in sustainability initiatives is also a crucial aspect of the corporate culture. In total, three capabilities were found to be especially important for the supplier. These capabilities have an influence on the level of sustainable procurement that can be reached, but also on the buyer-supplier relationship. Therefore, they are very relevant to take into account when looking at how buyer-supplier relationships can facilitate sustainable procurement.

5. BUYER-SUPPLIER RELATIONSHIPS

As poor sustainability performance of suppliers is largely reflected onto the buying company (Schneider and Wallenburg, 2012), it has the potential to harm the buying company's reputation (Reuter et al., 2010). Therefore, companies have to manage their suppliers carefully and build good supplier relationships. As Simpson and Power (2005: p. 66) claim: "Supply relationships may present a key way for business to influence the sustainability of their products and services". Indeed, several scholars have identified the importance of supplier relationships for sustainability (e.g. Beske et al., 2014; Duffy et al., 2013; Schneider and Wallenburg, 2012; Sharfman et al., 2009; Holt, 2004). Gualandris et al. (2014) even argue that good buyer-supplier relationships do not only facilitate the implementation of sustainability, but also make it more effective. Therefore, this chapter will study the concept of buyer-supplier relationships in order to answer the fourth research question: 'Which aspects of buyer-supplier relationships can influence sustainable procurement?'.

First, this chapter will shortly discuss the purchasing portfolio model of Kraljic (1983), as this is often used to explain the buyer-supplier relationship (Pagell et al., 2010; Caniëls and Gelderman, 2007; Wagner and Johnson, 2004; Gelderman and Van Weele, 2003). Next to Kraljic's widely accepted model, there are also other models that explain the buyer-supplier relationship based on the type of product purchased (e.g. Bensaou, 1999; Gelderman and Van Weele, 2000). Although these models have tried to differentiate themselves from the portfolio model of Kraljic, several scholars state the fundamental assumption of all portfolio models seems to be the differences in power and dependency between buyers and suppliers (e.g. Caniëls and Gelderman, 2007; Dubois & Pedersen, 2002).

As power and dependency are thus considered very important concepts in the buyer-supplier relationship (e.g. Caniëls and Gelderman, 2007; Dubois & Pedersen, 2002; Gelderman and Van Weele, 2000; Kraljic, 1983), these will be the first aspects of the buyer-supplier relationship that are discussed. Next, this chapter will address the aspects of trust and commitment, as these are not only central concepts in the buyer-supplier relationship (Wagner, 2011), but also considered especially important when companies are looking for improved sustainability performance (e.g. Canner and Hanmer-Lloyd, 2007; Pedersen and Andersen, 2006). Subsequently, this chapter will address the aspects of information exchange and communication, as these are considered both basic requirements for any buyer-supplier relationship (Fawcett et al., 2011) as well as especially important for sustainable procurement (e.g. Beske and Seuring, 2014; Hoejmoose and Adrien-Kirby, 2012; Paulraj et al., 2008). Next, geographical distance in buyer-supplier relationships will be discussed, because it has been argued this can influence all other aspects of the buyer-supplier relationship (Hoejmoose et al., 2013). Finally, codes of conduct will be discussed, as they are a popular and relatively easy way to make the supply chain more sustainable (Beske and Seuring, 2014; Hoejmoose and Adrien-Kirby, 2012; Wu and Pagell, 2011). Since they describe the value orientation of the purchasing company and its expectations from their suppliers (Hoejmoose and Adrien-Kirby, 2012; Amaeshi et al., 2008), they could have an important influence on the buyer-supplier relationship.

5.1 KRALJIC'S PURCHASING PORTFOLIO MODEL

In general, but also in sustainable procurement, not all purchases and buyer-supplier relationships can be handled in the same way (Gelderman and Van Weele, 2003). In fact, companies are found to benefit from engaging in a variety of relationships with different suppliers (Caniëls and Gelderman, 2007). In order to effectively apply procurement strategies and manage relationships, a classification of the types of purchases is needed. A widely accepted approach to understanding buyer-supplier relationships and procurement strategies is Kraljic's (1983) purchasing portfolio model (Pagell et al., 2010; Caniëls and Gelderman, 2007; Wagner and Johnson, 2004; Gelderman and Van Weele, 2003). According to Kraljic (1983), when the purchasing department allocates its limited resources in line with his portfolio model, purchasing performance will increase.

Kraljic's portfolio model classifies supply items on the basis of profit impact and supply risk (Gelderman and Van Weele, 2003). The profit impact of an item has been defined in terms of volume purchased, percentage of total purchase costs or impact on product quality or business growth. Supply risk is related to the availability of

an item, the number of suppliers, competitive demand, storage risks and substitution possibilities (Kraljic, 1983). Based on these classifications, four categories of purchased items exist, as can be seen in Table 4.

Table 4: Kraljic purchasing portfolio model (adapted from Kraljic, 1983, p.111)

	Supply risk	
	Low	High
Profit impact	<i>Leverage items</i>	<i>Strategic items</i>
High	Exploitation of purchasing power	Diversify, balance, or exploit
Low	<i>Non-critical items</i>	<i>Bottleneck items</i>
	Efficient processing	Volume assurance

According to Kraljic (1983), each category requires a distinctive approach, whose complexity should be in proportion to the strategic implications. This means that decisions on strategic items may for example require a large range of analytic techniques, whereas for decisions on non-critical items a simple market analysis can suffice. Caniëls and Gelderman (2007) state that the main purpose of Kraljic's portfolio model is to identify strategic items. Strategic items are of considerable value to the buying company, because of their high impact on profit and high related risk. Kraljic (1983) termed them scarce and/or high valued materials, which should be purchased from one supplier (Pagell et al., 2010). In order to reduce the high supply risk, companies should aim for close partnership relationships with its suppliers, thereby creating mutual trust and commitment and reducing the supply risk (Pagell et al., 2010; Caniëls and Gelderman, 2007; Kempeners and Van Weele, 1997).

Bottleneck items also have a high supply risk, but this is mainly related to the dominant power position suppliers have for these products (Kraljic, 1983). Caniëls and Gelderman (2007) stated that buyers and suppliers are not highly involved in the relationship in this category. This is due to the fact that the buying company is mainly concerned with contingency planning and volume assurance, if necessary even at additional costs (Caniëls and Gelderman, 2007). Indeed, relationships are not used here to safeguard against the supply risk. Pagell et al. (2010) also confirm risk reduction for bottleneck items is mainly achieved through keeping safety stocks from alternative sources, instead of maintaining close relationships.

Whereas bottleneck items are characterised by supplier power, leverage items are buyer dominated (Kempeners and Van Weele, 1997). The supply risk is minimal, but these items do represent a large share of the end product's cost price (Kraljic, 1983). Leverage items are characterised by the large amount of suppliers that can deliver them. Since suppliers and products are thus substitutable, there is no need for long-term supply contracts (Caniëls and Gelderman, 2007). In fact, buyers usually even exploit their purchasing power (Gelderman and Van Weele, 2003), because small percentages of cost savings can have a large impact on profit. The final category of non-critical items is also characterised by the existence of many alternative suppliers (Kraljic, 1983). Moreover, non-critical items only have a small value per unit and the handling of these items happens on a routine basis (Caniëls and Gelderman, 2007). For this category too, relationships are normally not very close and the buying company often uses simple contracts for doing business (Kempeners and Van Weele, 1997).

According to the model of Kraljic (1983), it thus seems that investing in close relationship is only really needed for strategic items. However, in light of the increasing importance of sustainability, it is important to ask if and how sustainability affects the categorisation of products in Kraljic's model. Of course, shifts in supply or demand patterns can alter the category an item belongs to (Kraljic, 1983). As a consequence of the sustainability issues companies face these days, changes of strategies and tactics may be needed. The risk of an effect on one or more elements of the triple bottom line has to be taken into account. For example, an item can graduate from non-critical to strategic due to increasing scarcity of natural resources. A recent study by Pagell et al. (2010) showed that a number of leading companies in sustainable supply chain management were not making purchasing decisions based on the traditional model of Kraljic anymore. Instead, they treated suppliers of leverage items as if they were strategic suppliers, developing types of buyer-supplier relationships associated with strategic items (Pagell et al., 2010). More specifically, the buying companies paid premium prices, offered long-term contracts and provided access to supplier development resources. Most companies did so out of a concern for supply-base continuity. According to Pagell et al. (2010), supply base continuity is aimed at ensuring that all suppliers do not only stay in business, but also that they thrive, reinvest, innovate

and grow. For these companies, supply base continuity was seen as an important aspect in ensuring sustainable supply chain management. Based on the findings of Pagell et al. (2010), it can be seen that companies who are concerned about sustainability invest more in closer buyer-supplier relationships, in contrast to what the traditional model of Kraljic (1983) recommends. In line with the results of the study of Pagell et al. (2010), Krause et al. (2009) also highlight the need for closer relationships for sustainability.

Although the portfolio model of Kraljic (1983) can be an effective model to categorise purchased items and explain buyer-supplier relationships, it seems it does not represent real world practices anymore these days. With the increasing importance of sustainability, Pagell et al. (2010) showed companies no longer make decisions based on the traditional model of Kraljic (1983). Crespín-Mazet and Döntenwill (2012) also state that traditional supplier portfolio models often prove difficult to apply in the pursuit of sustainability, as they are not suitable to incorporate the uncertainties related to sustainability and unable to account for confidentiality issues related to the sharing of sensitive sustainability related information. Since the portfolio model of Kraljic (1983) does not seem to account for the incorporation of sustainability in companies very well, this research will not try to measure the categorisations made in this model. Instead, important characterising aspects of the buyer-supplier relationship will be further examined to understand how buyer-supplier relationships should be designed to facilitate sustainable procurement.

5.2 POWER AND DEPENDENCY

Emerson (1962) defined power as the ability of an actor to influence another to act in a manner that they would not have otherwise. He viewed power as an issue of dependency, as he stated: “the power of A over B is equal to, and based upon, the dependence of B upon A” (Emerson, 1962: p.33). According to Emerson (1962), companies should create conditions in which dependency on others is reduced, whilst increasing the dependency of others on the company. Hoejmose et al. (2013) divided power-dependency along two dimensions: (1) power imbalance or asymmetric interdependence; and (2) joint interdependence. With power imbalance, the more powerful actor is able to influence the other, whereas with joint interdependence the actors are dependent upon each other (Hoejmose et al., 2013). Both dimensions are important when considering sustainability. Indeed, recent studies have suggested that power and dependency are very relevant aspects to consider when implementing sustainability (e.g. Touboul et al., 2014; Hoejmose et al., 2013; Andersen and Skjøtt-Larsen, 2009; Pedersen and Andersen, 2006).

POWER ASYMMETRY

With power asymmetry, one party has power advantages over the other. In the buyer-supplier relationship, both the buyer and the supplier can have the upper hand. In case the supplier has power advantages over the buyer, the buying company is dependent on the supplier. In this situation of supplier power, the buying company's ability to enforce sustainability practices at the supplier is very limited (Awaysheh and Klassen, 2010). When the buying company is completely dependent upon the supplier, the use of sanctions or the threat of leaving as ways to enforce sustainability become irrelevant (Pedersen and Andersen, 2006).

On the contrary, relative buyer power can create considerable benefits for the buying company. In the case of buyer power, the buying company can impose a range of sustainability requirements on their suppliers (Hoejmose et al., 2013). These suppliers will often adhere to the requirements, as failure to comply or respond to the buying company's demand could possibly exclude them from doing business (Perry and Towers, 2009). Moreover, it has even been argued that buyer power can have a multiplier effect (Hoejmose et al., 2013), in a way that the influence of buyers on suppliers can force sub-suppliers to act sustainable too (Preuss, 2001). According to Andersen and Skjøtt-Larsen (2009) and Pedersen and Andersen (2006), buyer power is a requirement for supplier compliance to sustainability criteria. Indeed, other scholars have also argued that relative buyer power enhances the company's ability to implement sustainability (e.g. Hoejmose et al., 2013; Awaysheh and Klassen, 2010). However, there is also a considerable amount of scholars that has suggested the opposite (e.g. Caniels and Gelderman, 2007; Maloni and Benton, 2000; Kumar et al., 1995; Heide, 1994). According to Kumar et al. (1995) and Heide (1994), power asymmetry can create less stable and less trusting relationships. Moreover, Anderson and Weitz (1989: p.312) state that “imbalanced channel relationships are characterized by less cooperation and greater conflict”. Eventually, the continuity and productivity of the

relationship in the long term could be threatened by the exploitation of buyer power (Anderson and Weits, 1989; Kumar et al., 1995). These arguments against the benefits of buyer power can also be related to the results of the study of Pagell et al. (2010), which was previously mentioned in section 5.1. Here, powerful buyers were not exploiting their power the way they should according to the portfolio model of Kraljic (1983), but developed buyer-supplier relationships associated with strategic items. The buying companies paid premium prices, offered long-term contracts and provided access to supplier development resources in order to ensure sustainable supply chain management (Pagell et al., 2010). This shows that asymmetric power relationships do not automatically involve misuse of power (Caniëls and Gelderman, 2007). Similar to the results of Pagell et al. (2010), Krause et al. (2009) also identified the need for closer relationships to ensure sustainability. Krause et al. (2009) and Pagell et al. (2010) thus also argue that power asymmetry does not foster sustainability. Instead, these scholars seem to advocate for more equal relationships in order to support sustainable procurement.

JOINT DEPENDENCY

In jointly dependent relationships, the buyer and supplier rely on each other (Hoejmoose et al., 2013). Whereas powerful companies often resist entering in long-term collaborative relationships due to the loss of power and increase of dependency (Touboullic et al., 2014), joint dependence is likely to stimulate the use of long-term contracts (Kumar et al., 1995). According to Hoejmoose et al. (2013) and Boyd et al. (2007) joint dependency shows many similarities with the conditions under which sustainability is likely to be successfully implemented. For example, joint dependency is stated to foster partnerships (Mentzer et al., 2000), collaborative and integrated relationships (Spekman et al., 1998) and greater levels of joint action, trust and commitment (Lund-Thomsen and Nadvi, 2010). Furthermore, joint dependency is likely to result in a mutual understanding of the importance of sustainability. As Hoejmoose et al. (2013: p.280) illustrate: “if the buyer’s products and services are boycotted or subjected to stakeholder scrutiny, this will have an immediate and significant impact on the supplier’s activities too”. In other words, bad sustainability performance of either actor is a problem for both parties in the case of joint dependency. In sum, joint dependency can be seen as a stimulating factor for sustainability, as it stimulates both the buyer and the supplier to mutually increase their sustainability.

5.3 TRUST AND COMMITMENT

Next to the concepts of power and dependency, commitment and trust are also central concepts in the buyer-supplier relationship (Wagner, 2011). Commitment and trust are especially important when companies are looking for improved sustainability performance, as this will challenge the established relationships and potentially result in the forming of new relationships (Canner and Hanmer-Lloyd, 2007). Trust has been defined in a number of ways, but all definitions seem to involve a willingness to be vulnerable, which is based on the positive expectations of another's actions or intentions (Spekman and Carraway, 2006). Moorman et al. (1993: p.82) defined trust as “a willingness to rely on an exchange partner in whom one has confidence”. It is commonly understood that for trust to exist, there must also be risk, because if the outcome is predictable or there is no uncertainty, there is no need for trust (e.g. Canner and Hanmer-Lloyd, 2007; Spekman and Carraway, 2006; Kwon and Suh, 2005; Morgan and Hunt, 1994). As there is always a certain dependency and a risk of opportunistic behaviour in any buyer-supplier relationship (Spekman and Carraway, 2006), trust is an important concept, also in light of sustainable procurement.

Trust is developed over the course of the buyer-supplier relationship and could lead to increased levels of commitment (Wagner 2011; Powers and Reagan, 2007; Ryssel et al., 2004; Morgan and Hunt, 1994). Commitment has been defined by Morgan and Hunt (1994: p.23) as “an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely”. According to Kwon and Suh (2005), this enduring commitment is a basic requirement for successful supply chain initiatives. Indeed, several scholars have identified the need for both trust and commitment for sustainability initiatives (e.g. Beske and Seuring, 2014; Gold et al., 2010; Canner and Hanmer-Lloyd, 2007; Emberson and Storey, 2006; Simpson and Power, 2005).

Trust can be considered the outcome of long-term close interaction between a buyer and a supplier (Gold et al., 2010), and is determined by the experience of repeated encounters and the satisfaction with the outcomes (Canner and Hanmer-Lloyd, 2007). In turn, trust is stated to facilitate cooperation, interaction, commitment and a common vision for the future (Gold et al., 2010; Canner and Hanmer-Lloyd, 2007; Spekman and Carraway, 2006). This is especially important in efforts to increase the sustainability of a company. Indeed, Sharfman et al. (2009) showed that companies that value trust and commitment are more likely to engage in sustainable practices. Instead of power, which serves as a mechanism for achieving compliance, trust provides a basis for achieving collaboration (Simpson and Power, 2005). Trust and commitment thus seem to enable a collaborative approach towards sustainability, which is viewed as key to achieving sustainability performance by some scholars (e.g. Beske and Seuring, 2014; Sarkis et al., 2011; Carter and Jennings, 2002). Such a collaborative approach towards sustainability requires the exchange of information and knowledge and a certain willingness to take risks (Kwon and Suh, 2005). As open communication nurtures the expectation that a partner is supportive (Ploetner and Ehret, 2006), this supports both trust and collaboration. In fact, with time and trust both the quantity and the quality of the shared information and knowledge will grow (Miemczyk et al., 2012), because the partners are not afraid to share all information (Kwon and Suh, 2005). Additionally, when trust and commitment are present in a relationship, employees involved in supplier development activities will be more open to knowledge sharing with the supplier (Wagner, 2011).

Trust and commitment are thus key for a collaborative approach towards sustainability, because they encourage buyers and suppliers to work at their relationship through further cooperation, they decrease the risk of opportunistic behaviour and they permit longer term and higher risk options (Emberson and Storey, 2006; Morgan and Hunt, 1994). Finally, trust and commitment can also decrease resources needed for monitoring suppliers, as the buyer can use experiences from past transactions with suppliers to target the monitoring of suppliers (Pedersen and Andersen, 2006). In other words, it will be a waste of resources to fully monitor suppliers which the buying company trusts and that have been proactive in the implementation of sustainability in the past. Additionally, a lower level of monitoring can increase the level of trust and the level of sustainability, because high levels of monitoring can signal distrust on the part of the monitoring party and could even result in noncompliance by suppliers (Murry and Heide, 1998).

5.4 INFORMATION EXCHANGE AND COMMUNICATION

Communication difficulties are a major cause of collaboration failures (Peng et al., 2012), as they could cause conflicts and misunderstandings between buyers and suppliers (Paulraj et al., 2008). Thus, a basic requirement for a buyer-supplier relationship and actually any form of collaboration is information exchange (Fawcett et al., 2011). Information sharing is seen as an enabler of collaborative relationships and the key to success (Handfield et al., 2006; Simpson and Power, 2005; Holt, 2004), and is often also required for passing sustainability requirements to suppliers (Beske and Seuring, 2014). Indeed, as aspects of sustainability criteria can be difficult to check at suppliers, Krause et al. (2009) call for more transparency and higher levels of communication between buyers and suppliers to ensure sustainability. Both scholars who advocate for trust and collaboration and those who advocate for the use of power agree that sustainability requires information sharing (Simpson and Power, 2005). Although information technology provides opportunities for enhanced communication and collaboration (Makkonen and Vuori, 2014) and managers often see information sharing as a technology issue, this is a misperception according to Fawcett et al. (2007). As stated by Fawcett et al. (2007), the information sharing capability of a company exists of two dimensions, namely the connectivity and the willingness to share information. Connectivity creates the capability to share information. This is often realised through the use of information technology, as this enables a free flow of information among companies (Spekman and Carraway, 2006). However, as Fawcett et al (2007) stated, a company's willingness to share information ultimately determines the extent of information sharing that takes place. Since many individuals are reluctant to share information that they perceive may place their companies at a competitive disadvantage (Fawcett et al., 2007), effective and efficient communication is then impossible. Kim et al. (2010) also found that a cooperative relationship is difficult to reach when a company is concerned that a partner may opportunistically use the acquired information.

Higher levels of connectivity and information exchange have several benefits. For example, information technology connections facilitate quick information sharing, but also allow for the monitoring of customer behaviour and rapid responses to changes (Fawcett et al., 2011). When these information technologies are

combined with a willingness to share information, the amount, quality and timeliness of information that is shared will increase, trust can be established and collaboration will be promoted (Fawcett et al., 2007). According to Paulraj et al. (2008), collaborating companies that exchange relevant information in a timely and accurate manner and share critical and sensitive information are more successful than collaborating companies that do not display this kind of communication. However, as stated previously, the willingness to share information is also a critical aspect of information exchange, because having an enabling technology does not ensure that the right information is shared across companies (Spekman and Carraway, 2006). Fawcett et al. (2011) state the willingness to share information is influenced by the corporate culture of the company. Not only does this influence information sharing across companies, it also influences the sharing of information between internal functions (Fawcett et al., 2007). Thus, a company should promote both cross-functional cooperation as well as inter-organisational teams to increase the willingness to share information and subsequently the amount of information shared (Wagner and Buko, 2005). It must be noted that each company can have a different willingness to share information. Thus, both companies in the buyer-supplier relationship should have a high degree of willingness to ensure communication (Fawcett et al., 2007). Furthermore, Fawcett et al. (2007) found that a willingness to share required trusting relationships, which was best achieved by having face-to-face contact every once in a while instead of relying solely on information technologies.

In light of sustainable procurement, proactive information sharing and communication are especially important. However, it must be noted that especially with sustainability, not all companies may be willing to share all information, as this may be sensitive information. As stated previously, information sharing is often required for passing sustainability requirements to suppliers (Beske and Seuring, 2014; Boyd et al., 2007), and can also be used for promoting sustainability compliance amongst suppliers (Hoejmose and Adrien-Kirby, 2012; Peng et al., 2012). Moreover, Paulraj et al. (2008: p.45) stated “collaborative communication is critical to fostering and maintaining value-enhancing inter-organizational relationships”. Paulraj et al. (2008) see communication as a relational competency, which fosters inter-organizational learning and is crucial for competitive success. Indeed, companies can learn from each other by sharing information and knowledge (Powell et al., 1996). For example, sustainable supplier development involves the transfer of knowledge and requires a constant, open and informal communication and information flow (Wagner and Johnson, 2004; Krause and Ellram, 1997). Communication and information exchange can thus improve the ability of a company to coordinate value-adding activities such as increasing the sustainability of a suppliers (Fawcett et al., 2011). Additionally, it can create a better understanding of complex issues such as sustainability (Paulraj et al., 2008). Finally, open and collaborative communication positively influences trust, thereby creating stronger relationships (Fawcett et al., 2011; Paulraj et al., 2008; Powell et al., 1996).

5.5 GEOGRAPHICAL DISTANCE

The previously discussed aspects of the buyer-supplier relationship can be influenced by the geographical distance between a buyer and supplier (Hoejmose et al., 2013). For example, it has been argued that geographical distance influences the buyers’ ability to influence the practices of a supplier (e.g. Elg and Hultman, 2011; Wisner and Tan, 2000). Therefore, geographical distance could pose challenges for sustainability practices in the supply chain. Indeed, Awaysheh and Klassen (2010) suggest that geographical distance is negatively related to the sustainability practices of the suppliers, as control and information flows from the buyer decrease as geographical distance increases between the buyer and supplier. Furthermore, they argue that with increased geographical distance, country and organisational cultural differences could become an issue (Ageron et al., 2012). Since sustainability issues are highly contextual and culturally dependent (Hoejmose and Adrien-Kirby, 2012), their interpretation differs throughout the world. Moreover, each region in the world faces their own regulations and sustainability challenges due to different environmental and social circumstances (Giunipero et al., 2012; Oruezabala and Rico, 2012). Especially for multinational companies, this creates difficulties for sustainable procurement. These potential differences in expectations, regulations and the understanding of sustainability can negatively influence the buyer-supplier relationship if buyers and suppliers do not understand each other (Awaysheh and Klassen, 2010).

Additionally, Hoejmose et al. (2013) argue that as the distance between buyers and suppliers increases, the importance of power asymmetries or joint dependency will decrease. Although power and dependency are important aspects of the buyer-supplier relationship in light of sustainability, they do not guarantee sustainable behaviour of the suppliers. For example, in the case of buyer power, buyers can try to force suppliers to act

sustainable by threatening to terminate the relationship (Hoejmose et al., 2013). However, geographical distance makes it difficult for buyers to check suppliers' practices. In a similar way, suppliers may show opportunistic behaviour when they have a power advantage. Rokkan and Buvik (2003) even argue that opportunistic behaviour of suppliers and difficulties in checking supplier behaviour are likely to multiply as the geographical distance increases. Furthermore, it has been argued that geographical distance complicates the development of collaborative buyer-supplier relationships (Homburg et al., 2002). This could be for example due to difficulties in communication, incomplete flows of information or difficulties in establishing trust (Awaysheh and Klassen, 2010; Hoejmose et al., 2013; Homburg et al., 2002). As these factors have been suggested to be important for the incorporation of sustainability (e.g. Carter and Jennings, 2002), geographical distance can be seen as having a negative effect on sustainable procurement.

However, geographical distance does not have to be a problem for sustainable procurement. As Xia (2011) showed, joint dependency is a strong predictor of successful cross-border alliances. As mentioned previously, joint dependency creates a mutual commitment to the relationship. As a result, it is also related to trust and mutual action (Lund-Thomsen and Nadvi, 2010), something which can overcome the problems associated with geographical distance. For example, joint dependency and trust could lead to enhanced communication or the decrease of a supplier's temptation to behave opportunistically (Hoejmose et al., 2013). Closer relationships where joint dependency and trust are present thus seem increasingly important, especially when the geographical distance between a buyer and supplier increases.

5.6 CODES OF CONDUCT

The final important aspect of buyer-supplier relationships with regard to sustainable procurement is the use of codes of conduct. Codes of conduct are used to ensure suppliers behave according to the corporate sustainability strategy (Wu and Pagell, 2011). According to the literature review of Hoejmose and Adrien-Kirby (2012), codes of conduct are by far the most common way of implementing, ensuring and extending sustainability practices. Indeed, Beske and Seuring (2014) also found codes of conduct to be used very often in their literature review. According to them (Beske and Seuring, 2014), codes of conduct are a relatively easy way to make the supply chain more sustainable, because they state in clear terms the value orientation of the purchasing company and its expectations from the suppliers (Hoejmose and Adrien-Kirby, 2012; Amaeshi et al., 2008). Beyond written rules, codes of conduct can also provide guidance to employees, enhance a company's reputation, encourage and support ethical behaviour of employees and maintain coherent standards across the organisation (Hoejmose and Adrien-Kirby, 2012; Preuss, 2009). Therefore, some scholars view them as a source of competitive advantage (e.g. Preuss, 2009; Pedersen and Andersen, 2006). Moreover, Beske and Seuring (2014) have also identified codes of conduct as a relatively simple way to solve sustainability risk-related issues, because they provide guidelines on how to deal with sustainability issues.

Codes of conduct can be initiated by the buying company alone, in collaboration with other companies or even with stakeholders such as NGOs (Amaeshi et al., 2008). For example, NGOs can be involved in the establishment of a code of conduct for their knowledge and input for the content of the codes, but also for building consensus and legitimacy with a wider set of stakeholders (Preuss, 2009). According to Amaeshi et al. (2008), codes of conduct are usually included as an agreement at the point of engagement with new suppliers, or mapped out in consultation with current suppliers. Although agreements can be made between buyers and suppliers, a code of conduct usually has a voluntary nature (Hoejmose and Adrien-Kirby, 2012; Preuss, 2009; Amaeshi et al., 2008). This is seen as a major downside and as one of the key reasons why codes of conduct can fail (Hoejmose and Adrien-Kirby, 2012; Preuss, 2009; Pedersen and Andersen, 2006). According to Pedersen and Andersen (2006), the main problem with implementing codes of conduct is non-compliance. They argue this is due to a lack of commitment from both buyers and suppliers, which could find its origin in the dispersed geographical and cultural levels of a supply chain (Pedersen and Andersen, 2006). Preuss (2009) also recognises the issue of non-compliance and relates it to the point that many codes do not have enforcement mechanisms or penalties. This lack of efficient monitoring systems is also seen as a key reason why codes of conduct can fail (Pedersen and Andersen, 2006), because companies do not systematically monitor their written requirements (Hoejmose and Adrien-Kirby, 2012). Contrary, Boyd et al. (2007) stated high levels of monitoring can create a feeling of distrust for the supplier, which can result in opportunistic behaviour by the supplier, including non-compliance and non-productive or even harmful activities. It thus seems there is not one clear level of monitoring activities that results in compliance by suppliers.

Several scholars have studied how codes of conduct can be implemented successfully and effectively (e.g. Van Tulder et al., 2009; Pedersen and Andersen, 2006). Pedersen and Andersen (2006) believe non-compliance issues can be resolved by appropriate incentives and penalties. Van Tulder et al. (2009) also acknowledge the role of rewards for compliance and penalties for failure to comply. Furthermore, it is argued that the likelihood of compliance by a supplier can be increased through trust and goal congruence between buyers and suppliers, reputation effects, direct sanctions and third-party interventions from for example NGOs (Pedersen and Andersen, 2006). Especially the previously discussed buyer-supplier relationship aspects in this chapter of trust, communication and collaboration are deemed to be very effective to ensure compliance (Hoejmose and Adrien-Kirby, 2012; Preuss, 2009; Kwon and Suh, 2005). Thus, it can be concluded that the implementation of a code of conduct does not only influence the relationship between the buyer and supplier, it also seems to require a supporting buyer-supplier relationship itself (Hoejmose and Adrien-Kirby, 2012; Lim and Phillips, 2008).

5.7 CONCLUSION

This chapter has discussed several aspects of a buyer-supplier relationship which could influence sustainable procurement, in order to answer the fourth research question: 'Which aspects of buyer-supplier relationships can influence sustainable procurement?'. Based on the importance of power and dependency in the portfolio model of Kraljic (1983), these aspects were discussed first. Indeed, several scholars also recognised the importance of considering power and dependency when studying sustainability. Whereas some scholars advocated the use of power to force suppliers to act sustainable, others stated the use of power could threaten the continuity and productivity of a relationship. They advocated for more equal relationships in order to support sustainable procurement. In the same light, joint dependency was seen as a stimulating factor for sustainability. It has been stated to foster partnerships, integrated and collaborative relationships and greater levels of joint action, trust and commitment, all of which have also been addressed as conditions under which sustainability is likely to be successfully implemented.

Two other central concepts in the buyer-supplier relationship literature are trust and commitment. Both trust and commitment have also been stated to be important for realising an improved sustainability performance. Trust and commitment seem to enable a collaborative approach towards sustainability, decrease the risk of opportunistic behaviour and decrease the need for monitoring suppliers. Where power serves as a mechanism for achieving compliance, trust and commitment provide a basis for collaboration. Although many scholars advocate the use of collaborative relationships to ensure sustainability, Simpson et al. (2007) found contradictory results. They state higher relationship investments by the buying company result in less sustainability, due to suppliers' perception that the likelihood of penalties for non-compliance is decreased. This illustrates that even though trust and commitment seem important enablers of sustainability, they do deserve special attention.

Another important aspect of the buyer-supplier relationship that could influence sustainable procurement is communication. Information exchange is seen as a basic requirement for any buyer-supplier relationship and can even be seen as the key to successful collaboration. An important notion found is that communication and information exchange not only depend on the capability and technology to share information, but are especially dependent on the willingness of a company to share information. The willingness to share information could be influenced by the corporate culture and the degree and existence of cross-functional cooperation and inter-organisational teams. The importance of information exchange and communication in light of sustainable procurement has been recognised, as it improves the ability of a company to coordinate value-adding activities such as increasing the sustainability of suppliers, creating a better understanding of complex issues such as sustainability, fostering inter-organisational learning and positively influencing trust.

Furthermore, it has been recognised that all these aspects of the buyer-supplier relationship can be negatively influenced by the geographical distance between a buyer and supplier. Thus, geographical distance could pose challenges for sustainable procurement. However, some scholars stated joint dependency, trust and mutual action and commitment to the relationship could overcome the issues related to geographical distance. Nevertheless, as it influences sustainable procurement, it is an important aspect of the buyer-supplier relationship and should be taken into account. The final aspect of a buyer-supplier relationship that is taken into account is the presence of a code of conduct. Codes of conduct provide clear guidelines for suppliers on

how to deal with sustainability, but also provide guidance to employees, enhance a company's reputation, encourage and support ethical behaviour of employees and they maintain coherent standards across the organisation. Codes of conduct have been argued to be a relatively easy way to solve sustainability issues, because of the guidelines they provide. It can be concluded that codes of conduct influence the buyer-supplier relationship and are therefore relevant to take into account.

All the previously discussed aspects of buyer-supplier relationships have their own influence on sustainable procurement. It can be concluded that the majority of scholars seems to advocate for a close relationship, characterised by commitment, trust and cooperation. Codes of conduct have been argued to be a relatively easy way to ensure sustainability and there are also reasons to believe in the use of power to ensure sustainable procurement. As scholars have showed that in order to ensure compliance, also a supporting buyer-supplier relationship is needed, it seems closer relationships are indeed favourable and facilitative of sustainable procurement.

6. THEORETICAL FRAMEWORK

In this chapter, the theoretical framework is presented. The theoretical framework is a schematic representation of the previously discussed concepts from literature. First, the maturity levels of sustainable procurement will be briefly discussed, followed by the capabilities of the buyer and the supplier. Finally, the features of the buyer-supplier relationship that can facilitate sustainable procurement will be addressed. In the end, the theoretical framework is presented and the research propositions are formulated.

6.1 MATURITY LEVELS OF SUSTAINABLE PROCUREMENT

This research studies how buyer-supplier relationships and buyer and supplier capabilities can facilitate sustainable procurement. Therefore, it is important to identify sustainable procurement performance in terms of certain maturity levels. This way it can be assessed what kind of relationship and capabilities are needed for a certain sustainable procurement performance. In Chapter 2, four sustainability maturity levels have been chosen to assess sustainable procurement performance:

1. Beginning level;
2. Improving level;
3. Succeeding level; and
4. Leading level.

6.2 CAPABILITIES OF THE BUYER AND THE SUPPLIER

As the capabilities of both the buyer and the supplier influence the way the companies work and what they are capable of, these are important to take into account when looking at how buyer-supplier relationships can facilitate sustainable procurement. In Chapter 3, first the capabilities of the buying company were discussed. The first capability that was identified was supplier management. Due to the impact suppliers can have on the sustainability performance of a company (Ageron et al., 2012), supplier management is a crucial issue for a company aiming to maintain a strategically competitive position (Govindan et al., 2013). Moreover, the incorporation of sustainability criteria increases the complexity of the purchasing process and supplier management (Handfield et al., 2002). It thus seems essential for a buying company to have good supplier management in place before starting to incorporate sustainability. Next to supplier management, the corporate culture of the company was identified as an important capability. In this research, corporate culture encompasses aspects related to how the company works. If there is a corporate focus on costs, the corporate culture could hinder sustainable procurement, but if top management support, a corporate history of working on sustainability issues and dedicated employees are present, the corporate culture can support sustainable procurement (Caniëls et al., 2013). Additionally, if the corporate culture supports cross-functional cooperation, the functional and corporate strategies are better aligned, which is of vital importance for business success (González-Benito, 2007; Boks, 2006). Furthermore, stakeholder management was identified as an important capability for the buying company. Companies may experience difficulties with implementing sustainable procurement if they do not understand the role and influence of stakeholders (Crespin-Mazet and Dontenwill, 2012; Miemczyk et al., 2012; Schneider and Wallenburg, 2012). Therefore, properly assessing stakeholder weights, prioritising them accordingly and engaging stakeholders in the purchasing process can be considered an important capability needed for sustainable procurement. The final capability needed is related to the know-how and expertise of the buying company. The buying company needs to have knowledge on relevant sustainability practices in order to implement sustainable procurement and transfer this to its suppliers (Blome et al., 2014; Sucky and Durst, 2013).

With respect to the suppliers' capabilities, also the corporate culture has been identified. Similar to the buying company, a suppliers' sustainability is likely to vary depending on top management support and whether or not there is a corporate history of working with sustainability issues and the attitude of employees. Additionally, the willingness to learn and to participate in sustainability initiatives from the buying company is an important aspect of the corporate culture (Caniëls et al., 2013; Spekman and Carraway, 2006), since a lack of motivation and interest could hinder sustainable procurement (Gadde and Snehota, 2000). Another capability of the supplier which is also similar to the buying company is know-how and expertise. Relevant knowledge and

expertise were found to be positively related to suppliers' participation in sustainability initiatives (Caniëls et al., 2013) and are thus capabilities a supplier needs. Finally, as Grekova et al. (2014) and Caniëls et al. (2013) recognised a lack of resources and the availability of a sustainability budget as potential constraints for sustainability, the capability of a supplier to access resources is very important. From literature it became clear suppliers often have limited resources available themselves (Lee and Klassen, 2008). Therefore, the access to external resources from their buyers, NGOs or governments could be crucial in achieving sustainability.

It could be concluded from the literature that the identified capabilities of both the supplier and the buyer influence the maturity level of sustainable procurement that can be reached. Therefore, both the capabilities of the buyer and the supplier are schematically represented in the theoretical framework as impacting the maturity level of sustainable procurement (see Figure 2). Furthermore, from literature it also became clear that the capabilities also impact the buyer-supplier relationship, which can be seen in the theoretical framework in Figure 2.

6.3 FEATURES OF BUYER-SUPPLIER RELATIONSHIPS

Next to the previously identified capabilities of the buyer and the supplier, the buyer-supplier relationship also influences the maturity level of sustainable procurement that is reached. Indeed, several scholars identified the importance of buyer-supplier relationships for sustainability (e.g. Beske et al., 2014; Gualandris et al., 2014; Duffy et al., 2013; Schneider and Wallenburg, 2012). As they remain undecided on what is important in the relationship to actually facilitate sustainable procurement (Grimm et al., 2014; Oruezabala and Rico, 2012), this research has identified several important features of the buyer-supplier relationship from literature. Since the aspects of power and dependency have been recognised to be very important in both the portfolio model of Kraljic (1983) and in light of sustainability (e.g. Hoejmosse et al., 2013; Andersen and Skjoett-Larsen, 2009), these are included as important features of the buyer-supplier relationship. Furthermore, trust and commitment are also central concepts in the buyer-supplier relationship (Wagner, 2011). From literature, it could be found that trust and commitment are crucial for a collaborative approach towards sustainability (Beske and Seuring, 2014; Sarkis et al., 2011; Carter and Jennings, 2002). Additionally, as Fawcett et al. (2011) stated a basic requirement for buyer-supplier relationships is information exchange, this is also taken into account as important feature of the relationship. Also, some scholars argue that the buyer-supplier relationship can be influenced by the geographical distance between a buyer and supplier (Hoejmosse et al., 2013; Awaysheh and Klassen, 2010). Since sustainability issues are highly contextual and culturally dependent (Hoejmosse and Adrien-Kirby, 2012), the geographical distance will also be taken into account in this research. The final feature of a buyer-supplier relationship that will be taken into account is the presence of a code of conduct. Several scholars acknowledge the importance and popularity of codes of conduct (e.g. Beske and Seuring, 2014; Hoejmosse and Adrien-Kirby, 2012; Wu and Pagell, 2011). They state in clear terms the value orientation of the purchasing company and its expectations from their suppliers (Hoejmosse and Adrien-Kirby, 2012; Amaeshi et al., 2008) and could therefore have an influence on the buyer-supplier relationship and the maturity level of sustainable procurement that is reached.

Several scholars argue buyer-supplier relationships present a key way for businesses to influence the sustainability of their products and services (e.g. Gualandris et al., 2014; Simpson and Power, 2005). Therefore, from literature it can be concluded that the buyer-supplier relationship can facilitate sustainable procurement. In the theoretical framework (see Figure 2) the buyer-supplier relationship therefore acts as a mediating variable, having an influence on the relationship between the capabilities of the buyer and supplier and the maturity level of sustainable procurement that can be reached.

6.4 THEORETICAL FRAMEWORK

A schematic representation of all the aspects described above is provided in the theoretical framework in Figure 2.

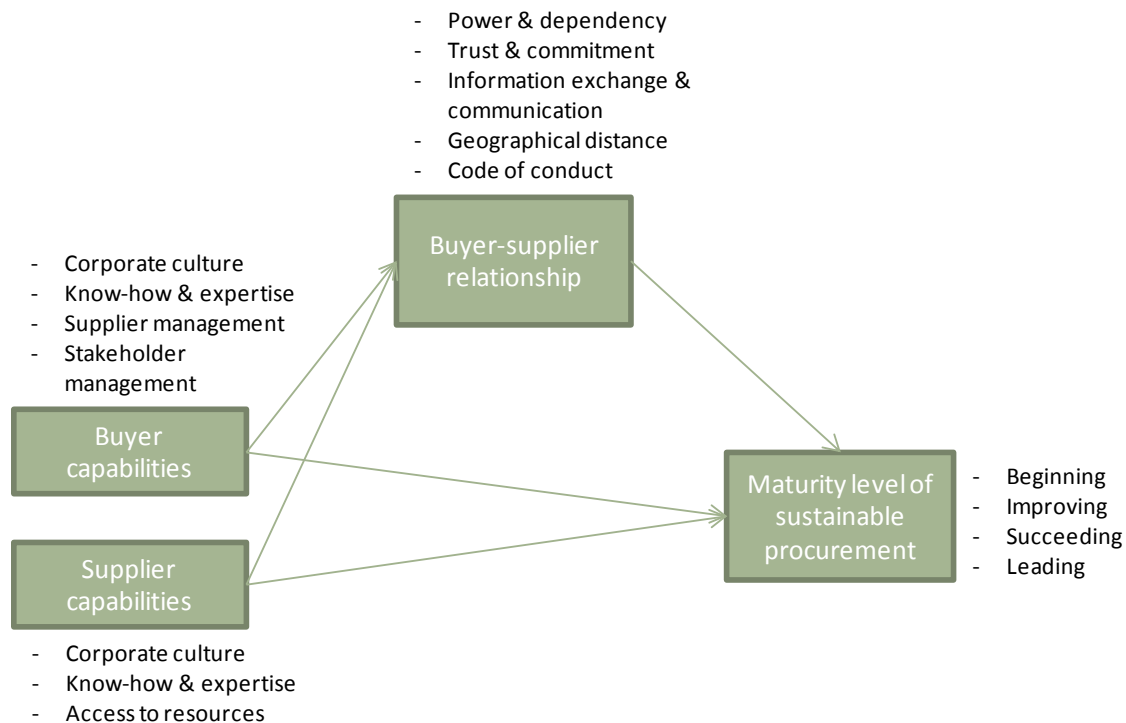


Figure 2: Theoretical framework

6.5 RESEARCH PROPOSITIONS

From the theoretical framework, it follows that the buyer-supplier relationship is expected to mediate the effect of buyer and supplier capabilities on the maturity level of sustainable procurement that is reached. Thus, it is expected that the buyer-supplier relationship can facilitate the reaching of high maturity levels of sustainable procurement, as it ensures that buyer and supplier capabilities indeed have a positive effect on the maturity level of sustainable procurement. This research will try to test this proposition and additionally try to gain insights into how the buyer-supplier relationship should be arranged in order to facilitate sustainable procurement. The following proposition has been formulated:

P1: The buyer and supplier capabilities are expected to affect the maturity level of sustainable procurement that is reached, through its effect on buyer-supplier relationships.

BUYER CAPABILITIES

From literature, it became clear that the higher the capabilities of the buyer are, the higher the maturity level of sustainable procurement that is reached. One of these capabilities is the corporate culture, which is expected to be able to either support or hinder sustainable procurement. Therefore, the following proposition has been formulated:

P2a: A sustainability oriented corporate culture supports higher maturity levels of sustainable procurement.

Furthermore, it is expected that without the proper know-how and expertise on sustainability, a buying company will be unable to reach high maturity levels of sustainable procurement. Not only will the buying company be unable to integrate sustainability in its own company, it is expected it will also be unable to

transfer sustainability requirements to the supplier. Thus, the following research proposition has been formulated:

P2b: Know-how and expertise of sustainability support higher maturity levels of sustainable procurement.

As the incorporation of sustainability increases the complexity of the purchasing process, it is expected good supplier management is essential to have in place before starting to incorporate sustainability. Therefore, the following proposition has been formulated:

P2c: Good supplier management supports higher maturity levels of sustainable procurement.

Finally, stakeholder management is expected to be an important capability needed for the buying company. Without stakeholder management, companies may not understand the role and influence of stakeholders on their company. Thus, the following research proposition has been formulated:

P2d: Stakeholder management supports higher maturity levels of sustainable procurement.

SUPPLIER CAPABILITIES

From literature, it could be concluded that the higher the capabilities of the supplier are, the higher the maturity level of sustainable procurement that is reached. With respect to the suppliers' capabilities, two capabilities are similar to those of the buying company. Without a good corporate culture and the willingness to engage in sustainability, suppliers are also expected not to contribute to the reaching of high maturity levels of sustainable procurement. Therefore, the same proposition has been formulated as for the buying company:

P3a: A sustainability oriented corporate culture supports higher maturity levels of sustainable procurement.

Additionally, relevant knowledge and expertise are also capabilities of the supplier that are expected to contribute to the participation in sustainability initiatives. Therefore, the same proposition has been formulated as with the buying company:

P3b: Know-how and expertise of sustainability support higher maturity levels of sustainable procurement.

Finally, a lack of resources and the availability of a sustainability budget are expected to be potential constraints for the supplier to engage in sustainability. Thus, the following proposition has been formulated:

P3c: Access to resources supports higher maturity levels of sustainable procurement.

BUYER-SUPPLIER RELATIONSHIP

From literature, it is expected that the buyer-supplier relationship can support sustainable procurement. For each of the aspects of the buyer-supplier relationship, propositions have been formulated. Although a power advantage for the buyer and a dependent supplier could result in the supplier adhering to the sustainability requirements of the buyer, hence supporting sustainable procurement, this is not expected to lead to the highest maturity levels. Instead, it is expected that a form of joint dependency will result in more collaboration and mutual understanding, supporting sustainable procurement. Thus, the following proposition has been formulated:

P4a: Joint dependency supports higher maturity levels of sustainable procurement.

Additionally, trust and commitment are central concepts in relationships. They are expected to be crucial for reaching higher maturity levels of sustainable procurement. Therefore, the following proposition has been formulated:

P4b: Trust and commitment in the relationship support higher maturity levels of sustainable procurement.

Frequent information exchange and communication is also expected to support sustainable procurement, as these concepts are almost basic requirements for any buyer-supplier relationship. Therefore, the following proposition has been formulated:

P4c: Information exchange and communication support higher maturity levels of sustainable procurement.

Additionally, it is expected that geographical distance could have an influence on the maturity level of sustainable procurement that can be reached. As sustainability issues are highly contextual and culturally dependent, the following research proposition has been formulated:

P4d: A small geographical distance between the buyer and the supplier supports higher maturity levels of sustainable procurement.

Finally, the presence of a code of conduct is expected to have an influence on sustainable procurement. Since they clearly state the company's expectations and value orientation, the following proposition has been formulated:

P4e: The presence of a code of conduct supports higher maturity levels of sustainable procurement.

7. METHODOLOGY

This chapter will elaborate on the empirical research design of this study. The connections between buyer and supplier capabilities, the buyer-supplier relationship and the level of sustainable procurement are explored via conducting a survey. This chapter will first describe the research setting, i.e. the Dutch food and beverages industry. Subsequently, the sample will be described, along with the method of data gathering. Finally, the operationalization of the variables will be outlined.

7.1 DUTCH FOOD AND BEVERAGES INDUSTRY

As has already been mentioned before, the focus of this research is on the Dutch food and beverages (F&B) industry. Prior research in the field of sustainable procurement often considered multiple industries simultaneously. However, sustainability practices vary per industry and industry specific circumstances influence the integration of sustainable procurement practices in companies (Hoejmoose and Adrien-Kirby, 2012; Tate et al., 2012). Schneider and Wallenburg (2012) and Wagner and Johnson (2004) confirm this, as they stated all companies of a particular industry will face similar circumstances, like industry-specific regulations, rivalry amongst established companies and pertinent NGO focus on select sustainability topics. Moreover, a single industry approach makes the results more precise and meaningful, especially since different industries might need to arrange their buyer-supplier relationships differently in order to achieve a certain level of sustainable procurement (Caniëls et al., 2013). Finally, by focussing on a single industry, this research tries to answer calls in the literature for industry specific applications (e.g. Sucky and Durst, 2013; Hollos et al., 2012; Tate et al., 2012; Schneider and Wallenburg, 2012; Carter and Easton, 2011).

The food and beverages industry is under increasing pressure to adopt sustainability. This is not only due to the nature of the products as animal/plant based, but also due to the complex, labour intensive nature of food supply chains (Maloni and Brown, 2006). Furthermore, the growing population, shifting patterns of consumption and an increasing competition for water, energy and land also play an important part (Vermeulen et al., 2012). Specific examples of environmental issues in the F&B industry are the depletion of arable land, waste disposal and farming techniques. Social issues include for example seasonal migration of workers and pesticide poisoning (Pullman et al., 2009). Some authors even include food safety as a social concern (e.g. Maloni and Brown, 2006). From these examples, it can be concluded that the F&B industry is thus well suited to investigate the adoption of the Triple Bottom Line (TBL) in sustainable procurement.

The Dutch F&B industry is an appropriate industry to gain more insights into how buyer-supplier relationships can facilitate sustainable procurement. The F&B industry is one of the largest industries in the Netherlands in terms of production and turnover (CBS, 2015), but also one of the most polluting industries (Grekova et al., 2014). Through all sorts of initiatives, mostly initiated by NGOs, the sector has been increasingly reducing its impact on sustainability (Erich, 2012). Examples include Fair Trade, the MSC label for fish products or the production of organic products. From an economic point of view, Dutch consumers pay a relatively low price for their food products (Erich, 2012). The focus on low prices and the continuous stream of new products that is introduced to the market creates a highly competitive environment for the food and beverages industry (Vermeulen et al., 2009; Fischer et al., 2009). Furthermore, Hollos et al. (2012) stated that customers and other stakeholders are inclined to punish companies, especially those selling branded products to the end consumer, that fail to comply with accepted sustainability standards. Due to the high pressure on prices and profit margins from retailers in the Netherlands (Grekova et al., 2014), cooperation within the chain seems necessary. Indeed, enhanced coordination between actors in the chain and the quality of their relationship are increasingly recognised as potential sources of competitiveness (Schiemann, 2007). According to Grekova et al. (2014) and Erich (2012), the Dutch F&B industry can be increasingly characterised by intense supply chain cooperation. Therefore, it is a suitable industry to gain more insights into how buyer-supplier relationships can facilitate sustainable procurement.

7.2 SAMPLE

The sampling frame was compiled from the address base of Dutch F&B companies from the Dutch Chamber of Commerce. A sample of 325 Dutch F&B companies with at least 50 employees was selected. After deletion of production locations and other double locations from the address base, 214 unique companies remained that together made up the sampling frame. Consistent with the definition of small and medium-sized enterprises of the European Commission (EC, 2014), this research leaves out the small and micro-sized companies by only including companies with at least 50 employees. Small and micro-sized companies were outside the scope of this research, as it was expected that the rather advanced practice of sustainable procurement would occur less in small and micro-sized companies. Indeed, Grekova et al. (2014) showed that environmental sustainability practices and capabilities were less implemented and developed in small companies.

Each respondent in the sample was selected based on their job responsibilities, which had to be procurement or an equivalent function in which there was regular contact with suppliers. In an effort to increase the response rate, the research protocol started with an introductory telephone contact in which the respondents were asked for their cooperation and e-mail addresses. Subsequently, an e-mail with a personalised link to the online survey was sent. In order to enhance the response rate, respondents were offered a summary of the results. When respondents had not completed the survey after seven days, a reminder e-mail with a deadline for completing the survey was sent to encourage participation. After the data collection period of three weeks, 75 responses were received from the sample size of 214, resulting in a response rate of 35%. After excluding 13 responses that were deemed unusable due to incompleteness, the effective response rate was 28.9% (62/214). The characteristics of the sample are provided in Table 5, showing the number of employees, the function of the respondents and the industry sector of the company within the food and beverages sector.

Table 5: Profile of respondents

	N	Percentage
Number of employees		
50 - 100	11	18%
100 - 500	36	58%
501 - 1000	4	6%
> 1000	11	18%
Total	62	100%
Function respondents		
Presidents/ vice presidents	4	6%
Directors	10	16%
Purchasing manager	22	35%
Buyer	22	35%
Other	4	6%
Total	62	100%
Industry sector		
Dairy	4	6%
Meat	8	13%
Fish and seafood	3	5%
Fruit and vegetables	6	10%
Bakery	16	26%
Beverages	6	10%
Other	19	31%
Total	62	100%

7.3 OPERATIONALISATION OF THE VARIABLES

In this section, the operationalisation and construction of the research variables will be provided. An extensive literature review was conducted to derive the variables that measure the theoretical constructs. All the items were measured using 7-point Likert scales and can be found in Appendix I. In total, four general concepts were assessed in the survey, namely the buyer capabilities, the supplier capabilities, the buyer-supplier relationship and the maturity level of sustainable procurement. Next, the operationalisation of the variables of each of these concepts will be discussed, followed by a description of the content validity of the constructs.

The concept buyer capabilities is operationalised in terms of (a) the corporate culture, (b) the level of know-how and expertise, (c) stakeholder management and (d) supplier management. This operationalisation followed from the theoretical framework. Corporate culture was measured using a three item construct from Cousins et al. (2006) that measured top management support, another three item construct from Cousins et al. (2006) to measure cross-functional cooperation and finally, two items on the attitude of employees were adopted from Park and Stoel (2005). To measure the level of know-how and expertise, two items from Cousins et al. (2006) were used to assess the level of skills of purchasing employees on sustainability and two items were developed based on literature to assess the sustainability knowledge management. For the concept of stakeholder management, a three item construct was developed based on Crespín-Mazet and Döntenwill (2012). Finally, supplier management was measured using a five item scale based on Yu et al. (2014).

As with the concept of buyer capabilities, the concept supplier capabilities also covers the items from the theoretical framework, namely (a) corporate culture, (b) know-how and expertise and (c) access to resources. The corporate culture also included items on top management support, adopted from Cousins et al. (2006), and the attitude of employees (Park and Stoel, 2005). Furthermore, it comprised of a three item construct adopted from Lee (2008), that measured the willingness to participate in the buyers' sustainability initiatives. The know-how and expertise was measured via a three item construct that was developed based on literature (Lee, 2008; Rao, 2002). Finally, the access to resources was also measured using a three item construct that was developed from literature (Lee, 2008; Rao, 2002).

The third concept measured is the buyer-supplier relationship. In line with the theoretical framework, the concept is operationalised in terms of (a) power and dependency, (b) trust and commitment, (c) information exchange and communication, (d) geographical distance and (e) code of conduct. Power and dependency was measured using a three item construct to assess the power of the supplier and a three item construct to assess the power of the buying company. Both these constructs have been adopted from Hoejmose et al. (2012). The concept trust and commitment was measured using a three item construct on the degree of commitment present, which was adopted from Carter and Jennings (2002), and a three item construct on trust, which was adopted from Hoejmose et al. (2012). The information exchange and communication variable was measured via a four item construct that was adopted from Paulraj et al. (2008) to measure the inter-organisational communication and a three item construct adopted from Fawcett et al. (2007) on information technology. To measure the geographical distance, a three item construct was developed. Finally, in order to measure the concept of code of conduct, a four and two item scale of Awaysheh and Klassen (2010) were used to measure the existence of a code of conduct and the monitoring and evaluation activities present respectively.

The maturity level of sustainable procurement was operationalised based on the maturity model developed in Chapter 2. For every aspect of the economic, environmental and social sustainability maturity model, a two item construct was developed. Always, one item related to the organisational integration of that particular aspect and the other item measured the content integration of that sustainability aspect. Indirectly, the items measuring the maturity level of sustainable procurement were adapted from Amini and Bienstock (2014), IRI (2014), Okongwu et al. (2013), Baumgartner and Ebner (2010), Van Marrewijk (2005) and Carter and Jennings (2004). To conclude, for all the before mentioned constructs that together formed the survey, content validity was assured by the fact that the constructs were based on an extensive literature review and the fact that most variables had proven reliability and validity, as they had been tested and used in the literature before. Moreover, the survey was evaluated by two academic experts and tested by two purchasing professionals from the Dutch F&B industry, who were asked to comment on the content and clarity of the survey. As a result, several minor changes were made to the survey.

8. RESULTS

In order to reduce the number of variables in the analysis, a principal component factor analysis (PCA) was conducted using SPSS 22. Since the survey has been created based on theory, the principal component factor analysis was driven by the earlier identified concepts of buyer capabilities, supplier capabilities and buyer-supplier relationships. In conducting the PCAs, the book of Field (2009) was used as a guide. After the PCA, a cluster analysis was performed to identify groups of companies with similar characteristics. Next, all three PCAs that were performed will be discussed. Subsequently, a description will be given of how the concept of maturity levels of sustainable procurement was divided into factors, followed by a section on reformulating the propositions according to the concepts derived from the PCAs. Finally, an overview of the cluster analysis is provided.

8.1 PRINCIPAL COMPONENT ANALYSIS BUYER CAPABILITIES

A PCA with oblimin rotation was conducted on the 20 items of the concept buyer capabilities. In line with Field (2009), oblimin rotation was used to allow for correlated factors, since theory has suggested that the factors might correlate. After the first analysis, three items were dropped from further analysis as they were cross-loading on multiple items with a single loading of 0.40 or higher and a difference between weights of less than 0.1 (Costello and Osborne, 2005). Additionally, after further analysis, one other item was dropped as that resulted in a significant increase of Cronbach's α . The dropped items can be found in the survey in Appendix I. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO= 0.845). Bartlett's test of sphericity $\chi^2 (120) = 679.466$, $p < 0.001$ showed that the correlations between items were sufficiently large for conducting a PCA. Next, the eigenvalues for each component were obtained. Three components had eigenvalues over Kaiser's criterion of 1 and explained 69.02% of the variance combined. Therefore, three components were retained in the final analysis. In Table 6 the factor loadings after rotation are presented (factor loadings over 0.4 appear in bold). The items that load on the same components suggest that component 1 represents the integration of sustainable procurement, component 2 the purchasing skills and component 3 the attitude of employees. The internal consistency of the scales was assessed using Cronbach's α coefficients. The Cronbach α coefficients were all well above the recommended threshold of 0.70 outlined by Nunnally (1978).

Table 6: Summary of principal component analysis for buyer capabilities (N = 62)

Item	Integration of sustainable procurement	Purchasing skills	Attitude of employees
Sustainability is considered a vital part of our corporate strategy.	.947	-.014	-.085
My company stimulates working together with suppliers for sustainability.	.903	.023	-.152
My company cooperates with suppliers for achieving sustainability objectives together.	.866	.058	-.105
Top management supports our efforts to improve sustainability.	.783	-.120	.187
Design specifications with sustainability requirements are provided to suppliers.	.739	.212	-.138
Top management values purchasing views on sustainable procurement.	.725	-.027	.151
Social sustainability risks are integrated in purchasing decisions.	.724	.060	.213
Environmental sustainability risks are integrated in purchasing decisions.	.653	.071	.185
Purchasing actively identifies relevant stakeholders.	.053	.882	-.239
Stakeholder input is integrated in purchasing processes.	.187	.815	-.322

My company ensures training needs of employees are identified and acted upon.	-.220	.754	.386
My company stimulates working in cross-functional teams.	.010	.724	.156
Purchasing has the skills to interpret changes in the supplier market.	.069	.693	-.032
Purchasing participates in product and process design.	.137	.603	.237
My colleagues' business decisions are highly socially responsible.	.369	.089	.689
My colleagues are highly ethical and socially responsible.	.370	.122	.617
Initial eigenvalues	7.59	2.24	1.22
% of variance explained	47.44	13.99	7.59
α	0.93	0.86	0.79

8.2 PRINCIPAL COMPONENT ANALYSIS SUPPLIER CAPABILITIES

A PCA with oblimin rotation was conducted on the 13 items of the concept supplier capabilities. Similar to the PCA for the buyer capabilities, oblimin rotation was used to allow for correlated factors. After the first analysis, two items were dropped from the analysis as they were cross-loading on multiple items with a single loading of 0.40 or higher and a difference between weights of less than 0.1 (Costello and Osborne, 2005). The dropped items can be found in the survey in Appendix I. The KMO measure verified the sampling adequacy (KMO= 0.803). Bartlett's test of sphericity $X^2(55) = 297.343$, $p < 0.001$ indicated that correlations between items were sufficiently large for PCA. The eigenvalues for each component showed that three components had eigenvalues over Kaiser's criterion of 1 and explained 67.90% of the variance combined. Therefore, these three components were retained in the final analysis. In Table 7 the factor loadings after rotation are presented (factor loadings over 0.4 appear in bold). The items that load on the same components suggest that component 1 represents the supplier attitude, component 2 the access to resources from the buying company and component 3 the supplier sustainable resources deployment. The internal consistency of the scales was assessed using Cronbach's α coefficients. The α coefficients for the supplier corporate culture ($\alpha = 0.87$) and access to resources from the buying company ($\alpha = 0.80$) were well above the lower limits of acceptability of 0.70 outlined by Nunnally (1978). The α coefficients for supplier internal resources reached a respectable 0.67.

Table 7: Summary of principal component analysis for supplier capabilities (N = 62)

Item	Supplier attitude	Access to resources from buying company	Supplier sustainable resources deployment
The suppliers' top management values its employees' views on sustainability.	.879	-.028	-.034
The suppliers expect benefits from the sustainability initiatives.	.865	.210	-.070
The suppliers' employees behave highly ethical and socially responsible.	.767	-.042	-.113
The suppliers are willing to participate in our sustainability initiatives.	.705	.027	.232
The suppliers' top management wants to improve sustainability.	.698	-.096	.234
The suppliers are aware of our sustainability initiatives.	.426	.261	.317
My company provides training / education to the supplier's.	.047	.896	-.019
My company arranges funds to help suppliers increase their sustainability.	.020	.886	.013
Suppliers engage in inter-firm sustainability knowledge transfer.	-.100	.236	.825
Suppliers have the internal resources to invest in our sustainability requirements.	.035	-.125	.764
Suppliers have the knowledge and expertise required to act upon sustainability.	.291	-.209	.600
Initial eigenvalues	4.67	1.74	1.06

% of variance explained	42.44	15.85	9.61
α	0.87	0.80	0.67

8.3 PRINCIPAL COMPONENT ANALYSIS BUYER-SUPPLIER RELATIONSHIP

Similar to the two previous concepts, a PCA with oblimin rotation was conducted on the 28 items of the concept buyer-supplier relationship. After the first analysis, nine variables were deleted from further analysis because they had low loadings of less than 0.40, or were cross-loading on multiple items with a single loading of 0.40 or higher and a difference between weights of less than 0.1. Additionally, two variables were dropped as that resulted in a significant increase of Cronbach's α . The dropped items can be found in the survey in Appendix I. The KMO measure verified the sampling adequacy (KMO= 0.735)). Bartlett's test of sphericity $X^2(136) = 535.358$, $p < 0.001$ indicated that correlations between items were sufficiently large for PCA. The eigenvalues for each component showed that five components had eigenvalues exceeding Kaiser's criterion of 1 and explained 73.19% of the variance combined. Therefore, five components were retained in the final analysis. In Table 8 the factor loadings after rotation are presented (factor loadings over 0.4 appear in bold). The items that load on the same components suggest that component 1 represents loyalty in a relationship, component 2 the strictness of guidance in a relationship, component 3 joint dependency, component 4 the intensity of communication and component 5 the connectivity. Again, the internal consistency of the scales was assessed using Cronbach's α coefficients. The α coefficients all exceeded the threshold of 0.70 outlined by Nunnally (1978).

Table 8: Summary of principal component analysis for buyers-supplier relationships (N = 62)

Item	Loyalty	Strictness of guidance	Joint dependency	Intensity of communication	Connectivity
Promises made by suppliers are reliable.	.913	.061	.046	-.063	.066
If problems arise. the suppliers are honest about the problems.	.871	-.104	-.012	-.157	-.225
Suppliers have been frank in dealing with us.	.756	-.037	.026	.182	-.006
We are committed to the relationship with these suppliers.	.645	.046	.051	.287	.022
Suppliers are monitored to ensure adherence to our code of conduct.	-.100	.918	.007	.072	.056
Supplier relationships are ended if suppliers do not adhere to our code of conduct.	.119	.836	.037	.062	.068
We have specific audit procedures to ensure that suppliers adhere to our code of conduct.	.028	.790	-.115	.029	-.224
Purchasing has sustainable sourcing training programs.	-.086	.625	.071	-.070	-.133
We account for a large proportion of these suppliers' total sales.	-.028	.019	.881	-.028	-.034
The suppliers would find it difficult to replace us.	-.038	-.181	.812	.224	-.242
We do not have a good alternative to these suppliers.	.048	.211	.731	-.283	.171
We are important to these suppliers.	.384	.002	.584	.208	-.024
We have frequent face-to-face communication.	-.143	.037	-.010	.879	-.072
We inform each other about things that may affect the other.	.277	.006	.067	.715	.101
Suppliers are provided with any information that might help them.	.374	.203	-.066	.623	-.022

Current information systems satisfy supply chain communication requirements.	.206	.132	-.058	-.133	-.811
Information systems are integrated throughout the supply chain.	-.084	.151	.205	.187	-.740
Initial eigenvalues	5.34	2.79	1.97	1.29	1.06
% of variance explained	31.40	16.40	11.60	7.57	6.23
α	0.86	0.83	0.80	0.78	0.71

8.4 MATURITY LEVEL OF SUSTAINABLE PROCUREMENT

Unlike the other concepts, no principal component analysis was run on the 24 items of the concept maturity level of sustainable procurement. The economic, social and environmental aspects of the maturity levels were carefully created and based on literature, in order to assess either the economic, social or environmental sustainability. Since a PCA could relate the 24 items to different dimensions of sustainability than intended in this research (i.e. economic, social and environmental), it was chosen not to perform a PCA. Instead, based on the strong conceptual motivations of the maturity model, the items belonging to the economic, social and environmental aspects respectively were added to create three factors. These factors each comprise eight items and represent the economic, social and environmental sustainability maturity level of the purchasing department. The internal consistency of the scales was assessed using Cronbach's α coefficients. The α coefficients for the economic aspects ($\alpha = 0.87$), social aspects ($\alpha = 0.87$) and environmental aspects ($\alpha = 0.91$) were all well above the threshold of 0.70 outlined by Nunnally (1978).

Later in this research, during the analysis of the results, the three sustainability maturity level factors are combined into a single factor named sustainable procurement performance. Since maturity levels can provide some sort of a performance indication (Müller and Pfleger, 2014), they are used in this research to evaluate a company's sustainable procurement performance. How this sustainable procurement performance measure is created will be discussed in section 8.7

8.5 REFORMULATING THE PROPOSITIONS

The previous sections have dealt with the PCAs. As most of the concepts from the theoretical framework have been combined or given other, more suitable, names during the PCAs, this section will elaborate on the newly formulated concepts and how they relate to the earlier defined propositions. First, the concepts related to the buyer capabilities will be discussed, followed by the supplier capabilities and the buyer-supplier relationship concepts. The first concept of buyer capabilities that has changed is the concept of corporate culture. This did not emerge from the PCA, but it resembles the newly formulated concept of attitude of employees. Additionally, the concepts of stakeholder management and know-how and expertise of sustainability are more or less combined into the new concept of purchasing skills. Finally, supplier management can be related to the newly developed concept of integration of sustainable procurement. The results from the PCA have provided new insights into the relevant concepts. Therefore, the propositions are reformulated in such a way that the concepts are redefined, but that the meaning and logic behind the propositions stays the same. The reformulated propositions regarding the buyer capabilities are:

- P2a: A positive attitude of employees towards sustainability supports higher maturity levels of sustainable procurement.*
- P2b: Good purchasing skills support higher maturity levels of sustainable procurement.*
- P2c: The integration of sustainable procurement supports higher maturity levels of sustainable procurement.*

With regard to the concepts related to supplier capabilities, the earlier defined concepts also do not match identically with the concepts from the PCA, but they do resemble the same. Similar to the buyer capabilities, the supplier corporate culture has been redefined as supplier attitude. The second proposition deals with know-how and expertise, which is similar to the newly formed concept of supplier sustainable resources deployment. Finally, the earlier defined concept access to resources strongly resembles the concept access to resources from the buying company, which was derived from the PCA. Again, the propositions have been reformulated, keeping their initial meaning:

- P3a: A positive attitude of the supplier towards sustainability supports higher maturity levels of sustainable procurement.*
- P3b: High sustainable resources deployment at the supplier support higher maturity levels of sustainable procurement.*
- P3c: Access to resources from the buying company supports higher maturity levels of sustainable procurement.*

Finally, the concepts related to the buyer-supplier relationship have also changed. First of all, it has to be noted that the proposition on the geographical distance (previously P4d) is skipped. The questions on geographical distance were deleted during the PCA, as can be seen in Appendix I. Therefore, it is impossible to state anything regarding this proposition. The concept of joint dependency was actually also identified during the PCA. The concept of trust and commitment has been reformulated as loyalty, whereas the previous concept of code of conduct is now termed strictness of guidance. The final concept was information exchange and communication. During the PCA, two different concepts were identified, each relating to one aspect. As a result, two new concepts were created: the intensity of communication and connectivity. Again, similar to the buyer and supplier capabilities, the propositions have been reformulated, keeping their initial meaning:

- P4a: Joint dependency supports higher maturity levels of sustainable procurement.*
- P4b: Loyalty in the relationship supports higher maturity levels of sustainable procurement.*
- P4c: The intensity of communication supports higher maturity levels of sustainable procurement.*
- P4d: A good connectivity between the buyer and the supplier supports higher maturity levels of sustainable procurement.*
- P4e: Strict guidance in the relationship supports higher maturity levels of sustainable procurement.*

8.6 CLUSTER ANALYSIS

After creating the factors, the data was analysed to cluster the companies (N=62) based on the 14 created factors. Cluster analysis is a statistical technique in which cases are analysed to obtain grouping or to cluster them. Unlike general linear models, cluster analysis does not have very strong assumptions that have to be met in order to properly interpret the results (Meyers et al., 2012). According to Meyers et al. (2012), cluster analysis is often used as an exploratory approach. Since the field of study in this research is new, an exploratory research approach suits the present research objective best. Moreover, due to the small sample size cluster analysis is an appropriate choice (Meyers et al., 2012).

The cluster analysis will structure the cases based on the buyer capabilities, supplier capabilities, the buyer-supplier relationship and the maturity levels of sustainable procurement. This way, an overview will be created of typologies of companies, based on these four concepts. In conducting the cluster analysis, a hierarchical agglomerative technique with Ward's method and the squared Euclidean distance measure was used. Agglomerative hierarchical clustering begins with all cases being treated as a cluster in itself. In several steps, similar clusters are merged based on the criterion of the method chosen (Field, 2000). In the end, all cases are combined in one, useless, cluster. As mentioned previously, the cluster analysis was conducted using Ward's method. The Ward method is a hierarchical clustering method that aims to join cases into clusters, such that the variance within a cluster is minimised (Field, 2000). In conducting the cluster analysis all values were standardised to Z scores, because the values of the variables created via the PCAs were on different scales than the values of the variables that were created via adding (i.e. the sustainability maturity variables).

Table 9 provides the agglomeration coefficients as given in the agglomeration schedule (see Appendix II). By rewriting the coefficients as in Table 9 it is easier to see the changes in the coefficients as the number of clusters increases. The number of clusters is frequently determined based on where the distance coefficients make a larger change (Burns and Burns, 2009). In this case, from 48.73 on there are relatively large changes. Based on this criterion, a four-cluster solution was selected as most appropriate. Indeed, the same solution can be found when looking at the dendrogram (see Appendix II). Therefore, the next step involved a second hierarchical agglomerative cluster analysis, in which a four-cluster solution was requested. Next, a one-way ANOVA was conducted to determine if the classifying variables are significantly different between the clusters (Burns and Burns, 2009). From the ANOVA table (see Appendix II) it can be seen that all between groups means are significant ($p < 0.05$). This means that there are significant differences between the groups as a whole. According to Burns and Burns (2009), with a significant ANOVA and three or more clusters, a Tukey post-hoc

test is also necessary to determine where the exact differences between the clusters lie. The output of this test can also be found in Appendix II.

Table 9: Reformed agglomeration schedule

Clusters	Agglomeration last step	Coefficients this step	Change
2	854.00	631.25	222.75
3	631.25	570.12	61.13
4	570.12	521.39	48.73
5	521.39	480.02	41.37
6	480.02	448.55	31.48
7	448.55	418.69	29.86
8	418.69	393.05	25.65

The Tukey post-hoc test (Appendix II) shows that supplier attitude is significantly different between cluster 1 and 2, 1 and 3 and 1 and 4. Access to resources from buying company is significantly different between cluster 2 and 3 and 3 and 4. Supplier sustainable resources deployment reliably differentiates between the clusters 1 and 2, 1 and 3, 1 and 4 and 3 and 4. Integration of sustainable procurement is significantly different between all clusters, except 1 and 3 and 2 and 4. Purchasing skills reliably differentiates between clusters 1 and 2, 1 and 3 and 1 and 4. Attitude of employees is significantly different between cluster 2 and 3 and 3 and 4. Loyalty is only significantly different between cluster 1 and 2, whereas strictness of guidance reliably differentiates between clusters 1 and 2, 2 and 3 and 2 and 4. Joint dependency is significantly different between cluster 2 and 3 and 3 and 4. The intensity of communication reliably differentiates between clusters 1 and 2, 1 and 3 and 1 and 4. Connectivity is significantly different between cluster 1 and 2 and 2 and 3. Finally, the economic maturity reliably differentiates between all four clusters, except clusters 1 and 3 and 3 and 4 and the environmental maturity and social maturity both reliably differentiate between all four clusters, except cluster 1 and 3.

8.7 CLUSTER INTERPRETATION

The interpretation stage involves assigning each of the four identified clusters a name or label that accurately describes the nature of that cluster (Cousins et al., 2006). Table 10 shows the final four-cluster solution. In order to interpret the clusters better, other questions from the survey were compared with the cluster groups via comparing means and crosstab analysis in SPSS. These questions included three questions on company performance, four questions on the integration of sustainable procurement, a question on the number of employees, a question on how respondents assessed their sustainability and a question on whether the company has special product lines that are focused on a high level of sustainability. An overview of the questions can be found in the survey, which is included in Appendix I. The results are summarised in Appendix III and show no surprising outcomes. The highest scoring cluster on sustainable procurement performance also acknowledges the highest cost reductions, largest growth in market share and higher profits to its sustainability activities. The second highest scoring clusters sees the second best improvements on these aspects, the third cluster the third best improvements and the worst scoring cluster indicates that they did not experience any improvements on these performance indicators as a result of their sustainability activities. The same distribution holds for the cluster scorings on the integration of the three sustainability aspects and their own assessment of their sustainability. The results furthermore showed that in the highest scoring cluster in terms of sustainable procurement performance almost all companies (11 vs. 2) had a special product line focussed on high sustainability levels. For the second best cluster, this was more equally divided (9 vs. 14), whereas the two lowest scoring clusters had significantly more companies without these special sustainability focussed product lines (2 vs. 18 and 1 vs. 5). Finally, the results showed that the number of employees cannot explain the cluster distribution.

Based on the four-cluster solution, Table 12 describes each cluster based on the central concepts of this research. The table provides an overview of supplier capabilities, buyer capabilities and the buyer-supplier relationship that were found per cluster. Additionally, Figure 3 provides an overview of the sectors within the food and beverages (F&B) industry and how they are spread amongst the different clusters.

Table 10: Final clusters mean and standard deviation

Mean (SD)	Cluster 1 (N=20)	Cluster 2 (N=13)	Cluster 3 (N=6)	Cluster 4 (N=23)	F
Supplier attitude	- 0.92 (0.87)	0.61 (0.71)	0.16 (1.12)	0.41 (0.63)	F = 13.990 P < 0.05
Access to resources from buying company	- 0.32 (1.02)	0.44 (0.99)	-0.93 (0.37)	0.27 (0.89)	F = 4.400 P < 0.05
Supplier sustainable resources deployment	- 0.88 (0.82)	0.62 (0.83)	1.02 (0.73)	0.14 (0.68)	F = 15.540 P < 0.05
Integration on sustainable procurement	- 0.88 (0.64)	1.00 (0.32)	-1.09 (1.03)	0.48 (0.52)	F = 39.490 P < 0.05
Purchasing skills	- 0.90 (1.08)	0.73 (0.44)	0.91 (0.30)	0.13 (0.59)	17.169 P < 0.05
Attitude of employees	- 0.06 (0.94)	0.41 (0.86)	-1.06 (0.79)	0.09 (1.02)	F = 3.446 P < 0.05
Loyalty	- 0.55 (1.21)	0.59 (0.79)	0.14 (0.80)	0.10 (0.73)	F = 4.228 P < 0.05
Strictness of guidance	- 0.39 (0.95)	1.07 (0.67)	-0.88 (1.01)	-0.04 (0.70)	F = 11.390 P < 0.05
Joint dependency	- 0.21 (0.86)	0.30 (1.01)	-1.09 (0.67)	0.30 (0.98)	F = 4.345 P < 0.05
Intensity of communication	- 0.77 (0.91)	0.56 (0.44)	0.34 (0.38)	0.26 (1.05)	F = 8.105 P < 0.05
Connectivity	0.34 (1.14)	-0.81 (0.72)	0.96 (0.56)	-0.08 (0.73)	F = 7.250 P < 0.05
Economic sustainability	26.05 (7.62)	44.46 (4.22)	27.67 (5.24)	34.74 (5.95)	F = 25.20 P < 0.05
Environmental sustainability	21.50 (4.51)	40.85 (6.94)	14.17 (3.19)	29.70 (7.30)	F = 37.14 P < 0.05
Social sustainability	25.95 (6.30)	42.39 (5.11)	23.00 (6.75)	36.26 (6.16)	F = 27.10 P < 0.05

As has been mentioned before, the three sustainability maturity level factors are combined into a single factor named sustainable procurement performance. Since maturity levels can provide some sort of a performance indication (Müller and Pflieger, 2014), they are used in this research to evaluate a company's sustainable procurement performance. As this research focusses on the adoption of the Triple Bottom Line, all three sustainability aspects are equally important. Therefore, the scores on each of these three factors could be combined to form a measure of sustainable procurement performance. This was done by taking the average of the scores on the three aspects for each cluster. In the analysis of the results (Section 8.8) this average is used in the graphs to represent the sustainable procurement performance. Table 11 shows the mean and standard deviation per cluster. Except for the third cluster, it can be seen that the three sustainability aspects are quite equally adopted. Additionally, Table 11 shows that the environmental sustainability aspect of sustainable procurement is implemented to a lesser extent than the economic and social sustainability aspects, for all clusters. The correlation matrix (Appendix II) further shows that all three sustainability aspects are significantly highly correlated with each other.

Table 11: Mean and standard deviation of sustainable procurement performance

	Cluster 1 (N=20)	Cluster 2 (N=13)	Cluster 3 (N=6)	Cluster 4 (N=23)
Economic sustainability	26,05	44,46	27,67	34,74
Environmental sustainability	21,50	40,85	14,17	29,70
Social sustainability	25,95	42,38	23,00	36,26
Mean	24,50	42,56	21,61	33,57
SD	2,60	1,81	6,86	3,44

Table 12: Description of the clusters

	Cluster 1 (N=20)	Cluster 2 (N=13)	Cluster 3 (N=6)	Cluster 4 (N=23)
Supplier capabilities	<ul style="list-style-type: none"> - Suppliers are characterised by a very negative attitude towards sustainability. - Suppliers do not have internal resources or access to resources from the buying company to invest in sustainability. 	<ul style="list-style-type: none"> - The suppliers are characterised by a very positive attitude towards sustainability. - Suppliers have good access to resources from the buying company, but also have sufficient resources of their own to invest in sustainability. 	<ul style="list-style-type: none"> - The suppliers are characterised by a very high degree of sustainable resources to deploy, whilst simultaneously no degree of access to resources from the buying company at all. - The suppliers are willing to invest in sustainability. 	<ul style="list-style-type: none"> - The suppliers are characterised by their positive attitude towards sustainability. - Suppliers have limited access to resources from the buying company and they only have limited resources available themselves.
Buyer capabilities	<ul style="list-style-type: none"> - Buyers are characterised by very low purchasing skills and a low integration of sustainable procurement. - Employees don't really have anything against sustainability, but they are not enthusiastic about it. 	<ul style="list-style-type: none"> - Buyers are characterised by a very high level of integration of sustainable procurement in the company and a positive attitude of the employees towards sustainability. - Buyers have very good purchasing skills. 	<ul style="list-style-type: none"> - The buyers are characterised by no integration of sustainable procurement whatsoever and a very negative attitude towards sustainability. - The buyers do have very high purchasing skills. 	<ul style="list-style-type: none"> - The buyers are characterised by a good integration of sustainable procurement, but only average purchasing skills. - The employees are not against sustainable procurement, but are only very slightly positive about it.
Buyer-supplier relationship	<ul style="list-style-type: none"> - The relationship is characterised by a very low intensity of communication and the absence of loyalty. - There is no joint dependency and also no strictness of guidance. - Remarkably, connectivity is quite alright. 	<ul style="list-style-type: none"> - The relationship is characterised by the very high degree of strictness of guidance, combined with a very low degree of connectivity. - Both the intensity of communication and the loyalty towards each other is high, but they are only to some degree dependent on each other. 	<ul style="list-style-type: none"> - The relationship is characterised by a very high degree of connectivity and quite a lot of communication. - The relationship is also characterised by a small degree of loyalty, but no strictness of guidance or joint dependency at all. 	<ul style="list-style-type: none"> - The relationship is characterised by a small degree of loyalty and joint dependency. - Connectivity is limited, but there is a reasonable intensity of communication and there is some degree of strictness of guidance.
Performance	<ul style="list-style-type: none"> - The buying companies did not experience cost reductions, increase in market share or higher profits as a result of their sustainability activities. 	<ul style="list-style-type: none"> - The buying companies experienced quite a lot of cost reductions and also a good increase in market share and higher profits due to their sustainability activities. 	<ul style="list-style-type: none"> - The buying companies did not create any cost reductions, larger market shares or higher profits as a result of their sustainability activities at all. 	<ul style="list-style-type: none"> - The buying companies experienced quite some cost reductions, created a larger market share and also saw their profit increase a bit due to their sustainability activities.

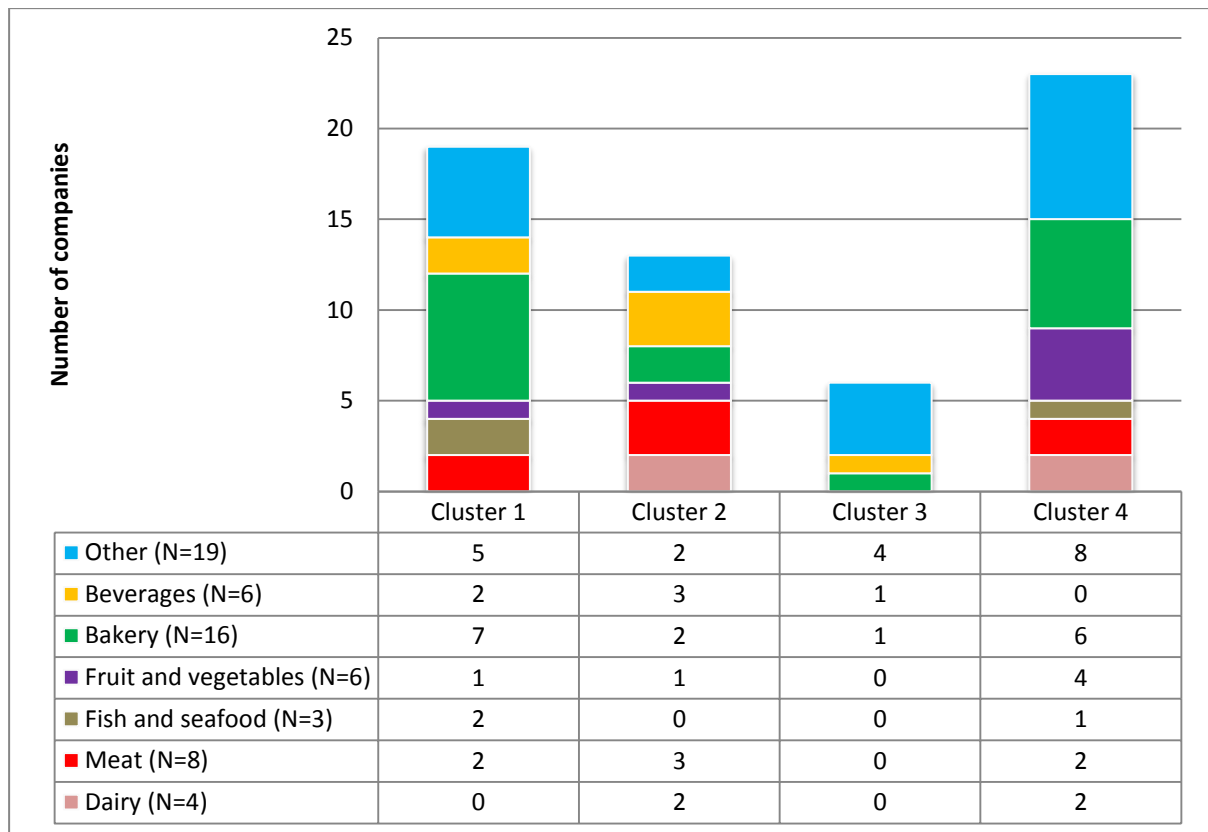


Figure 3: Cluster members per sector in the Dutch F&B industry

From Figure 3 it becomes clear that no real pattern can be found in the distribution of sectors within the Dutch F&B industry over the clusters. It can be seen that all four dairy companies are in the two highest scoring clusters in terms of sustainability performance. Furthermore, most bakeries (13 out of 16) are placed in the middle two clusters in terms of sustainability performance. However, the main result that can be found in Figure 3 is that sustainability performance does not seem to be constrained to sub-sectors within the Dutch F&B industry, as the sub-sectors are very distributed over the clusters.

As mentioned previously, part of the interpretation stage involves assigning the clusters a name or label that accurately describes the nature of that cluster (Cousins et al., 2006). The rationale for each of these names will be given next. The first cluster is labelled “*market relationship*”. This cluster represents 20 companies or 32.3% of the sampled population. The practices in this cluster strongly resemble a market type of relationship, meaning that the buyer and the supplier are not committed to each other or the relationship, the information exchange is relatively low and there is little coordination needed (Gereffi et al., 2005). This type of arm’s-length market relationship as described by Gereffi et al. (2005) is comparable to what is found in cluster 1. The companies do not invest in each other, communication is brought to a minimum and there is no loyalty towards each other. Moreover, sustainability is not a goal for these companies, which means the complexity will be low and prices are the most important, as is also the case for market relationships (Gereffi et al., 2005).

The second cluster is termed “*sustainability leader*”. This cluster represents 13 companies or 21% of the sampled population. This cluster scores significantly better than the other clusters on the maturity level of sustainable procurement. Moreover, the cluster scores by far the highest on strictness of guidance, indicating that there is a strict code of conduct and that there are strict rules to follow. This resembles a strong leadership with tight control to ensure sustainability. Since both the buyer and the supplier want to be sustainable and there is a high degree of loyalty and a high intensity of communication, the highest sustainable performance is reached in this cluster. Surprisingly, the connectivity of cluster 2 is by far the lowest compared to the other clusters.

The third cluster is termed “*one-sided sustainability*”. This cluster represents 6 companies or 9.7% of the sample. The “one-sided sustainability” cluster reflects a buyer-supplier relationship in which the supplier is capable and willing to invest in sustainability, but where the buying company is absolutely against sustainability. This cluster scores lowest on the maturity level of sustainable procurement reached, but remarkably, the cluster scores by far the highest on connectivity. The very low joint dependency and the very low strictness of guidance also indicate that the buying company is reluctant to engage in sustainability, thereby resembling the one-sidedness of the sustainability performance that is reached.

Finally, cluster 4 is labelled “*inconclusive sustainability*”. This cluster comprises of 23 companies or 37% of the sample. The cluster scores second highest for the maturity level of sustainable procurement. Although both the buyer and the supplier care for sustainability, the supplier does not have the needed resources and the buying company does not do as much as it could. For example, the integration of sustainable procurement is good, but could be a lot higher, and the resources they provide to their suppliers could also be higher. Therefore, this cluster is termed “inconclusive sustainability”, as both parties do work on sustainability, but not to the extent that the highest sustainability performance is reached.

8.8 ANALYSIS OF THE RESULTS

Next, the redefined propositions (section 8.5) will be analysed using the clusters found during the cluster analysis, which contain certain configurations of buyer and supplier capabilities and the buyer-supplier relationship. First, the propositions on buyer capabilities and supplier capabilities will be analysed. Subsequently, the propositions on the buyer-supplier relationship will be discussed.

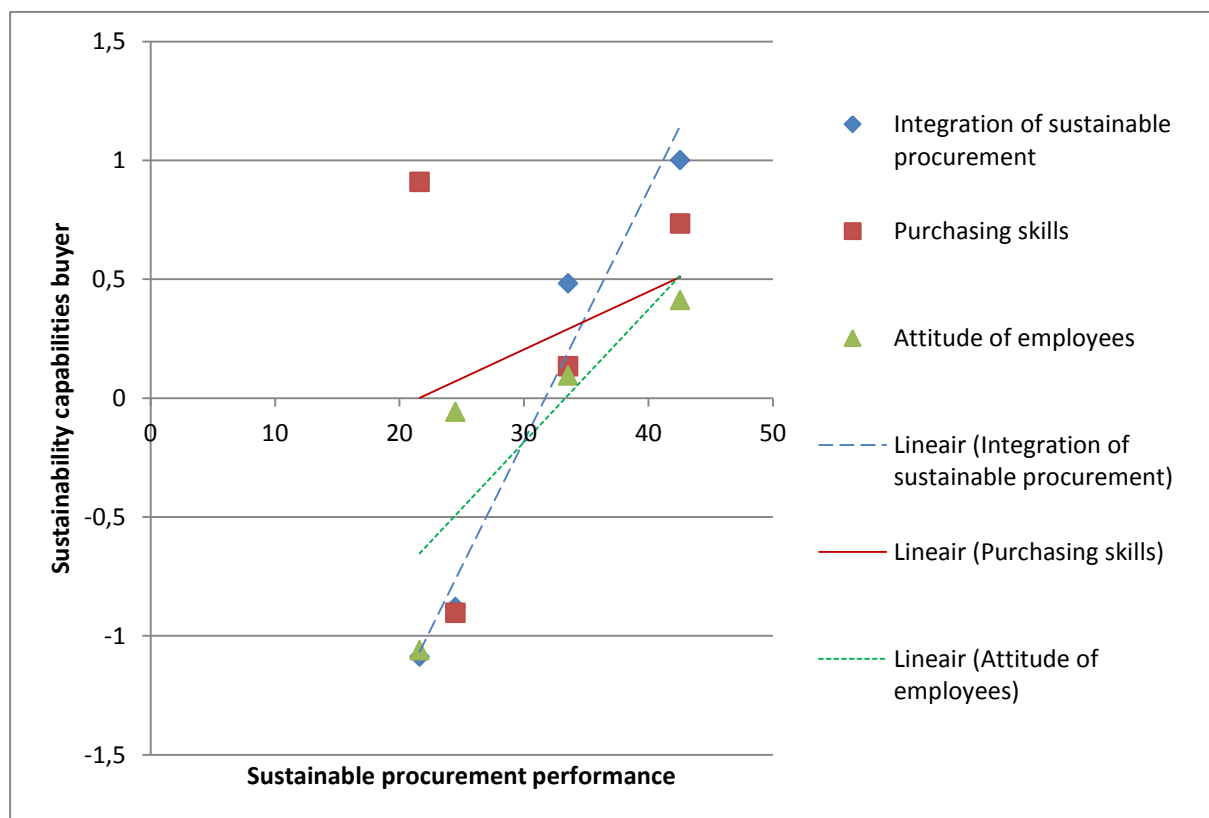


Figure 4: The effect of buyer capabilities on sustainable procurement performance

Figure 4 shows the concepts of the buyer capabilities that were identified during the PCA and the effect on sustainable procurement performance. The x-axis of the graph represents sustainable procurement performance, which is, as mentioned before in Section 8.4, a combined measure of the scores on the three sustainability aspects. On the y-axis the scale of the sustainability capabilities of the buyer are presented, which was derived from the values of the concepts that were created during the PCA. All points in the graph

represent a certain buyer capability of one cluster. Thus, the scores on buyer capabilities for all four clusters are included in the graph and ordered according to their sustainable procurement performance. The values were obtained via the cluster analysis. Finally, a linear regression line was added using Microsoft Excel. All three concepts depicted in the graph show a positive relationship between the capability and the sustainable procurement performance, signifying that the higher each capability, the higher the maturity level of sustainable procurement that is reached. The previously defined propositions were:

P2a: A positive attitude of employees towards sustainability supports higher maturity levels of sustainable procurement.

P2b: Good purchasing skills support higher maturity levels of sustainable procurement.

P2c: The integration of sustainable procurement supports higher maturity levels of sustainable procurement.

From Figure 4 it can be seen that every higher sustainable procurement performance is related to a higher attitude of employees, indicating that the employees have a more positive attitude towards sustainability. Proposition P2a can therefore be supported. The concepts of purchasing skills also shows a positive linear relationship with sustainable procurement performance. Therefore, proposition P2b can also be supported. It should be noted that only having high purchasing skills will not lead to higher maturity levels of sustainable procurement, as can be seen in Figure 4. Finally, the integration of sustainable procurement shows a very steep positive linear relationship with the maturity level of sustainable procurement that is reached. Since the two lowest scoring clusters on the integration of sustainable procurement also perform significantly worse on the maturity level of sustainable procurement than the two cluster with a high integration of sustainable procurement, it seems the integration of sustainable procurement supports high maturity levels. Therefore, proposition P2c can also be supported.

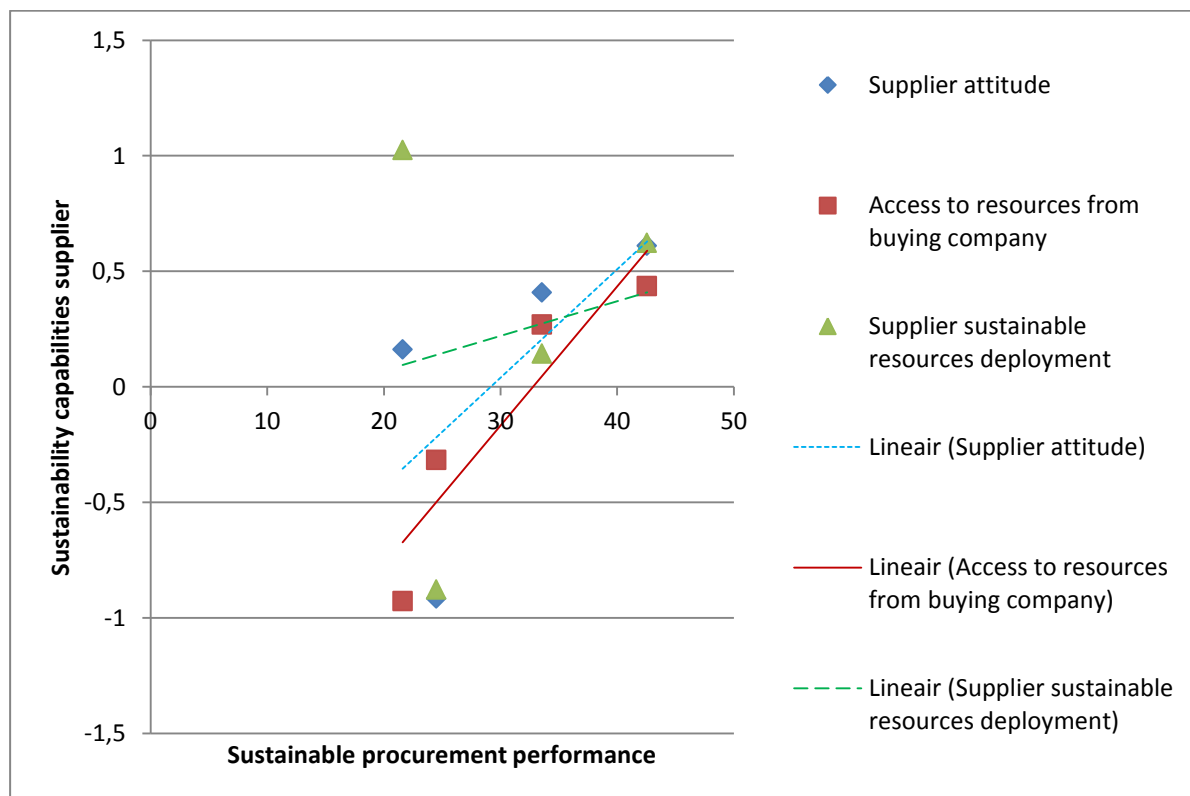


Figure 5: The effect of supplier capabilities on sustainable procurement performance

Figure 5 shows the concepts related to the supplier capabilities that were identified during the PCA, and how they relate to sustainable procurement performance. Again, the x-axis represents the sustainable procurement performance and the y-axis the scale of capabilities present at the supplier. The values for each capability of each cluster were obtained from the cluster analysis. Again, a linear regression line was added to aid interpretation. As with the buyer capabilities, the three concepts of supplier capabilities also show a positive

relationship with the sustainable procurement performance. This means that the higher these capabilities are, the higher the performance of sustainable procurement will be. The following propositions have been formulated earlier:

P3a: A positive attitude of the supplier towards sustainability supports higher maturity levels of sustainable procurement.

P3b: High sustainable resources deployment at the supplier support higher maturity levels of sustainable procurement.

P3c: Access to resources from the buying company supports higher maturity levels of sustainable procurement.

With regard to the supplier attitude, it can be stated that except for the one-sided sustainability cluster (cluster 3), it can be seen from Figure 5 that the higher the sustainable procurement performance, the higher the supplier attitude. This reflects that increasing sustainability performance is related to an increasingly positive attitude of the supplier towards sustainability. Indeed, the positive linear relationship in Figure 5 confirms this. Therefore, proposition P3a can be supported. The second proposition deals with supplier sustainable resources deployment. Again, except for the sustainable resources deployment of the one-sided sustainability cluster (cluster 3), it can be seen from Figure 5 that the higher the sustainable resources deployment, the higher the sustainable procurement performance. Since the linear relationship between supplier sustainable resources deployment and sustainable procurement performance is indeed positive, proposition P3b can also be supported. Finally, Figure 5 shows that the two lowest scoring clusters on sustainable procurement performance have a negative access to resources from the buying company, whereas a positive access to resources from the buying company is related to a significantly better performance of sustainable procurement. Proposition P3c is therefore also supported.

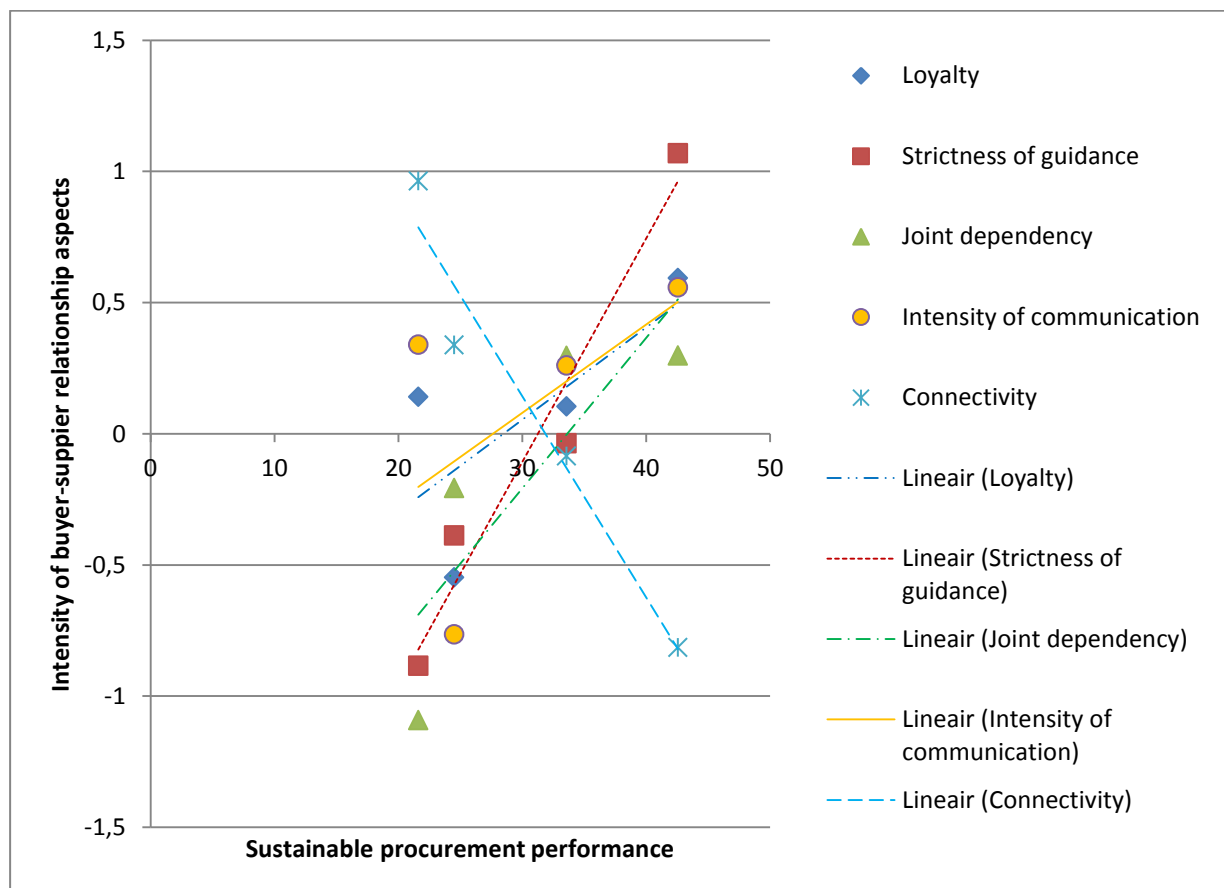


Figure 6: The effect of the different buyer-supplier relationship aspects on sustainable procurement performance

Figure 6 shows the relationship between the different buyer-supplier relationship aspects that were identified during the PCA and the sustainable procurement performance. Again, on the x-axis the sustainable

procurement performance scale can be found. The y-axis shows the scale of the buyer-supplier relationship aspects, which was derived from the values of the concepts that were created during the PCA. Again, the scores on all aspects for each cluster have been ordered according to sustainable procurement performance. Additionally, a linear regression line has also been added. Overall, it can be seen that all buyer-supplier relationship aspects have a positive linear relationship with sustainable procurement performance, except for the aspect of connectivity. The previously defined propositions were:

P4a: Joint dependency supports higher maturity levels of sustainable procurement.

P4b: Loyalty in the relationship supports higher maturity levels of sustainable procurement.

P4c: The intensity of communication supports higher maturity levels of sustainable procurement.

P4d: A good connectivity between the buyer and the supplier supports higher maturity levels of sustainable procurement.

P4e: Strict guidance in the relationship supports higher maturity levels of sustainable procurement.

As can be seen in Figure 6, the two lowest scoring clusters on sustainable procurement performance have a negative joint dependency, whereas the two highest scoring clusters have a positive joint dependency. Thus, it can be stated that without joint dependency, high sustainable procurement performance is not likely to be reached. Proposition P4a is therefore supported. The concept of loyalty shows a positive linear relationship with the sustainable procurement performance in Figure 6 and therefore, proposition P4b is supported. The next proposition includes the intensity of communication, which shows a positive linear relationship in Figure 6 with the sustainable procurement performance. Therefore, proposition P4c can be supported. However, for connectivity a negative linear relationship can be seen in Figure 6. This indicates that the higher the connectivity, the lower the sustainable procurement performance, or in other words, this means that connectivity does not support sustainable procurement. Thus, proposition P4d is rejected. Finally, from Figure 6 it becomes clear there is a very steep positive linear relationship with sustainable procurement performance for strictness of guidance. Thus, proposition P4e can be supported.

Finally, proposition *P1: The buyer and supplier capabilities are expected to affect the maturity level of sustainable procurement that is reached, through its effect on buyer-supplier relationships* has to be checked. From the theoretical framework, it followed that the buyer-supplier relationship was expected to mediate the effect of buyer and supplier capabilities on the maturity level of sustainable procurement that is reached. Thus, it was expected that the buyer-supplier relationship could facilitate the reaching of high maturity levels of sustainable procurement, as it would ensure that buyer and supplier capabilities indeed have a positive effect on the maturity level of sustainable procurement. Although the effects between buyer and supplier capabilities and the buyer-supplier relationship on sustainable procurement were not directly measured in the empirical research, some suggestions can be made based on the results. From the correlation matrix in Appendix II, the correlation between both buyer and supplier capabilities and the buyer-supplier relationship can be seen. As there are both significant positive and negative correlations, this confirms that there is a relationship between buyer-supplier relationships and buyer and supplier capabilities. Buyer-supplier relationships can thus probably indeed mediate the effect of buyer and supplier capabilities on sustainable procurement. Proposition P1 is therefore supported.

To further validate the results of propositions P2 – P4, a correlation matrix is included in Appendix II. The correlation matrix shows whether the positive (or negative) relationships between the concepts and sustainable procurement performance hold for the entire sample. The correlations all confirm the above found results. To summarise the results of the analysis of the propositions, Table 13 provides an overview.

Table 13: Summary of the results of the propositions

Proposition	Result
P1: The buyer and supplier capabilities are expected to affect the maturity level of sustainable procurement that is reached, through its effect on buyer-supplier relationships	Supported
P2a: A positive attitude of employees towards sustainability supports higher maturity levels of sustainable procurement.	Supported
P2b: Good purchasing skills support higher maturity levels of sustainable procurement.	Supported
P2c: The integration of sustainable procurement supports higher maturity levels of sustainable procurement.	Supported
P3a: A positive attitude of the supplier towards sustainability supports higher maturity levels of sustainable procurement.	Supported
P3b: High sustainable resources deployment at the supplier support higher maturity levels of sustainable procurement.	Supported
P3c: Access to resources from the buying company supports higher maturity levels of sustainable procurement.	Supported
P4a: Joint dependency supports higher maturity levels of sustainable procurement.	Supported
P4b: Loyalty in the relationship supports higher maturity levels of sustainable procurement.	Supported
P4c: The intensity of communication supports higher maturity levels of sustainable procurement.	Supported
P4d: A good connectivity between the buyer and the supplier supports higher maturity levels of sustainable procurement.	Rejected
P4e: Strict guidance in the relationship supports higher maturity levels of sustainable procurement.	Supported

9. CONCLUSION AND DISCUSSION

In this final chapter the analysed results of this research are made conclusive. This research aims *“to further develop the theory on sustainable procurement by providing an understanding of how buyer-supplier relationships can facilitate sustainable procurement in the Dutch F&B industry.”* To meet the research objective, the research questions have been investigated in the previous chapters. In the first paragraph of this chapter these research questions will be answered and an overall conclusion will be drawn. The second paragraph contains a discussion on the research, including some theoretical reflections and interesting findings of this study. Additionally, reflections on the relevancy, validity and reliability of this research are provided. The final paragraph of this chapter will provide recommendations for future research and practitioners.

9.1 CONCLUSION

The conclusion consists of two sections. In the first section an answer to the sub-research questions will be given based on the results of the literature study and the survey. The second section will provide an answer to the central research question, thereby providing an overall conclusion on how buyer-supplier relationships can facilitate sustainable procurement in the Dutch F&B industry.

9.1.1 CONCLUSION SUB-RESEARCH QUESTIONS

The sub-research questions all deal with a specific part of the research in order to acquire the knowledge necessary to meet the research objective. To answer the central research question, five sub-research questions were formulated and answered:

1. Which maturity levels of sustainable procurement can be identified?

Based on literature, a maturity model for sustainable procurement was developed in order to measure the impact of buyer-supplier relationships and buyer and supplier capabilities on sustainable procurement. Chapter 2 has discussed several maturity models that were found in literature, upon which the current maturity model was based. In total, four sustainable procurement maturity levels have been identified and created. The first level was labelled ‘Beginning level’ and represents companies that mostly only adhere to (if any) mandatory regulations. The second ‘Improving level’ stands for companies that go slightly further than the mandatory requirements and start putting some effort into sustainability. The third level was termed ‘Succeeding level’ and represents a consideration and maturity of sustainability that is often above industry average. Sustainability becomes more and more integrated in the company and in the relationship with the suppliers. Finally, the fourth ‘Leading level’ represents an outstanding effort towards sustainability and a sophisticated maturity. These companies are highly committed to sustainability and have completely integrated sustainability, both content wise and in the organisation.

In the maturity model, the four levels of maturity have been defined based on different aspects of sustainability. For each of the three sustainability aspects (economic, social and environmental) generally accepted important aspects were taken from literature to include in the maturity model. The economic dimension of the sustainable procurement maturity model includes the aspects economic value distribution, sustainability reporting, knowledge management and innovation and technology. The environmental dimension of the maturity model comprises the aspects Life Cycle Assessment process, material and part purchasing, manufacturing impact and supplier management. For the social dimension of the maturity model two categories were created: internal for employees and external for the relationship with suppliers. The internal social aspect includes health and safety and employee management, whereas the external social aspect includes supplier management and corporate citizenship. For each of these sustainable procurement aspects, four different maturity levels were created based on literature and existing maturity models. The final maturity model can be found in Chapter 2, Tables 1-3.

2. Which capabilities of the buying company, related to the buyer-supplier relationship, influence sustainable procurement?

From the literature study it became clear that a buying company needs to have certain capabilities in order to have a higher maturity level of sustainable procurement. The first capability that was identified as important was supplier management. As the complexity of supplier management will increase when sustainability issues are incorporated, it seems essential for the buying company to have good supplier management capabilities on beforehand. Additionally, the corporate culture of the buying company, which covers aspects related to how the company works, was also identified as important. According to the literature, the corporate culture could either hinder or support sustainable procurement. The third capability needed was stakeholder management. From literature it was expected that companies could experience difficulties in implementing sustainable procurement if they do not understand the role and influence of stakeholders. The final identified capability was the know-how and expertise of sustainability that is needed. Without the necessary knowledge and expertise the buying company is expected not to be able to reach high sustainable procurement maturity levels.

The results of the survey confirmed the findings from literature. From the analysis of the results it became clear that the integration of sustainable procurement is an important capability needed. The integration of sustainable procurement involves the integration of sustainability criteria in the purchasing process, sustainable supplier development activities and top management support. Additionally, the analysis of the results showed purchasing skills are also positively related to sustainable procurement performance. Purchasing skills includes aspects like stakeholder management, cross-functional cooperation and knowledge and skills of the purchasing personnel. Finally, the results showed the attitude of the employees is also positively related to the sustainable procurement performance. This means that ethical and socially responsible personnel supports higher maturity levels of sustainable procurement. To summarise, the capabilities the buying company needs to support its sustainable procurement performance are good purchasing skills, a positive attitude of employees towards sustainability and a high integration of sustainable procurement in the company.

3. Which capabilities of the supplier, related to the buyer-supplier relationship, influence sustainable procurement?

Ensuring sustainability and achieving sustainable procurement takes two parties, implying that the supplier also needs to have certain capabilities to support this. From literature it became clear a very important capability was the access to resources, especially since research has shown suppliers often lacked the resources needed to invest in sustainability. Additionally, similar to the buying company, the supplier also needs relevant know-how in order to improve its sustainability. Finally, also similar to the buying company, the corporate culture has been identified as having an important influence on the maturity level of sustainable procurement. The suppliers willingness to participate, top management support and other aspects of the corporate culture could either hinder or support sustainable procurement according to literature.

The results of the empirical research have confirmed the findings in literature. From the analysis of the results it became clear that access to resources from the buying company is positively related to sustainable procurement performance. This means that when the suppliers have access to funds and training or education from the buyer, this positively influences the maturity levels of sustainable procurement that can be reached. Additionally, the results showed that supplier sustainable resources deployment is also positively related to sustainable procurement performance. This includes the internal resources and knowledge available at the supplier and the inter-firm sustainability knowledge transfer activities the supplier engages in. Finally, the results showed the supplier attitude has an influence on sustainable procurement. This means the higher top management support, the willingness to engage in sustainability initiatives and the ethical and social responsibility of employees, the higher the maturity level of sustainable procurement. To summarise, the capabilities the supplier needs to support sustainable procurement performance of the buyer are access to resources from the buying company, the deployment of their own sustainability resources and a positive attitude towards sustainability.

4. Which aspects of buyer-supplier relationships can influence sustainable procurement?

From the literature study it became clear that power and dependency are two very important aspects in the buyer-supplier relationship. However, the academic community has remained inconclusive about the effect of

power asymmetry or joint dependency on sustainability. Some scholars advocate the use of power to force suppliers to act sustainable, whereas others advocate for more equal relationships and joint dependency. Either way, power and dependency influence sustainable procurement. Two other central concepts in the buyer-supplier relationship literature are trust and commitment. According to literature, trust and commitment provide a basis for collaboration and are stated to be important for realising an improved sustainability performance. However, as mentioned in Chapter 5, some scholars state that higher (non-monetary) relationship investments stimulate opportunistic behaviour at the supplier, thereby decreasing the sustainability. This could be due to the suppliers' perception that the likelihood of penalties for non-compliance is decreased or because high levels of monitoring can create a feeling of distrust for the supplier. Overall, the literature points mostly in the direction of a positive relationship between trust and commitment and sustainable procurement performance. Another aspect of buyer-supplier relationships that could influence sustainable procurement which came forward during the literature study was information exchange and communication. Literature has suggested that especially the willingness to share information could have a large influence on the information exchange in a relationship. Furthermore, codes of conduct are argued to have a positive influence on the maturity level of sustainable procurement reached. They are perceived by researchers as a relatively easy way to solve sustainability issues, because of the guidelines they provide. The final aspect of buyer-supplier relationships that came forth from literature is the geographical distance. Although some scholars state joint dependency, mutual action and trust and commitment could overcome issues related to geographical distance, others have argued that a large geographical distance could negatively impact all the previously mentioned aspects of buyer-supplier relationships, thereby also negatively impacting sustainable procurement.

The results of the empirical research have provided some valuable insights into the relationship between aspects of buyer-supplier relationships and sustainable procurement performance. First of all, the analysis of the results showed that loyalty, which encompasses aspects of trust and commitment, is positively related to sustainable procurement performance. Thus, this research did not support the arguments in literature that higher (non-monetary) relationship investments stimulate opportunistic behaviour at the supplier. Additionally, the results showed that joint dependency was positively related to sustainable procurement performance. In the cases where both the supplier and the buyer were dependent on each other, sustainable procurement performance was significantly higher than when there was no joint dependency. Thus, this research did also not support the scholars who advocate for using power to force suppliers to act sustainable. However, the results do show an important role for the strictness of guidance in the buyer-supplier relationship. The positive relationship between strictness of guidance and sustainable procurement performance indicates that codes of conduct, rules and audit procedures have a positive influence on the maturity level of sustainable procurement. Finally, the analysis of the results showed two interesting results. The intensity of communication, which includes aspects of face-to-face communication and willingness to share information, has a positive relationship with sustainable procurement performance. This confirms the expectations from the literature study. However, connectivity, which includes aspects on the linkage and integration of information systems, has a negative relationship with sustainable procurement performance. This does not imply that connectivity has a negative influence on sustainable procurement, but it does lead to the conclusion that connectivity is not a prerequisite for sustainable procurement. To summarise, the following aspects of buyer-supplier relationships have been found through the analysis of the empirical research to be related to sustainable procurement: loyalty, strictness of guidance, joint dependency, intensity of communication and connectivity.

5. Which aspects of the Dutch F&B business environment influence the buyer-supplier relationship with regard to sustainable procurement?

The setting of this research was the Dutch food and beverages industry, as literature had suggested this was a suitable industry to gain more insights into how buyer-supplier relationships can facilitate sustainable procurement. Specific aspects of the business environment of the Dutch F&B industry that could influence this research were found during the literature study. Firstly, the sector has been increasingly improving its sustainability through all sorts of initiatives like the MSC label and organic certifications. These initiatives, which are often initiated by NGOs, could influence the buyer-supplier relationship, as some initiatives may take over auditing procedures or control activities. This could result in less strictness of guidance being needed to ensure sustainability. Secondly, Dutch consumers enjoy relatively low prices for their food products, illustrating the highly competitive environment of the Dutch F&B sector. This could influence both the resources of the

supplier and the buyer, as their focus might stay on efficiency instead of sustainability to cope with the highly competitive environment. Finally, consumers are inclined to punish companies that sell branded products if they fail to meet their sustainability expectations. Due to the highly competitive environment and pressure from consumers, companies may be inclined to cooperate more and change their attitude towards sustainability. The threat of consumer punishments could also increase the joint dependency in a relationship, as bad sustainability performance of one actor could be a problem for both parties when consumers start boycotting products for example.

9.1.2 CONCLUSION CENTRAL RESEARCH QUESTION

After concluding upon the sub-research question, this section answers the central research question. A combination of theoretical and empirical research methods has been used to investigate the main research question: *'Which configuration of buyer-supplier relationships facilitates sustainable procurement?'*

The literature study has suggested several configurations of buyer-supplier relationships that would foster sustainability, but did not provide a conclusive answer. First of all, in case of power asymmetry in favour of the buyer, the buying company could impose sustainability requirements on their suppliers. Some scholars even argued that the use of power is a requirement for supplier compliance to sustainability criteria. In line with other scholars, the empirical research showed contradictory results. Joint dependency turned out to be positively related to sustainable procurement performance, supporting the idea in literature that joint dependency supports sustainability.

Furthermore, the theoretical research suggested that trust and commitment positively influence sustainable procurement through increased information sharing, a decrease in the risk of opportunistic behaviour and more cooperation. Indeed, the empirical research supported these findings, as the concept loyalty was positively related to sustainable procurement performance. Where loyalty between the buyer and supplier existed, the intensity of communication was significantly higher than for relationships without loyalty, thereby indeed supporting sustainable procurement. However, theory also suggested that trust and commitment decrease the need for monitoring suppliers, which was not confirmed by the empirical research. Although two of the identified clusters with loyalty in the relationship indeed had a lower strictness of guidance, the best performing cluster in terms of sustainable procurement performance had the highest loyalty in combination with an even higher strictness of guidance. It thus seems that trust and commitment, or loyalty, definitely support sustainable procurement, but that in order to achieve the highest sustainable procurement performance, strict guidance might also be needed.

Strict guidance, or the use and control of codes of conduct, has been argued to be a relatively easy way to make the supply chain more sustainable. According to literature, a major downside to the use of codes of conduct is the often voluntary nature of the agreement and consequently the non-compliance of suppliers. However, some scholars have warned that high levels of monitoring could create distrust and non-productive or even harmful actions by the supplier. On the contrary, the empirical research showed that a high degree of strictness of guidance, including strict monitoring and control activities, has a positive effect on sustainable procurement performance. Thus, when codes of conduct are implemented together with strict monitoring and control activities this could facilitate sustainable procurement. The theoretical research suggested that supplier compliance to a code of conduct can also be increased through trust, goal congruence between buyers and suppliers and reputation effects. Since the highest scoring cluster, both in terms of sustainable procurement performance and highest strictness of guidance, also shows a high degree of loyalty, it seems trust indeed reinforces supplier compliance and thereby the sustainability performance of both the buyer and the supplier. Additionally, goal congruence between buyers and suppliers and reputation effects are also likely to stimulate supplier compliance and sustainable procurement performance in the Dutch F&B industry. This is due to the business environment, where consumers are inclined to punish companies that are not sustainable, hence creating a threat to the reputation of the companies.

Furthermore, the literature study revealed that information sharing is seen as a basic requirement for any relationship and for reaching sustainability. When the right information is shared in a timely and accurate manner, sustainable procurement performance will benefit. However, the willingness to share critical and

sensitive information can be hampered by a lack of trust. As mentioned before, the results from the empirical research have shown that where the intensity of communication is high, loyalty is also high and where the intensity of communication is low, loyalty is also low. Thus, it can be concluded that trust and the sharing of information reinforce each other. Another aspect of information sharing is connectivity. Although connectivity can facilitate quick information sharing, it does not guarantee that the right information is shared. Here, the empirical research shows interesting results. Connectivity was negatively related to the sustainable procurement performance, which does not imply that connectivity has a negative influence on sustainable procurement, but does suggest that it is thus not a prerequisite in order to reach sustainability.

Finally, next to the specific aspects of buyer-supplier relationships, this research also included buyer and supplier capabilities. It was expected that without proper sustainability capabilities at the buyer and the supplier, high sustainable procurement performance could not be reached. Indeed, the empirical research showed that the integration of sustainable procurement, a positive attitude towards sustainability and good purchasing skills are capabilities of the buyer that have a positive effect on sustainable procurement performance. For the supplier also a positive attitude towards sustainability was identified as having a positive effect on sustainable procurement performance, along with access to resources from the buying company and the deployment of sustainability resources. As the identified capabilities and the aspects of the buyer-supplier relationship all correlated with each other, this shows that the buyer-supplier relationship and the buyer and supplier capabilities together determine sustainable procurement performance.

The empirical research has shown which buyer-supplier relationship configurations, including buyer and supplier capabilities, are used in practice and how they relate to sustainable procurement performance. Four clusters were identified with different configurations and different performance outcomes. It can be concluded that loyalty and a high intensity of communication do not only reinforce each other, but consequently also reinforce their positive effect on sustainable procurement. However, in order to reach a high maturity of sustainable procurement, joint dependency seems to be a prerequisite. Moreover, where joint dependency is present, suppliers have access to resources of the buying company, which in turn also increases sustainable procurement performance. Additionally, the 'sustainability leader' cluster revealed that in order to reach the highest sustainable procurement performance, strict guidance in the form of a code of conduct and strict monitoring and control activities could further facilitate sustainable procurement performance. Moreover, the empirical research revealed that strict guidance is significantly positively correlated with the integration of sustainable procurement and purchasing skills at the buying company, thereby confirming the importance of the capabilities for sustainable procurement performance. Thus, it must be noted that the configuration of the buyer-supplier relationship should be supported by a buyer and supplier with the right capabilities. Indeed, the 'one-sided sustainability' and the 'market relationship' clusters confirmed that both the buyer and the supplier need to have good sustainability capabilities in combination with the right buyer-supplier relationship in order to reach a high maturity level of sustainable procurement.

9.2 DISCUSSION

This paragraph will first discuss some theoretical reflections on the results. Subsequently, the relevancy of this research will be discussed. Finally, the validity and reliability of this research are discussed.

9.2.1 THEORETICAL REFLECTIONS

This section will discuss other interesting findings from the empirical research, along with a theoretical reflection on the results. First of all, the general findings of the empirical research are in line with the earlier mentioned (Section 5.1) study of Pagell et al. (2010). Similar to the results of their study, this research has shown that more cooperative forms of buyer-supplier relationships, in which the buyer provides the supplier with the needed resources, are needed to ensure sustainability. Pagell et al. (2010) changed the dominant approach to purchasing portfolio models, because they found economically very viable companies that were not making decisions in the manner suggested by Kraljic (1983). Moreover, these companies could be considered leaders in sustainable supply chain management. It thus seems that in order to achieve sustainability, using the traditional purchasing portfolio models is not appropriate anymore. Indeed, one of the most contradictory results from this research and the study of Pagell et al. (2010) compared to the traditional

purchasing portfolios is the purposeful increase of supply risk. Similar to the results of Pagell et al. (2010), this research showed that companies that were investing in sustainability purposefully increased asset specificity through intense communication, providing resources to suppliers and creating strict guidance, thereby increasing the supply risk as defined by Kraljic (1983).

A second interesting reflection on this study includes the question whether a company's position in the supply chain has an effect on the maturity level of sustainable procurement that is reached. Whilst asking the respondents to cooperate in this research, one of the respondents stated that they did not take part in any sustainability activities, because they were not selling to end-consumers. This suggests that the level of sustainable procurement could depend on the company's position in the supply chain. Indeed, Hoejmose et al. (2012) showed that green practices in business to business (B2B) supply chains were considerably underdeveloped compared to business to consumer (B2C) supply chains. González-Benito and González-Benito (2006) also stated that companies further down the chain, thus not directly visible to consumers, are more reactive in their approach to sustainability. This could be caused by what Hollos et al. (2012) stated, that consumers and other stakeholders are inclined to punish companies, especially those selling branded products to the end consumer, if they fail to comply with accepted sustainability standards. Although this research did not take into account the company's position in the supply chain, it could be an interesting addition for future research as it could explain some of the differences found between the clusters in this research.

Thirdly, a surprising outcome of the empirical research was that connectivity was negatively related to sustainable procurement performance. The results showed that the best performing companies, in terms of sustainability, had no connectivity whatsoever whilst the worst performing companies had a very high connectivity. Theoretically, it would be expected that connectivity should be high, since the buying company would need to know what the supplier is doing regarding sustainability. Then, it would be expected that information systems are integrated so that information about sustainability activities can be exchanged easily and quickly. Nevertheless, the results from the empirical research proved otherwise. As Fawcett et al. (2007) stated, information sharing and communication are too often mistaken for being a technology issue. Although information technology provides opportunities for enhanced communication and collaboration (Makkonen and Vuori, 2014), a company's willingness to share information ultimately determines the extent of communication (Fawcett et al., 2007). As the intensity of communication did appear to be positively related to sustainable procurement performance, it seems that the willingness to share information is indeed far more important than the connectivity. The 'sustainability leader' cluster confirms this, as they show the highest intensity of communication and by far the lowest connectivity of all clusters. However, it should be noted that as information technology enables a free flow of information among companies (Spekman and Carraway, 2006), it is likely to enhance communication and could thereby potentially increase sustainable procurement performance even further.

Fourthly, an interesting question that arises when looking at the sustainable procurement performance of the clusters is why the environmental aspect of sustainability is implemented to a lesser extent than the economic and social aspects? As mentioned in the introduction, far more attention has been paid to the environmental aspects of sustainability in literature, resulting in a larger amount of scientific articles compared to the social or economic dimensions. Therefore, it is remarkable that companies in the Dutch F&B industry perform worse on the environmental aspect, as it would be expected that there is more knowledge in this area.

LEVELS OF SUSTAINABLE PROCUREMENT

Finally, another relevant theoretical reflection concerns the maturity model of sustainable procurement that was created in Chapter 2. The sustainable procurement maturity model included social, economic and environmental aspects and indicated for each level what sustainability related activities should be present to reach that certain level. After conducting this research, aspects related to the buyer-supplier relationship and buyer and supplier capabilities can be considered as an addition to the maturity model, to create a more comprehensive overview of each maturity level. First of all, a relevant addition to the maturity model would be to include the amount of alignment between the sustainability capabilities of the buyer and the supplier. In other words, do the buyer and supplier have an equal amount of sustainability capabilities and are they both positive about sustainability? Figure 7 shows that when capabilities are aligned, both in terms of their

resources and attitude, higher sustainable procurement performance is reached. Sustainable procurement performance is positioned on the x-axis and the y-axis represents the scale of the sustainability capabilities based on the values from the PCAs. For both the buyer and the supplier capabilities, the average of all capabilities was taken per cluster and presented in Figure 7. Furthermore, Table 14 presents the proposed addition of buyer-supplier relationship configurations. Based on the results from the empirical research, an estimation has been made which aspects of both the buyer, the supplier and their relationship suit each maturity level, as defined in Chapter 2.

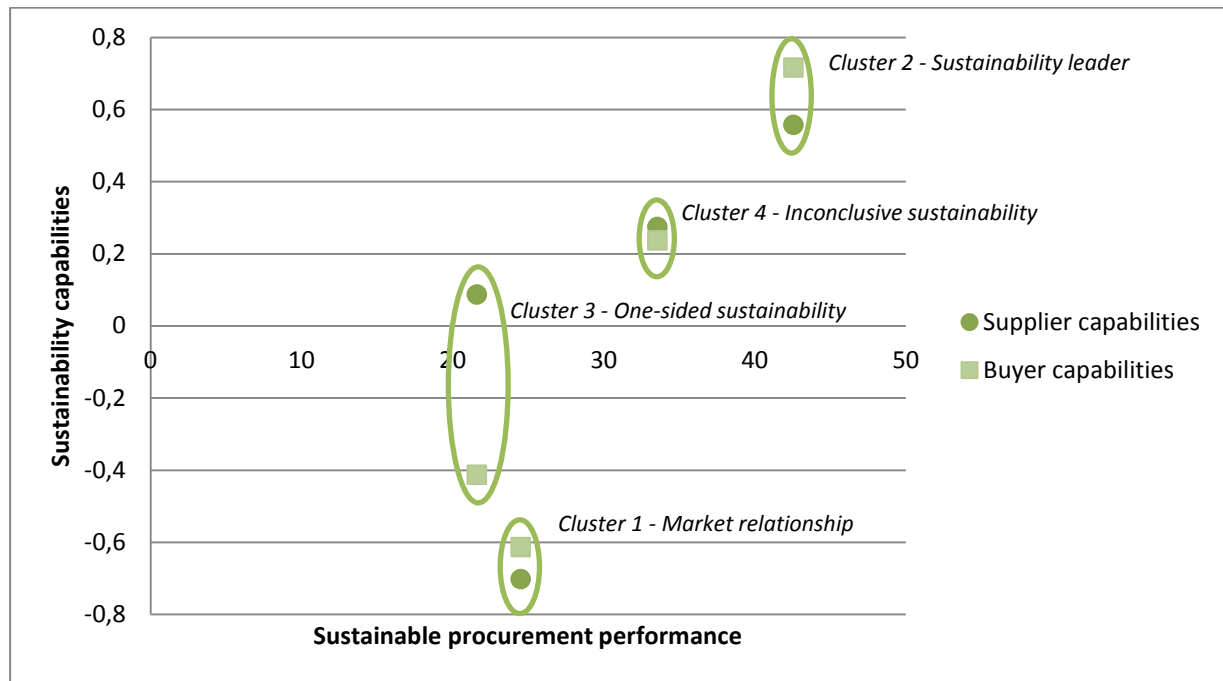


Figure 7: The effect of alignment between average buyer and supplier sustainability capabilities per cluster on sustainable procurement performance

Table 14: Buyer-supplier relationship aspects related to sustainable procurement levels

Maturity level	Buyer-supplier relationship
Beginning	<ul style="list-style-type: none"> - Relationship is characterised by a market type of relationship: the buyer and supplier show no commitment or loyalty, information exchange is low and there is no strict guidance. - Both the buyer and the supplier do not have the capabilities needed for sustainable procurement, nor is there any intention from the buying company to support the supplier. - Both parties have a negative attitude towards sustainability.
Improving	<ul style="list-style-type: none"> - Relationship is stable, but there is no strict guidance or joint dependency. Companies are able to communicate through information systems sufficiently. - One of the parties has good sustainability capabilities, but the other does not. - A one-sided positive attitude towards sustainability.
Succeeding	<ul style="list-style-type: none"> - Relationship is characterised by a cooperative approach: there is a good intensity of communication, loyalty and joint dependency are present, but there is no strict guidance. - Both parties have good sustainability capabilities and the buying company supports the supplier in reaching higher sustainability through providing some access to its own resources. - Both parties are positive about sustainability.
Leading	<ul style="list-style-type: none"> - Relationship is characterised by a dedication to sustainability: there is a very high strictness of guidance, combined with a strong intensity of communication and high degree of loyalty and joint dependency. - Both parties have excellent sustainability capabilities . Nevertheless, the buying company even supports the supplier with additional resources to invest in sustainability. - Both parties have a very positive attitude towards sustainability.

9.2.2 RELEVANCY OF RESEARCH

As described in the introduction of this report (Chapter 1), sustainable procurement has received growing attention in the academic community the last decade. Nevertheless, still many research gaps exist. This research therefore attempted to improve the knowledge and theory on how buyer-supplier relationships can support sustainable procurement. The lack of empirical research into buyer-supplier relationships and how they can foster sustainability has left researchers undecided on what is important in the buyer-supplier relationship to achieve sustainability. By investigating the current practices in the Dutch F&B industry through empirical research, this research has scientific relevance and investigates relationships between concepts that have not been studied yet. Moreover, this research considered the adoption of the TBL in sustainable procurement, thereby also adding to the current literature.

Next to the scientific relevance, there is also some practical relevance. It has been argued in the introduction of this report (Chapter 1) that managers face significant obstacles and barriers in the implementation of sustainable procurement. Indeed, the implementation of sustainable procurement remains low in practice. Moreover, the ability of managers to recognise and shape relationships in such a way that it improves sustainability can be considered a valuable asset, which could aid in making sustainable decisions. Thus, this research is also very relevant for practitioners.

9.2.3 VALIDITY AND RELIABILITY

As all research has its limitations, this section will discuss the reliability and validity of this research. First of all, with regard to the validity of measurements, it can be stated that the operationalisation of the concepts was based on literature as much as possible. As mentioned before in Chapter 7, content validity was assured by the fact that the constructs were based on an extensive literature review and the fact that most variables had proven reliability and validity, as they had been tested and used in the literature before. However, for some concepts no proven constructs could be found. In these cases, the operationalisation of the measurement was based on the literature interpretation of the researcher. To further increase the validity of the measurements, the survey was evaluated by two academic experts and tested by two practitioners, who were asked to comment on the content and clarity of the survey. As a result, several minor changes were made to the survey.

The internal validity of the conclusions is largely dealt with by basing the propositions on previous work. However, since the theoretical understanding of the effect of the buyer-supplier relationship on sustainable procurement performance is relatively unexplored, this research remains exploratory. More research is therefore necessary to confirm the results found in this study. Furthermore, the theoretical model created in Chapter 6 was not completely tested in the survey. More specifically, the mediating effect of buyer-supplier relationships on the connection between buyer and supplier capabilities and sustainable procurement performance was not directly tested. Based on the results of the empirical research, the theoretical model is expected to be true, but future research should confirm this. With respect to the external validity it can be stated that there was a relatively low response rate. Although the effective response rate was a good 28.9%, the absolute number of respondents (62) is too low to make any population claims or to conduct any heavy statistical analysis on. Nevertheless, as this research is exploratory, it did provide meaningful insights.

Finally, with regard to the reliability of this research, it can be stated that, based on Cronbach's alpha, the internal consistency of the survey was good (see Sections 8.1 - 8.3). However, it should also be noted that whenever this research would be repeated, another distribution over the clusters can be expected. This research focussed on sustainability, which can be considered an ever-changing topic in terms of consumer pressure, legislation and market pressure for example. Therefore, when this research would be conducted at another time, the business environment is likely to be different. This could especially be of influence on the distribution of companies over the clusters, as higher pressure will likely result in more companies trying to be sustainable and lower pressure will probably not.

9.3 RECOMMENDATIONS

This final section discusses recommendations for future research and practitioners. The first recommendation for future research would be to investigate factors that could stimulate a feeling of joint dependency, as this was found to be important in reaching sustainable procurement. Secondly, an interesting reflection on this research involved the question whether a company's position in the supply chain has an effect on the maturity level of sustainable procurement that is reached. If different capabilities or a different configuration of the buyer-supplier relationship is needed, this would be very relevant to know for practitioners. Since business to business and business to consumer markets differ on quite a few aspects, it would add to the current knowledge to investigate whether this is also the case for buyer-supplier relationships and how they facilitate sustainable procurement. Thirdly, the influence of geographical distance on buyer-supplier relationships could not be determined in this research. As it has the potential to influence the relationship and sustainable procurement, it would be relevant to know if and how geographical distance affects these concepts. Therefore, future research could be focussed in that direction. Fourthly, the nature of the identified clusters and maturity levels raises questions to whether development between clusters/levels occurs smoothly and if companies can skip stages. These questions warrant future research. Overall, since theory on the effect of buyer-supplier relationships on sustainable procurement performance is relatively undeveloped, more research is needed to confirm the results found in this study. In this light, it would also be relevant to perform a similar study in a different business environment, to check whether these results are bounded to the Dutch F&B industry or whether they also apply in other sectors. Furthermore, future research could investigate the lower performance on the environmental dimension compared to the economic and social dimension that was found in all clusters. It would be interesting to know if there is an explanation for this phenomenon.

Finally, some recommendations to practitioners can be made. In order to have good sustainable procurement, the maturity model developed in Chapter 2 can be followed to learn what each maturity level requires in terms of activities and capabilities. Additionally, this research has shown that the integration of sustainable procurement throughout the company is necessary to achieve a high sustainable procurement performance. This involves integrating sustainability criteria in the purchasing process, sustainable supplier development activities and top management support. Furthermore, as a buying company one should have good purchasing skills, including stakeholder management, cross-functional cooperation and sufficient sustainability related knowledge and skills of the purchasing personnel. Additionally, it is very important that the employees have a positive attitude towards sustainability. In the buyer-supplier relationship, special attention should be paid to creating a feeling of loyalty with trust and commitment. Not only do trust and commitment increase sustainable procurement performance, they also increase the intensity of communication, which in turn is also important for reaching high sustainable procurement performance. Furthermore, it is advised to invest in strict guidance through codes of conduct and monitoring and control activities. Finally, this research has showed that a feeling of joint dependency positively influences sustainable procurement performance. It is therefore recommended to also create a feeling of joint dependency in the buyer-supplier relationship.

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APPENDIX

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APPENDIX I - SURVEY

Please indicate to what extent you agree with the following statements

1= strongly disagree, 7= strongly agree

<i>Corporate culture</i>							
Top management supports our efforts to improve sustainability.	1	2	3	4	5	6	7
Sustainability is considered a vital part of our corporate strategy.	1	2	3	4	5	6	7
Top management values purchasing views on sustainable procurement.	1	2	3	4	5	6	7
My colleagues are highly ethical and socially responsible.	1	2	3	4	5	6	7
My colleagues' business decisions are highly socially responsible.	1	2	3	4	5	6	7
My company stimulates working in cross-functional teams.	1	2	3	4	5	6	7
My company stimulates working together with suppliers for sustainability.	1	2	3	4	5	6	7
Purchasing participates in product and process design.	1	2	3	4	5	6	7
<i>Know-how and expertise</i>							
Purchasing has the skills to interpret changes in the supplier market.	1	2	3	4	5	6	7
Purchasing is technically capable to help our suppliers improve their sustainability. ^a	1	2	3	4	5	6	7
My company engages in inter-firm sustainability knowledge transfer. ^a	1	2	3	4	5	6	7
My company ensures training needs of employees are identified and acted upon.	1	2	3	4	5	6	7
<i>Supplier management</i>							
Design specifications with sustainability requirements are provided to suppliers.	1	2	3	4	5	6	7
My company cooperates with suppliers for achieving sustainability objectives together.	1	2	3	4	5	6	7
Environmental sustainability risks are integrated in purchasing decisions.	1	2	3	4	5	6	7
Social sustainability risks are integrated in purchasing decisions.	1	2	3	4	5	6	7
Economic sustainability risks are integrated in purchasing decisions. ^a	1	2	3	4	5	6	7
<i>Stakeholder management</i>							
Purchasing actively identifies relevant stakeholders.	1	2	3	4	5	6	7
Stakeholder input is integrated in purchasing processes.	1	2	3	4	5	6	7
Stakeholders are engaged in the purchasing process for their positive influence on the company's reputation. ^a	1	2	3	4	5	6	7

Please indicate to what extent you agree with the following statements

1= strongly disagree, 7= strongly agree

<i>Corporate culture of suppliers</i>							
The suppliers' top management wants to improve sustainability.	1	2	3	4	5	6	7
Sustainability is a vital part of the suppliers' corporate strategy. ^a	1	2	3	4	5	6	7
The suppliers' top management values its employees' views on sustainability.	1	2	3	4	5	6	7
The suppliers' employees behave highly ethical and socially responsible.	1	2	3	4	5	6	7
The suppliers are aware of our sustainability initiatives.	1	2	3	4	5	6	7
The suppliers are willing to participate in our sustainability initiatives.	1	2	3	4	5	6	7
The suppliers expect benefits from the sustainability initiatives.	1	2	3	4	5	6	7
<i>Know-how and expertise of suppliers</i>							
Suppliers have the knowledge and expertise required to act upon sustainability.	1	2	3	4	5	6	7
My company provides training / education to the supplier's.	1	2	3	4	5	6	7
Suppliers engage in inter-firm sustainability knowledge transfer.	1	2	3	4	5	6	7
<i>Suppliers' access to resources</i>							
Suppliers have the internal resources to invest in our sustainability requirements.	1	2	3	4	5	6	7
My company arranges funds to help suppliers increase their sustainability.	1	2	3	4	5	6	7

Suppliers have access to external resources for investing in sustainability. ^a	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---

Please indicate to what extent you agree with the following statements	1= strongly disagree, 7= strongly agree						
Power and dependency							
These suppliers are crucial to our future performance. ^a	1	2	3	4	5	6	7
We do not have a good alternative to these suppliers.	1	2	3	4	5	6	7
We are dependent on these suppliers. ^a	1	2	3	4	5	6	7
We are important to these suppliers.	1	2	3	4	5	6	7
We account for a large proportion of these suppliers' total sales.	1	2	3	4	5	6	7
The suppliers would find it difficult to replace us.	1	2	3	4	5	6	7
Trust and commitment							
Suppliers have been frank in dealing with us.	1	2	3	4	5	6	7
Promises made by suppliers are reliable.	1	2	3	4	5	6	7
If problems arise, the suppliers are honest about the problems.	1	2	3	4	5	6	7
We are committed to the relationship with these suppliers.	1	2	3	4	5	6	7
We intend to maintain the relationship with these suppliers indefinitely. ^a	1	2	3	4	5	6	7
We are willing to make long-term investments in the relationship with these suppliers. ^a	1	2	3	4	5	6	7
Information exchange and communication							
We share sensitive information with our suppliers. ^a	1	2	3	4	5	6	7
Suppliers are provided with any information that might help them.	1	2	3	4	5	6	7
We inform each other about things that may affect the other.	1	2	3	4	5	6	7
We have frequent face-to-face communication.	1	2	3	4	5	6	7
Information systems are integrated throughout the supply chain.	1	2	3	4	5	6	7
Information applications are integrated within our company. ^a	1	2	3	4	5	6	7
Current information systems satisfy supply chain-communication requirements.	1	2	3	4	5	6	7
Geographical distance							
Our suppliers are located within the Netherlands. ^a	1	2	3	4	5	6	7
Our suppliers are located outside the Netherlands, but in Europe. ^a	1	2	3	4	5	6	7
Our suppliers are located outside Europe. ^a	1	2	3	4	5	6	7
Code of conduct							
Our employees must abide by a defined set of acceptable/unacceptable behaviour (e.g. ethics statement). ^a	1	2	3	4	5	6	7
Purchasing has sustainable sourcing training programs.	1	2	3	4	5	6	7
My company has a supplier code of conduct.	1	2	3	4	5	6	7
Supplier relationships are ended if suppliers do not adhere to our code of conduct.	1	2	3	4	5	6	7
Suppliers are monitored to ensure adherence to our code of conduct.	1	2	3	4	5	6	7
We have specific audit procedures to ensure that suppliers adhere to our code of conduct.	1	2	3	4	5	6	7

Please indicate to what extent you agree with the following statements	1= strongly disagree, 7= strongly agree						
Economic sustainability aspects							
Generated economic value is equally distributed amongst all supply chain actors.	1	2	3	4	5	6	7
We pay a price premium to our suppliers if they provide sustainable products. ^a	1	2	3	4	5	6	7
Sustainability reporting is integrated in all our reporting efforts.	1	2	3	4	5	6	7
Set goals and measures for all sustainability issues are communicated.	1	2	3	4	5	6	7
Sustainability related knowledge management is completely integrated in our company.	1	2	3	4	5	6	7
Human capital development is a major objectives in my company. ^a	1	2	3	4	5	6	7
Best available sustainable technologies are proactively used and invested	1	2	3	4	5	6	7

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in.							
Sustainability driven innovation activities involve multiple stakeholders.	1	2	3	4	5	6	7
<i>Environmental sustainability aspects</i>							
LCA results are used in all our business processes.	1	2	3	4	5	6	7
Our LCA process covers every aspect of the cradle to cradle analysis.	1	2	3	4	5	6	7
Our material choices minimise environmental impact and maximise sustainability.	1	2	3	4	5	6	7
We collaborate closely with our supply chain to be the industry leader in proactive sustainable R&D efforts.	1	2	3	4	5	6	7
My company is an industry leader in sustainable manufacturing. ^a	1	2	3	4	5	6	7
We try to reduce the environmental impact of manufacturing throughout the supply chain. ^a	1	2	3	4	5	6	7
To reduce a suppliers' environmental impact, we actively engage in supplier development activities.	1	2	3	4	5	6	7
Supplier selection is dependent upon a suppliers' environmental and sustainable policies and efforts.	1	2	3	4	5	6	7
<i>Social sustainability aspects</i>							
Our health and safety policy supports the organisational sustainability goal.	1	2	3	4	5	6	7
We have custom made health and safety arrangements for individual employees.	1	2	3	4	5	6	7
Employee management aligns individual and collective interests.	1	2	3	4	5	6	7
We have a pro-active policy for hiring women and minorities. ^a	1	2	3	4	5	6	7
Supplier selection is dependent upon a suppliers' social and sustainable policies and efforts.	1	2	3	4	5	6	7
We pro-actively support higher social sustainability at our suppliers.	1	2	3	4	5	6	7
Corporate citizenship is completely integrated in our business activities. ^a	1	2	3	4	5	6	7
Corporate citizenship programs support all stakeholders, i.e. from local neighbourhoods to suppliers. ^a	1	2	3	4	5	6	7

Please indicate to what extent you agree with the following statements 1= strongly disagree, 7= strongly agree

Sustainability activities in my company have created cost reductions.	1	2	3	4	5	6	7
Sustainability activities in my company have created a larger market share.	1	2	3	4	5	6	7
Sustainability activities in my company have created higher profits.	1	2	3	4	5	6	7
Social sustainability issues are completely integrated in our business activities.	1	2	3	4	5	6	7
Environmental sustainability issues are completely integrated in our business activities.	1	2	3	4	5	6	7
Economic sustainability issues are completely integrated in our business activities.	1	2	3	4	5	6	7
All three sustainability aspects (i.e. social, environmental, economic) receive equal attention in our business activities.	1	2	3	4	5	6	7

How would you assess the sustainability of your main product stream? 1= very low, 7= very high

Do you have special product lines focussed on a high level of sustainability? Yes/no

What percentage of your turnover comes from sustainable products?

Number of employees

Function in company

Product category

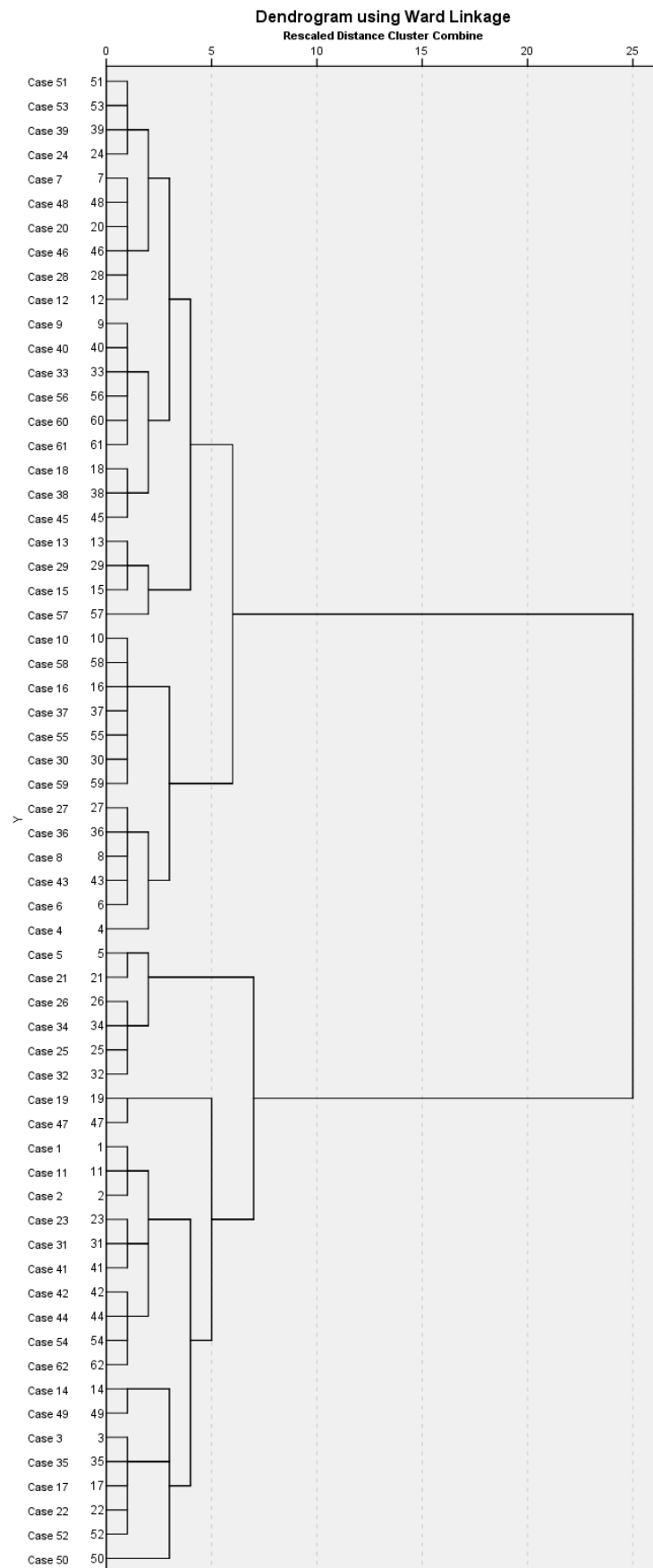
Note: ^a Item removed during the Principal Component Analysis (PCA).

APPENDIX II – SPSS OUTPUT

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	51	53	1,563	0	0	6
2	33	56	3,178	0	0	13
3	7	48	4,892	0	0	28
4	20	46	6,667	0	0	28
5	8	43	8,920	0	0	26
6	39	51	11,416	0	1	10
7	17	22	14,297	0	0	30
8	27	36	17,240	0	0	38
9	37	55	20,187	0	0	32
10	24	39	23,258	0	6	45
11	10	58	26,415	0	0	19
12	42	44	29,745	0	0	31
13	33	60	33,110	2	0	29
14	13	29	36,666	0	0	39
15	26	34	40,561	0	0	43
16	3	35	44,704	0	0	42
17	14	49	49,126	0	0	53
18	1	11	53,596	0	0	33
19	10	16	58,217	11	0	44
20	30	59	63,069	0	0	32
21	9	40	67,958	0	0	36
22	23	31	72,910	0	0	27
23	54	62	78,040	0	0	31
24	25	32	83,174	0	0	43
25	5	21	88,322	0	0	46
26	6	8	93,737	0	5	38
27	23	41	99,569	22	0	47
28	7	20	105,487	3	4	35
29	33	61	111,548	13	0	36
30	17	52	117,734	7	0	42
31	42	54	124,512	12	23	47
32	30	37	131,662	20	9	44
33	1	2	139,185	18	0	50
34	18	38	146,963	0	0	41
35	7	28	154,897	28	0	37
36	9	33	162,904	21	29	51
37	7	12	171,098	35	0	45
38	6	27	179,716	26	8	48
39	13	15	188,467	14	0	49
40	19	47	197,365	0	0	58
41	18	45	206,393	34	0	51
42	3	17	216,047	16	30	53
43	25	26	225,879	24	15	46
44	10	30	235,962	19	32	52
45	7	24	247,948	37	10	54
46	5	25	260,065	25	43	60
47	23	42	272,286	27	31	50
48	4	6	284,636	0	38	52
49	13	57	297,326	39	0	57
50	1	23	312,186	33	47	56

51	9	18	329,406	36	41	54
52	4	10	348,884	48	44	59
53	3	14	369,477	42	17	55
54	7	9	393,046	45	51	57
55	3	50	418,691	53	0	56
56	1	3	448,547	50	55	58
57	7	13	480,023	54	49	59
58	1	19	521,388	56	40	60
59	4	7	570,116	52	57	61
60	1	5	631,247	58	46	61
61	1	4	854,000	60	59	0



ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Supplier attitude	Between Groups	25,609	3	8,536	13,990	,000
	Within Groups	35,391	58	,610		
	Total	61,000	61			
Access to resources from buying company	Between Groups	11,308	3	3,769	4,400	,007
	Within Groups	49,692	58	,857		
	Total	61,000	61			
Supplier sustainable resources deployment	Between Groups	27,182	3	9,061	15,540	,000
	Within Groups	33,818	58	,583		
	Total	61,000	61			
Integration of sustainable procurement	Between Groups	40,951	3	13,650	39,490	,000
	Within Groups	20,049	58	,346		
	Total	61,000	61			
Purchasing skills	Between Groups	28,691	3	9,564	17,169	,000
	Within Groups	32,309	58	,557		
	Total	61,000	61			
Attitude of employees	Between Groups	9,229	3	3,076	3,446	,022
	Within Groups	51,771	58	,893		
	Total	61,000	61			
Loyalty	Between Groups	10,946	3	3,649	4,228	,009
	Within Groups	50,054	58	,863		
	Total	61,000	61			
Strictness of guidance	Between Groups	22,614	3	7,538	11,390	,000
	Within Groups	38,386	58	,662		
	Total	61,000	61			
Joint dependency	Between Groups	11,193	3	3,731	4,345	,008
	Within Groups	49,807	58	,859		
	Total	61,000	61			
Intensity of communication	Between Groups	18,019	3	6,006	8,105	,000
	Within Groups	42,981	58	,741		
	Total	61,000	61			
Connectivity	Between Groups	16,636	3	5,545	7,250	,000
	Within Groups	44,364	58	,765		
	Total	61,000	61			
EconomicSustainability	Between Groups	2908,825	3	969,608	25,196	,000
	Within Groups	2231,949	58	38,482		
	Total	5140,774	61			
EnvironmentalSustainability	Between Groups	4203,814	3	1401,271	37,139	,000
	Within Groups	2188,395	58	37,731		
	Total	6392,210	61			
SocialSustainability	Between Groups	2983,280	3	994,427	27,098	,000
	Within Groups	2128,462	58	36,698		
	Total	5111,742	61			

Tukey post-hoc test

Multiple Comparisons

				Mean			95% Confidence Interval	
		(I) Ward	(J) Ward	Difference (I-			Lower	Upper
Dependent Variable		Method	Method	J)	Std. Error	Sig.	Bound	Bound
Supplier attitude	Tukey HSD	1	2	-1,52684211*	,27829212	,000	-2,2629553	-,7907289
			3	-1,07723828*	,36360234	,022	-2,0390064	-,1154702
			4	-1,32362000*	,23882838	,000	-1,9553473	-,6918927
		2	1	1,52684211*	,27829212	,000	,7907289	2,2629553
			3	,44960383	,38553172	,650	-,5701699	1,4693775
			4	,20322211	,27104804	,876	-,5137297	,9201739
		3	1	1,07723828*	,36360234	,022	,1154702	2,0390064
			2	-,44960383	,38553172	,650	-1,4693775	,5701699
			4	-,24638172	,35808825	,901	-1,1935644	,7008010
		4	1	1,32362000*	,23882838	,000	,6918927	1,9553473
			2	-,20322211	,27104804	,876	-,9201739	,5137297
			3	,24638172	,35808825	,901	-,7008010	1,1935644
Access to resources from buying company	Tukey HSD	1	2	-,75230677	,32976033	,114	-1,6245590	,1199455
			3	,61052467	,43084808	,494	-,5291158	1,7501651
			4	-,58672608	,28299804	,174	-1,3352869	,1618348
		2	1	,75230677	,32976033	,114	-,1199455	1,6245590
			3	1,36283144*	,45683315	,021	,1544576	2,5712053
			4	,16558069	,32117651	,955	-,6839664	1,0151278
		3	1	-,61052467	,43084808	,494	-1,7501651	,5291158
			2	-1,36283144*	,45683315	,021	-2,5712053	-,1544576
			4	-1,19725075*	,42431420	,032	-2,3196084	-,0748931
		4	1	,58672608	,28299804	,174	-,1618348	1,3352869
			2	-,16558069	,32117651	,955	-1,0151278	,6839664
			3	1,19725075*	,42431420	,032	,0748931	2,3196084
Supplier sustainable resources deployment	Tukey HSD	1	2	-1,49938121*	,27203874	,000	-2,2189535	-,7798089
			3	-1,90113113*	,35543198	,000	-2,8412877	-,9609745
			4	-1,02004463*	,23346177	,000	-1,6375766	-,4025126
		2	1	1,49938121*	,27203874	,000	,7798089	2,2189535
			3	-,40174992	,37686860	,711	-1,3986087	,5951089
			4	,47933658	,26495743	,280	-,2215049	1,1801781
		3	1	1,90113113*	,35543198	,000	,9609745	2,8412877
			2	,40174992	,37686860	,711	-,5951089	1,3986087
			4	,88108650	,35004180	,068	-,0448125	1,8069855
		4	1	1,02004463*	,23346177	,000	,4025126	1,6375766
			2	-,47933658	,26495743	,280	-1,1801781	,2215049
			3	-,88108650	,35004180	,068	-1,8069855	,0448125
Integration of sustainable procurement	Tukey HSD	1	2	-1,88021807*	,20945969	,000	-2,4342619	-1,3261742
			3	,20895424	,27366938	,870	-,5149313	,9328398
			4	-1,36196335*	,17975686	,000	-1,8374400	-,8864867
		2	1	1,88021807*	,20945969	,000	1,3261742	2,4342619
			3	2,08917230*	,29017477	,000	1,3216282	2,8567164
			4	,51825472	,20400735	,064	-,0213671	1,0578765
		3	1	-,20895424	,27366938	,870	-,9328398	,5149313
			2	-2,08917230*	,29017477	,000	-2,8567164	-1,3216282
			4	-1,57091758*	,26951914	,000	-2,2838253	-,8580099
		4	1	1,36196335*	,17975686	,000	,8864867	1,8374400

			2		,51825472	,20400735	,064	-1,0578765	,0213671
			3		1,57091758*	,26951914	,000	,8580099	2,2838253
Purchasing skills	Tukey HSD	1	2		-1,63747497*	,26589886	,000	-2,3408066	-,9341433
			3		-1,81225311*	,34740993	,000	-2,7311905	-,8933157
			4		-1,03646825*	,22819256	,000	-1,6400626	-,4328739
		2	1		1,63747497*	,26589886	,000	,9341433	2,3408066
			3		-,17477814	,36836272	,964	-1,1491380	,7995817
			4		,60100671	,25897738	,105	-,0840169	1,2860303
		3	1		1,81225311*	,34740993	,000	,8933157	2,7311905
			2		,17477814	,36836272	,964	-,7995817	1,1491380
			4		,77578486	,34214140	,118	-,1292167	1,6807864
		4	1		1,03646825*	,22819256	,000	,4328739	1,6400626
			2		-,60100671	,25897738	,105	-1,2860303	,0840169
			3		-,77578486	,34214140	,118	-1,6807864	,1292167
Attitude of employees	Tukey HSD	1	2		-,46945882	,33658903	,508	-1,3597737	,4208561
			3		1,00312625	,43977011	,114	-,1601140	2,1663665
			4		-,15236699	,28885838	,952	-,9164291	,6116951
		2	1		,46945882	,33658903	,508	-,4208561	1,3597737
			3		1,47258507*	,46629328	,013	,2391882	2,7059820
			4		,31709183	,32782745	,768	-,5500478	1,1842314
		3	1		-1,00312625	,43977011	,114	-2,1663665	,1601140
			2		-1,47258507*	,46629328	,013	-2,7059820	-,2391882
			4		-1,15549324*	,43310093	,047	-2,3010927	-,0098937
		4	1		,15236699	,28885838	,952	-,6116951	,9164291
			2		-,31709183	,32782745	,768	-1,1842314	,5500478
			3		1,15549324*	,43310093	,047	,0098937	2,3010927
Loyalty	Tukey HSD	1	2		-1,14089355*	,33096151	,006	-2,0163231	-,2654640
			3		-,68895151	,43241748	,390	-1,8327432	,4548402
			4		-,65236294	,28402888	,111	-1,4036505	,0989246
		2	1		1,14089355*	,33096151	,006	,2654640	2,0163231
			3		,45194204	,45849720	,758	-,7608334	1,6647175
			4		,48853061	,32234642	,435	-,3641110	1,3411723
		3	1		,68895151	,43241748	,390	-,4548402	1,8327432
			2		-,45194204	,45849720	,758	-1,6647175	,7608334
			4		,03658857	,42585980	1,000	-1,0898573	1,1630345
		4	1		,65236294	,28402888	,111	-,0989246	1,4036505
			2		-,48853061	,32234642	,435	-1,3411723	,3641110
			3		-,03658857	,42585980	1,000	-1,1630345	1,0898573
Strictness of guidance	Tukey HSD	1	2		-1,45789208*	,28982943	,000	-2,2245227	-,6912614
			3		,49633693	,37867640	,560	-,5053037	1,4979776
			4		-,35179085	,24872962	,496	-1,0097080	,3061263
		2	1		1,45789208*	,28982943	,000	,6912614	2,2245227
			3		1,95422901*	,40151492	,000	,8921780	3,0162800
			4		1,10610124*	,28228503	,001	,3594264	1,8527761
		3	1		-,49633693	,37867640	,560	-1,4979776	,5053037
			2		-1,95422901*	,40151492	,000	-3,0162800	-,8921780
			4		-,84812777	,37293372	,116	-1,8345784	,1383228
		4	1		,35179085	,24872962	,496	-,3061263	1,0097080
			2		-1,10610124*	,28228503	,001	-1,8527761	-,3594264
			3		,84812777	,37293372	,116	-,1383228	1,8345784
Joint dependency	Tukey HSD	1	2		-,50517300	,33014152	,426	-1,3784335	,3680875
			3		,88406154	,43134612	,182	-,2568963	2,0250194

		4		,50467696	,28332517	,293	-1,2541031	,2447492
	2	1		,50517300	,33014152	,426	-,3680875	1,3784335
		3		1,38923454*	,45736123	,018	,1794639	2,5990052
		4		,00049605	,32154777	1,000	-,8500331	,8510252
	3	1		-,88406154	,43134612	,182	-2,0250194	,2568963
		2		-1,38923454*	,45736123	,018	-2,5990052	-,1794639
		4		-1,38873850*	,42480469	,010	-2,5123935	-,2650835
	4	1		,50467696	,28332517	,293	-,2447492	1,2541031
		2		-,00049605	,32154777	1,000	-,8510252	,8500331
		3		1,38873850*	,42480469	,010	,2650835	2,5123935
Intensity of communication	1	2		-1,32350645*	,30668662	,000	-2,1347262	-,5122867
		3		-1,10512680*	,40070115	,038	-2,1650253	-,0452283
		4		-1,02587189*	,26319634	,001	-1,7220551	-,3296887
		2	1	1,32350645*	,30668662	,000	,5122867	2,1347262
	2	3		,21837965	,42486801	,955	-,9054429	1,3422022
		4		,29763455	,29870342	,752	-,4924688	1,0877379
	3	1		1,10512680*	,40070115	,038	,0452283	2,1650253
		2		-,21837965	,42486801	,955	-1,3422022	,9054429
		4		,07925491	,39462445	,997	-,9645701	1,1230799
	4	1		1,02587189*	,26319634	,001	,3296887	1,7220551
		2		-,29763455	,29870342	,752	-1,0877379	,4924688
		3		-,07925491	,39462445	,997	-1,1230799	,9645701
Connectivity	1	2		1,15198759*	,31158058	,003	,3278228	1,9761524
		3		-,62570839	,40709534	,422	-1,7025203	,4511035
		4		,42282505	,26739630	,397	-,2844675	1,1301176
		2	1	-1,15198759*	,31158058	,003	-1,9761524	-,3278228
	2	3		-1,77769599*	,43164785	,001	-2,9194519	-,6359401
		4		-,72916255	,30346998	,088	-1,5318740	,0735489
	3	1		,62570839	,40709534	,422	-,4511035	1,7025203
		2		1,77769599*	,43164785	,001	,6359401	2,9194519
		4		1,04853344	,40092168	,054	-,0119484	2,1090153
	4	1		-,42282505	,26739630	,397	-1,1301176	,2844675
		2		,72916255	,30346998	,088	-,0735489	1,5318740
		3		-1,04853344	,40092168	,054	-2,1090153	,0119484
EconomicSustainability	1	2		-18,41154*	2,21003	,000	-24,2573	-12,5658
		3		-1,61667	2,88751	,943	-9,2545	6,0211
		4		-8,68913*	1,89663	,000	-13,7059	-3,6723
		2	1	18,41154*	2,21003	,000	12,5658	24,2573
	2	3		16,79487*	3,06166	,000	8,6964	24,8933
		4		9,72241*	2,15250	,000	4,0288	15,4160
	3	1		1,61667	2,88751	,943	-6,0211	9,2545
		2		-16,79487*	3,06166	,000	-24,8933	-8,6964
		4		-7,07246	2,84372	,073	-14,5944	,4495
	4	1		8,68913*	1,89663	,000	3,6723	13,7059
		2		-9,72241*	2,15250	,000	-15,4160	-4,0288
		3		7,07246	2,84372	,073	-,4495	14,5944
EnvironmentalSustainability	1	2		-19,34615*	2,18836	,000	-25,1346	-13,5577
		3		7,33333	2,85920	,061	-,2296	14,8962
		4		-8,19565*	1,87804	,000	-13,1633	-3,2280
	2	1		19,34615*	2,18836	,000	13,5577	25,1346
		3		26,67949*	3,03165	,000	18,6605	34,6985
		4		11,15050*	2,13140	,000	5,5127	16,7883

SocialSustainability	Tukey HSD	3	1	-7,33333	2,85920	,061	-14,8962	,2296
			2	-26,67949*	3,03165	,000	-34,6985	-18,6605
			4	-15,52899*	2,81584	,000	-22,9772	-8,0808
		4	1	8,19565*	1,87804	,000	3,2280	13,1633
			2	-11,15050*	2,13140	,000	-16,7883	-5,5127
			3	15,52899*	2,81584	,000	8,0808	22,9772
		1	2	-16,43462*	2,15819	,000	-22,1433	-10,7260
			3	2,95000	2,81978	,723	-4,5086	10,4086
			4	-10,31087*	1,85214	,000	-15,2100	-5,4118
		2	1	16,43462*	2,15819	,000	10,7260	22,1433
			3	19,38462*	2,98984	,000	11,4762	27,2931
			4	6,12375*	2,10201	,025	,5637	11,6838
		3	1	-2,95000	2,81978	,723	-10,4086	4,5086
			2	-19,38462*	2,98984	,000	-27,2931	-11,4762
			4	-13,26087*	2,77702	,000	-20,6064	-5,9154
		4	1	10,31087*	1,85214	,000	5,4118	15,2100
			2	-6,12375*	2,10201	,025	-11,6838	-,5637
			3	13,26087*	2,77702	,000	5,9154	20,6064

*. The mean difference is significant at the 0.05 level.

Correlations

		Supplier attitude	Access to resources from buying company	Supplier sustainable resources deployment	Integration of sustainable procurement	Purchasing skills	Attitude of employees	Loyalty	Strictness of guidance	Joint dependency	Intensity of communication	Connectivity	Economic sustainability	Environmental Sustainability	Social Sustainability
Supplier attitude	Pearson Correlation	1	,134	,457**	,603**	,522**	,201	,397**	,292*	,175	,456**	-,413**	,368**	,255*	,364**
	Sig. (2-tailed)		,298	,000	,000	,000	,118	,001	,021	,173	,000	,001	,003	,045	,004
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Access to resources from buying company	Pearson Correlation	,134	1	,081	,398**	-,027	,133	-,100	,431**	,120	,089	-,242	,535**	,546**	,440**
	Sig. (2-tailed)	,298		,529	,001	,833	,302	,441	,000	,354	,494	,058	,000	,000	,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Supplier sustainable resources deployment	Pearson Correlation	,457**	,081	1	,218	,552**	-,095	,255*	,121	,169	,499**	-,062	,318*	,200	,217
	Sig. (2-tailed)	,000	,529		,089	,000	,461	,045	,351	,190	,000	,631	,012	,119	,090
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Integration of sustainable procurement	Pearson Correlation	,603**	,398**	,218	1	,404**	,244	,300*	,414**	,268*	,353**	-,492**	,686**	,600**	,664**
	Sig. (2-tailed)	,000	,001	,089		,001	,056	,018	,001	,035	,005	,000	,000	,000	,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Purchasing skills	Pearson Correlation	,522**	-,027	,552**	,404**	1	,174	,239	,341**	,086	,516**	-,086	,442**	,279*	,436**
	Sig. (2-tailed)	,000	,833	,000	,001		,176	,062	,007	,509	,000	,506	,000	,028	,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Attitude of employees	Pearson Correlation	,201	,133	-,095	,244	,174	1	,101	,278*	,020	,020	-,086	,232	,210	,347**
	Sig. (2-tailed)	,118	,302	,461	,056	,176		,437	,028	,877	,876	,507	,069	,102	,006
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Loyalty	Pearson Correlation	,397**	-,100	,255*	,300*	,239	,101	1	,076	,218	,322*	-,154	,125	,225	,247
	Sig. (2-tailed)	,001	,441	,045	,018	,062	,437		,555	,088	,011	,233	,332	,078	,053
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62

Strictness of guidance	Pearson Correlation	,292*	,431**	,121	,414**	,341**	,278*	,076	1	,169	,098	-,276*	,579**	,581**	,559**
	Sig. (2-tailed)	,021	,000	,351	,001	,007	,028	,555		,189	,448	,030	,000	,000	,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Joint dependency	Pearson Correlation	,175	,120	,169	,268*	,086	,020	,218	,169	1	,101	-,131	,238	,328**	,245
	Sig. (2-tailed)	,173	,354	,190	,035	,509	,877	,088	,189		,436	,308	,063	,009	,055
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Intensity of communication	Pearson Correlation	,456**	,089	,499**	,353**	,516**	,020	,322*	,098	,101	1	-,151	,219	,226	,195
	Sig. (2-tailed)	,000	,494	,000	,005	,000	,876	,011	,448	,436		,241	,087	,078	,129
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Connectivity	Pearson Correlation	-,413**	-,242	-,062	-,492**	-,086	-,086	-,154	-,276*	-,131	-,151	1	-,350**	-,438**	-,366**
	Sig. (2-tailed)	,001	,058	,631	,000	,506	,507	,233	,030	,308	,241		,005	,000	,003
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
EconomicSustainability	Pearson Correlation	,368**	,535**	,318*	,686**	,442**	,232	,125	,579**	,238	,219	-,350**	1	,752**	,718**
	Sig. (2-tailed)	,003	,000	,012	,000	,000	,069	,332	,000	,063	,087	,005		,000	,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Environmental Sustainability	Pearson Correlation	,255*	,546**	,200	,600**	,279*	,210	,225	,581**	,328**	,226	-,438**	,752**	1	,731**
	Sig. (2-tailed)	,045	,000	,119	,000	,028	,102	,078	,000	,009	,078	,000	,000		,000
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62
SocialSustainability	Pearson Correlation	,364**	,440**	,217	,664**	,436**	,347**	,247	,559**	,245	,195	-,366**	,718**	,731**	1
	Sig. (2-tailed)	,004	,000	,090	,000	,000	,006	,053	,000	,055	,129	,003	,000	,000	
	N	62	62	62	62	62	62	62	62	62	62	62	62	62	62

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

APPENDIX III – CLUSTER INTERPRETATION TABLES

Performance indicators per cluster

		Sustainability activities in my company have created cost reductions.	Sustainability activities in my company have created a larger market share.	Sustainability activities in my company have created higher profits.
1	Mean	3.40	2.50	2.90
	N	20	20	20
	Std. Deviation	1.142	1.100	1.119
2	Mean	5.46	4.85	4.08
	N	13	13	13
	Std. Deviation	1.127	1.405	1.115
3	Mean	2.83	1.83	2.17
	N	6	6	6
	Std. Deviation	1.472	.753	1.602
4	Mean	5.04	4.09	3.87
	N	23	23	23
	Std. Deviation	1.107	1.125	1.058
Total	Mean	4.39	3.52	3.44
	N	62	62	62
	Std. Deviation	1.497	1.544	1.288

Integration of sustainability per cluster

		Social sustainability issues are completely integrated in our business activities.	Environmental sustainability issues are completely integrated in our business activities.	Economic sustainability issues are completely integrated in our business activities.	All three sustainability aspects receive equal attention in our business activities.
1	Mean	2.90	2.60	3.05	2.95
	N	20	20	20	20
	Std. Deviation	1.210	1.273	1.276	1.276
2	Mean	5.46	5.23	5.38	5.31
	N	13	13	13	13
	Std. Deviation	.877	1.092	.768	.751
3	Mean	1.83	1.67	2.50	1.50
	N	6	6	6	6
	Std. Deviation	1.169	1.211	1.975	.837
4	Mean	4.39	3.96	4.74	3.74
	N	23	23	23	23
	Std. Deviation	1.158	1.065	1.287	1.096
Total	Mean	3.89	3.56	4.11	3.60
	N	62	62	62	62
	Std. Deviation	1.600	1.606	1.631	1.520

Own assessment of sustainability (1= very low; 7= very high) per cluster

Cluster	Mean	N	Std. Deviation
1	3.20	20	.951
2	5.46	13	.660
3	2.83	6	1.169
4	4.78	23	.600
Total	4.23	62	1.260

Special high sustainability product line per cluster

Cluster	1 (=Yes)	2 (=No)	Total
1	2	18	20
2	11	2	13
3	1	5	6
4	9	14	23
Total	23	39	62

Number of employees per cluster

Cluster		1	2	3	4	
Employees	50<100	6	2	1	2	11
	>1000	1	5	0	5	11
	100-500	13	4	5	14	36
	501-1000	0	2	0	2	4
Total		20	13	6	23	62