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# Measuring suppliers' willingness to collaborate with ZGT in CSR and NPD projects based on Buyer-supplier knowledge factors

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**Author:**

Nick Wegereef

**Date:**

2<sup>nd</sup> March 2017

**Pages/words:**

50 / 13,496

**Supervisors:**

Dr. N.J. Pulles

Dr. M. de Visser

A. Ros-van de Bult



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N. (Nick) Wegereef

Faculty of Behavioural, Management and Social Sciences (BMS)

MSc. Business Administration

Purchasing and Supply Management

Graduation committee

Internal supervisors:

Dr. N.J. Pulles

Dr. M. de Visser

External supervisor:

A. Ros-van de Bult

University of Twente  
Drienerlolaan 5  
7522NB, Enschede  
the Netherlands  
<http://www.utwente.nl/>

Ziekenhuis Groep Twente  
Geerdinksweg 141  
7555DL, Hengelo  
the Netherlands  
<https://www.zgt.nl/>

## **Acknowledgements**

This thesis has been written in order to finish my Master of Science in Business Administration with specialisation Purchasing and Supply Management (PSM) at the University of Twente. Before reading this thesis I would like to thank some people who have helped me in several ways while doing my research and writing this thesis.

First of all I would like to thank Annemieke Ros-van de Bult, who has been my external supervisor, for allowing me to conduct the research on behalf of University Twente at ZGT. I would like to thank her for providing me access into the purchasing system and trusting me with this confidential information. Without this I would not have been able to conduct the research in the way as I was currently. Lastly I would like to thank Annemieke, as well as all my other colleagues at ZGT who have been part of my research, for all their professional help and advice when needed. Without this the level of my thesis would probably be lower than at the moment.

Second my thankfulness goes out to Dr. Niels Pulles for being my first internal supervisor from the moment I got back from my exchange at Lappeenranta University of Technology in Lappeenranta, Finland. Even though he was very busy at the moment he still gave me the chance to write my thesis under his supervision. His help and constructive criticism through Skype, e-mail or personal contact helped me during the process of thesis writing.

Third I want to thank Dr. M. de Visser for being my second internal supervisor and for his time to check and comment on my thesis while finishing it.

At last my gratefulness goes out to my girlfriend, family, friends and housemates for their support during my research and thesis writing.

Goor, 2<sup>nd</sup> March, 2017

Nick Wegereef

## **Management summary**

In a well-designed and thoroughly studied product market companies try to maintain themselves by gaining a competitive advantage on other companies. Since the product market has become familiar for a lot of companies these companies try to find new ways to maintain or increase their competitive advantage. One way to do this is via the factor market. Companies are searching for suppliers and to start buyer-supplier relationships. By doing this companies can exchange, besides of products and/or services, know-how and knowledge about for instance processes.

Ziekenhuis Groep Twente (ZGT) is one of the companies that wants to focus on the factor market. But, their focus is not on gaining a competitive advantage. ZGT's focus is on New Product Development (NPD) and Corporate Social Responsibility (CSR). NPD is important for ZGT since often the medical equipment bought by ZGT has a lot of functions, but misses some functions which would help ZGT improve their operational effectiveness and/or efficiency. By engaging in buyer-supplier relationships ZGT hopes to start a collaboration in either NPD projects or CSR projects. The focus of these NPD projects is to discuss the functions of medical equipment with its suppliers. By doing this ZGT hopes to increase their relationship with its suppliers and increase the usability of medical equipment for ZGT's doctors. The second type of projects ZGT is interested in are focussed on CSR. CSR has a still increasing importance for companies and often is used as a benchmark. ZGT is aware of this importance and wants to invest in this type of buyer-supplier relationships to increase their CSR operations.

This thesis tries to identify whether suppliers of ZGT are interested to collaborate with ZGT in these kind of projects. It tries to identify this based on several variables. One of these variables is Buyer-supplier knowledge, which is a new concept in literature. The concept of Buyer-supplier knowledge is built on the two indicators Trust and Dependency. This has been done since the expectation is that the more a supplier trusts or is dependent of ZGT the more prepared a supplier is to collaborate with ZGT. Besides this new concept the variables Customer attractiveness and Supplier satisfaction were included and tested. Competitiveness was added as a control variable. The research as outlined adds to existing empirical research because of the model in which it has been tested. Most variables have been tested individually in the current literature, but not combined into one concept and linked to the willingness of suppliers to collaborate.

To gather data for this thesis two questionnaires have been spread. One of these questionnaires was send to suppliers of ZGT that were selected based on several selection criteria. These suppliers answered several questions about ZGT and the other mentioned variables. After these suppliers fulfilled the questionnaire the second questionnaire was spread among employees of ZGT. These employees got the same kind of questions about the supplier and the variables. By doing this it was possible to gather exact values (from the supplier) and expected values (of ZGT's employees). Based on this data the absolute values could be calculated and the concept of Buyer-supplier knowledge could be tested.

After the data was gathered it could be analysed and the hypotheses got tested. Table I below shows the results of these hypotheses tests

<b>Hypotheses</b>	<b><math>\beta</math>-value</b>	<b>T-value</b>	<b>Accepted/rejected</b>
<b>1.</b> Buyer-supplier knowledge is positively related to supplier satisfaction.	Trust -0.235 Dependency 0.438	Trust 0.377 Dependency 0.701	Rejected
<b>2.</b> Buyer-supplier knowledge is positively related to customer attractiveness.	Trust 0.512 Dependency -0.353	Trust 0.779 Dependency 0.516	Rejected
<b>3a.</b> Supplier satisfaction is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.	-0.272	2.198	Rejected
<b>3b.</b> Supplier satisfaction is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.	0.364	3.246	<b>Accepted</b>
<b>4a.</b> Customer attractiveness is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.	-0.125	0.950	Rejected
<b>4b.</b> Customer attractiveness is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.	0.030	0.285	Rejected

*Table I: Hypotheses tests*

B-skTrust appeared to have a positive effect on customer attractiveness while having a negative effect on supplier satisfaction. This negative effect is unforeseen, but could be explained by smaller suppliers responding to the online questionnaire. These smaller suppliers cannot build their trust on only one buyer and therefore are more satisfied if they build their trust on multiple buyers. B-skDependency had an unexpected negative effect on customer attractiveness. Cause of this could be the fear of the buying firms' power in case of a too high dependency. Also the will of small suppliers to spread their sales volume among multiple buyers. But, all of the above mentioned effects are non-significant. Therefore this thesis concludes that Buyer-supplier knowledge has no significant effect on either customer attractiveness or supplier satisfaction.

Additionally, this thesis shows a negative significant effect of Supplier satisfaction on ZGT's suppliers' willingness to collaborate in NPD projects and a significant positive effect on suppliers' willingness to collaborate in CSR projects. Also, Customer attractiveness appears to have an insignificant negative effect on suppliers' willingness to collaborate in NPD projects and an insignificant positive effect on suppliers' willingness to collaborate in CSR projects. Supplier satisfaction and Customer attractiveness both have a negative impact on the willingness of suppliers to collaborate in NPD projects. A cause could be the single item measure used to test this situation. Limited data collection the loss of supplier data could be another.

Concluding, based on this thesis' data, if ZGT would want to collaborate with its suppliers in NPD projects it has to become less attractive to its suppliers and make its suppliers less satisfied. Controversially, if ZGT would want to collaborate with its suppliers in CSR projects it has to become more attractive to its suppliers and make its supplier more satisfied.

Besides two questionnaires also semi-structured interviews were held with four suppliers of ZGT. The scope of these interviews was NPD and CSR buyer-supplier relationships. Unfortunately these semi-structured interviews did not provide the information which was expected. But, the outcome of these semi-structured interviews can provide ZGT with advice and points of attentions from these suppliers which they provided based on their own previous and current experiences.

**Keywords:** Buyer-supplier knowledge, B-skTrust, B-skDependency, Trust, Dependency, Corporate Social Responsibility, New Product Design, Supplier satisfaction, Customer attractiveness, Competitiveness, buyer-supplier relationships.

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## 1. Introduction

In the introduction of this master thesis report several parts will be highlighted. At first the Purchasing department of Ziekenhuis Groep Twente (ZGT) will be introduced to get an understanding of the purchasing standards at ZGT. The research questions and the outline of this paper are also given.

### 1.1 ZGT's Purchasing department

ZGT consists of two hospitals which are located in Almelo and Hengelo. In 2015 ZGT counted 3,005 employees including 230 medical specialists and 93 physician assistants. ZGT has 755 beds spread over several hospital wards and during 2015 had a total of 154,597 patient days of which 28,819 were day care admissions. Besides all these patients days ZGT also took care of 527,701 out patients visits.

The purchasing department at ZGT is situated within the organisation as a department on its own. It is situated within 'Facilitair bedrijf' as shown in Figure 1. 'Facilitair bedrijf' then again is situated within ZGT as shown in Appendix 1.

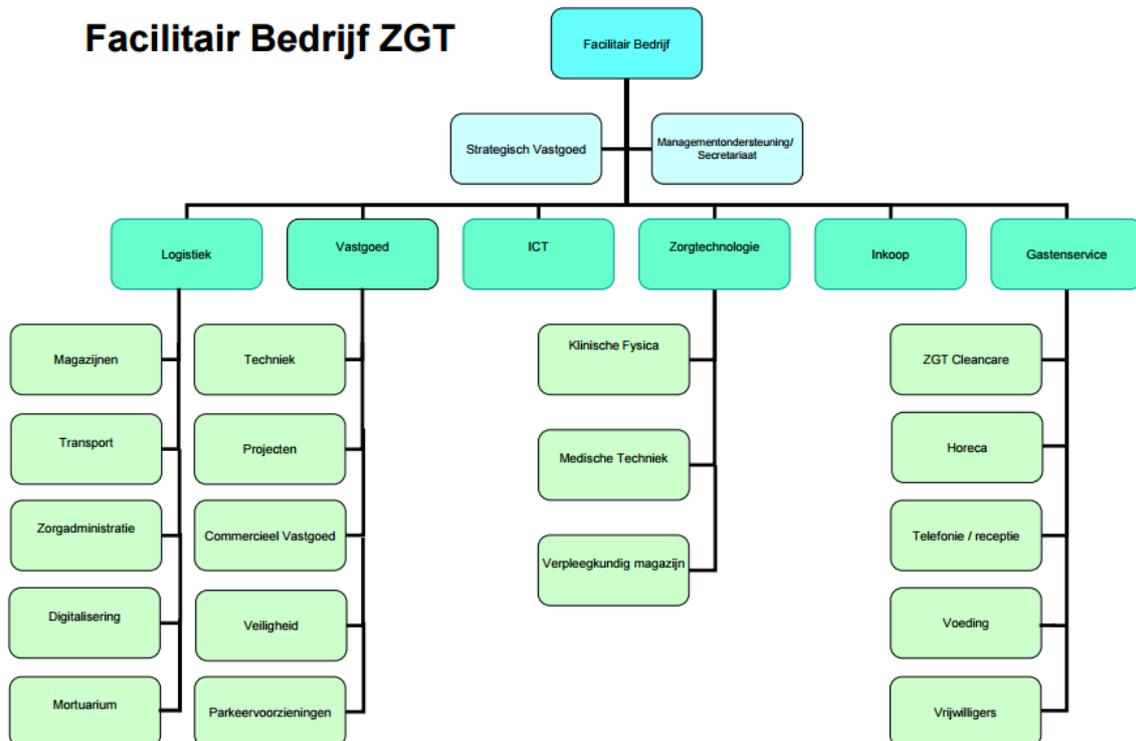


Figure 1: Organogram 'Facilitair bedrijf' ZGT (in Dutch)

The Purchasing department of ZGT holds responsibility for purchasing all the medical machines or technology and medicines needed, but also for less important supplies such as the

white coats for doctors. Besides purchasing products or services, the Purchasing department is responsible for selecting and contracting suppliers which meet the requirements that have been set by the management and doctors of ZGT. The Purchasing department of ZGT does not have a budget since they operate as an advisory department for other departments. These departments all have their own budget and this budget is set based on previous years and after consultation with health insurance companies. In 2014 the Purchasing department of ZGT spend €44,658,171.00. The total spend of ZGT in 2014 was €156,290,439.00. The spend of the Purchasing department in 2014 was 28.54 percent of the overall spending of ZGT. In 2015 the Purchasing department of ZGT spend €45,933,127.40. The total spend of ZGT in 2015 and the spend of the Purchasing department in 2015 has not been calculated yet.

ZGT's Purchasing department consists of fifteen fulltime employees. The head responsible employee is the purchasing manager. The purchasing manager gets supported by five purchasing advisors and nine other employees which have positions such as purchasing assistant, contract manager or employees of Purchasing Administration.

## 1.2 Current situation

ZGT's purchasing department declared that there was an interest in collaborating with suppliers. After consultation with the purchasing manager about interesting factors for ZGT two factors that are important for their Purchasing department were chosen to look into. These factors are concerned with Corporate Social Responsibility (CSR) or New Product Design (NPD) projects. These factors linked to willingness of suppliers to collaborate with ZGT will be measured by using a concept of Buyer-supplier knowledge. This concept consists of two variables which have not been used together before and have been chosen because of academic purposes. So, this thesis aims to seek if there are significant effects of buyer-supplier knowledge that influence the extent to which suppliers of ZGT are willing to cooperate in CSR or NPD projects at ZGT. In order to test this, the following research questions have been developed:

**RQ1:** In what way can ZGT create a better relationship with its suppliers in order to improve ZGT's CSR/NPD projects?

**RQ2:** Which difficulties should ZGT consider if they want to increase CSR/NPD projects with its suppliers?

A lot of research has already been done in line with the variables which will be used in this thesis. Krause, Handfield and Tyler (2007) researched whether supplier dependency and buyer dependency influenced the length of buyer-supplier relationships. Pulles, Veldman, Schiele and

Sierksma (2014) researched whether customer attractiveness and supplier satisfaction had an influence on becoming a preferred customer. The variable trust also has been tested in various researches to indicate its importance in for instance relational capability (Kale, Singh & Perlmutter, 2000; Walter, Lechner & Kellermans, 2007) or preferential resource allocation (Pulles, Veldman, Schiele, & Sierksma, 2014; Pulles, Veldman, & Schiele, 2016)

As shown a lot of research has already been done, but as far as known, no research has been done in combination with Buyer-supplier knowledge factors and suppliers willingness' to collaborate. Therefore this thesis contributes to existing literature and has academic relevance.

### 1.3 Aim of this thesis

This thesis has multiple goals. At first it tries to see if buyer-supplier knowledge has an (indirect) effect on suppliers' willingness to collaborate with ZGT. Second it tries to map whether there are interesting current suppliers which want to intensify their collaboration with ZGT and start collaborating in CSR and/or NPD projects.

### 1.4 Paper outline

The further outline of this paper will be the literature review, which elaborates on the factors buyer-supplier knowledge, CSR and NPD. After the literature review the hypotheses are given. Included in these hypotheses is the theory behind the indicators. Third, the method section follows and elaborates on the methods used for the gathering of data and the analysis of data. Thereafter the results of the used methods are given. Subsequently the explanatory interviews and finally the discussion are presented which includes the conclusions, recommendations and future research possibilities for this master thesis.

## 2. Literature review

While writing this thesis literature research has been done to gather information about the different subtopics that are included in this thesis. While gathering the literature several search engines were used (but not limited to) such as Scopus, one of the biggest search engines for scientific articles, Google Scholar, ResearchGate and Science Direct. In order to find literature fit for this master thesis the following keywords have been used: Corporate Social Responsibility (CSR), buyer-supplier partnerships, knowledge integration, New Product Design (NPD). Equivalents of these words were filled in into the search engines while using AND/OR in order to decrease the chance of relevant literature to be excluded.

The literature review aims to provide information about the different factors that are highlighted in this thesis. This information tries to give a deeper understanding of these factors and make connections between the factors in order to lift the level of this master thesis.

### 2.1 Buyer-supplier knowledge

The scientific aspect which is part of this master thesis is concerned with the new concept of Buyer-supplier knowledge. This Buyer-supplier knowledge is concerned with the knowledge of the buyer about the supplier and the other way around. It has been tried to identify whether there is a dissimilarity present between the expected value of knowledge of the buyer and the exact value of knowledge from the supplier and how this influences their relationship.

Grant (1996) emphasizes that due to quick and never ending changes in market competition Buyer-supplier knowledge based skills are an important factor to create value. This has as a result that buyers more often cooperate with suppliers and except for just exchanging products or services exchange information and knowledge as well. These kind of cooperative relationships allow knowledge integration between the buyer and supplier and create a solid know-how of products, services, processes and markets (Huang, Kristal & Schroeder, 2008). Priem and Swink (2012) accentuate that even though it is shown that knowledge integration is one of the factors that has a significant effect on how a supply chain performs there is not a specific guideline yet that shows how to improve the level of innovation and maintain a higher performance. Besides, almost no research has been done about what management can do to positively influence cooperative relationships between buyers and suppliers (Mishra and Shah, 2009).

Buyer-supplier knowledge is closely linked to buyer-supplier relationships since the better the relationship is, most likely, the more knowledge buyer and supplier have from each

other. Pulles et al. (2014) found that depending on the share a supplier has at a buyer, different types of trust have a significant positive or negative effect on the way they distribute resources to their customers. The two types of trust and power Pulles et al. (2014) treat are goodwill trust and competence trust.

Revilla and Knoppen (2015) researched how two key factors influence the knowledge integration in a cooperative relationship between a buyer and supplier. Revilla and Knoppen (2015) address the two factors strategic supply management and trust. Fawcett and Magnan (2002) found that a lack of trust between a buyer and a supplier withholds them to go into a cooperative relationship. Choi and Krause (2006) underscore that if a supplier and buyer have different point of views about their gains of the cooperative relationship and therefore act in a way which was explicitly prohibited, trust decreases. Cai, Goh, Souza and Li (2013) found that on average trust plays an essential role in a cooperative relationship with regard to learning and the knowledge integration. Kiessling, Harvey and Garrison (2004) even mention trust as the second most crucial factor that influences inter-organisational behaviour. Since it has been proven that trust is an important factor in buyer-supplier relationships, this thesis uses trust as one of the indicators of the new concept Buyer-supplier knowledge to see if it influences suppliers' willingness to collaborate in CSR or NPD projects.

## 2.2 Corporate social responsibility

Where at the end of 1990s some hospitals were working according to “an ounce of prevention is worth a pound of cure”, nowadays waste management is one of the points on the agenda. Confino (2011) adds that nowadays some revolutionary companies are beginning to look at how to manage ecosystems. Kaiser et al. (1999) point out that other ways to operate in a more CSR way are through collaborative purchasing of goods, changing the purchasing policy and evaluating medical products. ZGT currently already cooperates with seven other hospitals in the Netherlands through Inkoop Alliantie Ziekenhuizen (IAZ). IAZ has been established in 2009 and is an association of currently eight different hospital groups. In total IAZ performs purchasing activities for twelve hospitals. By doing this IAZ has, for the duration of the contracts concluded, saved eleven million euro.

In the dynamic markets of today CSR is an important aspect with regard to competitive advantage (Zhang & Zhang, 2016). CSR can be defined as ‘the voluntary integration, by companies, of social and environmental concerns in their commercial operations and in their relationships with interested parties’ (Commission of the European Communities, 2001, p. 7).

Porter and Kramer (2006) stated that if ‘corporations were to analyse their prospects for social responsibility using the same frameworks that guide their core businesses ... it can be a source of opportunity, innovation, and competitive advantage’ (p. 80). Suppliers are affected by CSR related regulations since it can change the way in which they have to operate in order to fulfil these regulations and their customers’ needs (Intergovernmental Panel on Climate Change, 2007). Van Bergen, Soonawal and Wälzholz (2008), Gunther (2010) and Halldórsson and Kovács (2010) point out that because of this suppliers are becoming increasingly aware of CSR and the costs and vulnerabilities of a supply chain that can arise due to these regulations and its obligatory operational changes. Kim and Lyon (2011) state that correct management of greenhouse gas emissions can lead to a higher brand and market value.

Medical Waste Committee (1994) estimated that the medical waste generated in the United States during the start of the 1990s was about 3.5 million tons per year. According to Orts and Spigonardo (2014) only twenty to thirty percent of hospitals is actively working on a more CSR way of operating, but that there is potential to increase this percentage. Orts and Spigonardo (2014) besides that claim that ‘the process of “greening” health care has many aspects, but the major priorities include (1) Reducing energy consumption, (2) supply-chain management, (3) phasing out toxic and hazardous substances, (4) reducing waste and (5) improving hospital food service’ (p. 2). Kaiser, Eagan and Shaner (1999) said already that ‘the link between health care waste and pollution is not readily apparent. The issue is highly complex and sometimes controversial. It includes a web of relationships and decisions encompassing product suppliers, health care workers, and hospital waste treatment’ (p. 206). Until today these numbers are still hard to find, but there is already way more attention for green purchasing.

Pagell and Shevchenko (2014) write about truly sustainable supply chains and why there is no future for this type of supply chains according to them. Pagell and Shevchenko (2014) look from the point of view that it is going to become perfectly normal to work according to CSR. Pagell and Wu (2009) define a truly sustainable supply chain as: ‘to be truly sustainable a supply chain would at worst do no net harm to natural or social systems while still producing a profit over an extended period of time; a truly sustainable supply chain could, customers willing, continue to do business forever’ (p. 38). Pagell and Shevchenko (2014) introduce five issues about why sustainability has no future, which are (1) harm reduction is no harm elimination, (2) a limited stakeholder view; the primacy of profits, (3) a focus on the familiar, (4) the limits of empiricism as most of us presently practice it and (5) measuring supply chain

impacts. Because according to Pagell and Wu (2009) in the nearby future CSR is 'normal' they believe there is no future in further research.

### 2.3 New Product Development

ZGT would like to create buyer-supplier partnerships to increase NPD together with its suppliers instead of the supplier only offering machines, materials and equipment to ZGT. ZGT would like this in order to increase the effectiveness and efficiency of their operations since they can then help develop materials and equipment and influence the design process so the outcome is more specifically made for ZGT.

To start, NPD can be divided in two different types of innovations and is therefore perceived as an ambidextrous project. The two types in which NPD can be distinguished are incremental NPD or radical NPD (De Visser, de Weerd-Nederhof, Faems, Song, & van Looy, 2010). These two are different in the extent of innovativeness and the degree of risk taking (De Visser et al., 2010). Incremental innovations for NPD improve products or processes that are already available on the market by implementing small changes. These small changes are easily adopted by companies with regard to the required knowledge needed. Radical innovations for NPD are those innovations which create entirely new products that do not exist on the market yet, or innovations which introduce new products or processes to which companies cannot adapt unless they implement major changes (Olson, Walker, & Ruekert., 1995; De Visser et al., 2010). In addition to this Sarin and McDermott (2003) argue that radical innovations are more complex and have higher risks, are more uncertain and need a higher degree of expertise than incremental innovations. This thesis focuses on NPD projects of ZGT in general, but a suggestion for future research could be to see whether these collaborations focus on radical or incremental NPD.

Ragatz, Handfield and Scannel (1997) already pointed out that due to the quick changes that occur in technology, product life cycles and worldwide competition NPD has become a big issue for organisations. Besides this Ragatz et al. (1997) found that suppliers being part of an NPD project are the biggest differentiator in integrating NPD efforts successfully. Petersen, Handfield and Ragatz (2005) researched NPD with respect to product coordination, process design and supply chain design and found that 'early supplier involvement is a key coordinating process in supply chain design, product design and process design' (p. 371). Since ZGT does not develop its own medical machines or technology it wants to be involved in the NPD of its

suppliers. It is therefore interesting to see if suppliers are willing to collaborate with ZGT in order to create better products and/or services for both parties.

In order to collaborate in NPD boundaries have to be overcome. Ragatz et al. (1997) sum up some of these, but not all, such as resistance to sharing proprietary information. These kinds of boundaries often occur because of the trust between the buyer and supplier and the risk which will be taken. Cooper (1997) confirms this and states that NPD is an uncertain process with a high failure rate. Verganti (1997, 1999) adds that the project scope and product life-cycle of NPD projects is uncertain. Another issue as presented by Chiesa, Frattini and Manzini (2008) is that the knowledge exchange between the buyer and supplier is typically tacit. Problems in NPD can be solved due to a higher level of trust since this allows a better flow of information and better clarification of goals (Zand, 1972).

Besides trust and risk there are several other factors that influence supplier relationships in NPD. One of these factors is commitment (Gundlach, Achrol & Mentzer, 1995). Moorman Zaltman and Deshpande (1992) defined the term commitment as ‘an enduring desire to maintain a valued relationship’ (p. 316). Walter (2003) split commitment into four antecedents. These four are loyalty, willingness to make short-term sacrifices, long-term orientation and willingness to invest in the relationship.

Another factor mentioned by Walter (2003) is supplier specific adaptations. Walter (2003) proved that if the buyer uses higher supplier-specific adaptations it increases the involvement of suppliers in NPD projects. Walter (2003) besides showed that higher supplier-specific adaptations lead to higher supplier commitment and involvement in NPD. A second factor Walter (2003) mentioned was a relationship promoter at the buyer and stated that ‘establishing purposeful and timely communication, lobbying for support and resources, building coalitions between key persons, defining mutual and clear goals, solving conflicts, synchronizing cooperational activities, and advancing a congruent understanding of each other’s competences and needs, facilitate effective supplier involvement in customer NPD’ (p. 724). Since these factors concern manufacturing firms it is interesting to see whether or not these also apply to ZGT.

### 3. Hypotheses

Based on the literature review in chapter two several hypotheses have been formulated. All of these hypotheses, which have been developed based on Social Exchange Theory (SET), will be tested based on the data gathered through the online questionnaire which has been spread. All the hypotheses are direct or indirect concerned with either NPD or CSR projects in relation to buyer-supplier knowledge. All of the hypotheses are shown in the conceptual model in Figure 2. Hypotheses 1 and 2 (H1 – H2) are concerned with the linkage of buyer-supplier knowledge to customer attractiveness and supplier satisfaction. Customer attractiveness and supplier satisfaction have previously shown to be positively linked to receive a preferential treatment (Schiele et al., 2012). This thesis tests whether this also holds for willingness to collaborate in NPD and CSR projects. Therefore the link of supplier satisfaction and customer attractiveness to the willingness of suppliers to collaborate in NPD or CSR projects is tested by hypotheses 3 and 4 (H3a – H4b). Competitiveness in this conceptual model is shown since it has been used as a control variable to check whether there would be changes if this variable would be added at a certain place in the model.

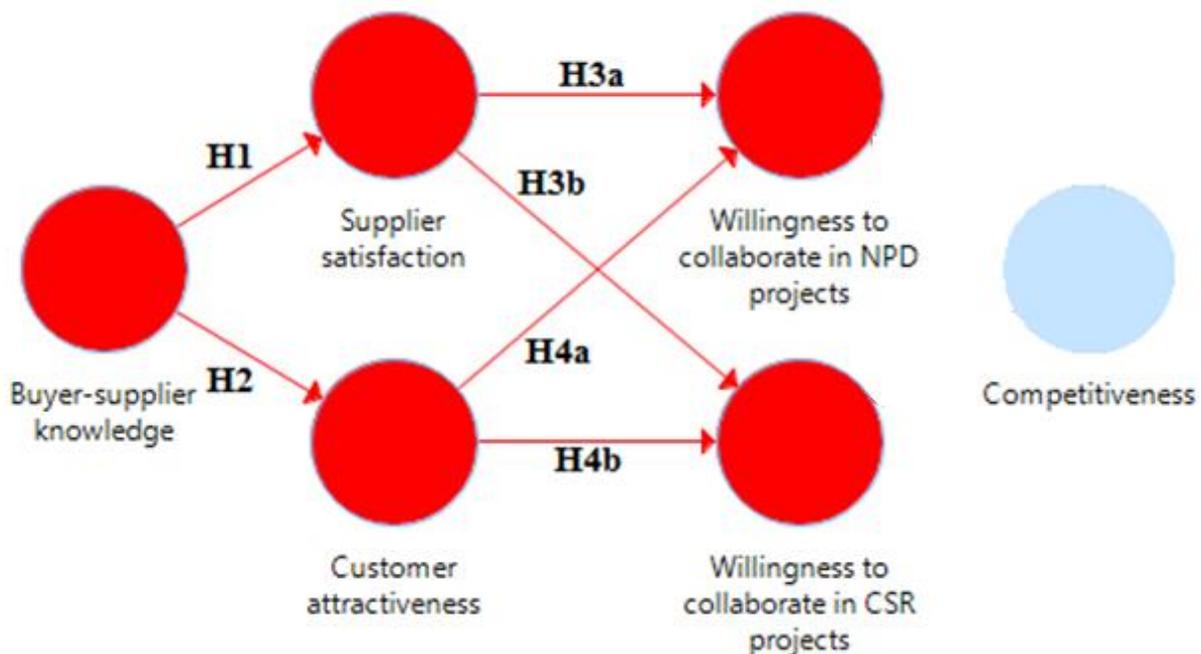


Figure 2: Conceptual model

The conceptual model as shown in Figure 2 adds to the existing empirical research since the variables of Buyer-supplier knowledge, Suppliers satisfaction and Customer attractiveness have been tested individually, but not combined or linked to the willingness of suppliers to collaborate in CSR or NPD projects.

### 3.1 Linking Buyer-supplier knowledge to supplier satisfaction and customer attractiveness

Supplier satisfaction and customer attractiveness have proven to be important in buyer-supplier relationships (Schiele, Veldman, Hüttinger & Pulles, 2012). Customer attractiveness is concerned with the expectation a supplier has of the relationship it can have with a customer (Schiele, Calvi & Gibbert, 2012). In other words, the higher the expectation of the supplier the higher the customer is perceived as attractive. Ramsay and Wagner (2009) look at attractiveness from a more practical perspective and argue that if a supplier receives offers from multiple customers, the customer with the highest expected value (i.e. attractiveness) is chosen to engage into a relation with.

Vos, Schiele and Hüttinger (2016) state that ‘supplier satisfaction is the buyer's ability to live up to the expectations of the supplier’ (p. 4613). Forker and Stannack (2000) add to this that this satisfaction is influenced by the relationship the supplier and buyer have. Satisfaction interacts with the just mentioned attractiveness and influences the relationship between supplier and buyer and the value created in this relationship.

Trust has shown to be an interesting factor in buyer-supplier knowledge as it has been addressed by several researchers (Kaiser et al., 1999; Pulles et al., 2014; Revilla & Knoppen, 2015) and is therefore used as one of the measures of Buyer-supplier knowledge. Ireland and Webb (2007) state that trust is one of the most important factors when a buyer and a supplier engage into a collaborative relationship and also while developing this relationship. In order to collaborate in NPD and CSR projects a buyer and a supplier should have developed their relation and should trust each other since these kind of projects have certain risks as well. It is therefore expected that the more the buyer and supplier trust each other the more willing they are to collaborate in NPD and/or CSR projects.

The other measure of Buyer-supplier knowledge concerns the dependency of the supplier and buyer. Buyer-supplier dependency can occur on different levels. Fink, James and Hatten (2011) for instance talk about transaction based dependency. The resource dependency theory states that suppliers or buyers that are dependent are vulnerable and that dependency should therefore be minimalised (Cool & Henderson, 1998). In light of this thesis we are interested in whether dependent suppliers are more or less willing to collaborate in NPD and/or CSR projects. The expectation is that there is a positive effect since suppliers are afraid to lose ZGT as a customer otherwise.

Buyer-supplier knowledge also is a way for a customer to become more attractive for a supplier or to satisfy a supplier more easily since they can use this knowledge in their advantage. Therefore it is expected that buyer-supplier knowledge is positively related to both supplier satisfaction and customer attractiveness.

**H1:** Buyer-supplier knowledge is positively related to supplier satisfaction.

**H2:** Buyer-supplier knowledge is positively related to customer attractiveness.

### 3.2 Linking supplier satisfaction and customer attractiveness to willingness to collaborate in NPD and CSR projects

Pulles, Schiele, Veldman and Hüttinger (2015) state that ‘customer attractiveness can help buying firms obtain better resources because the extent to which suppliers perceive a buying firm as attractive might induce these suppliers to allocate resources to that relationship’ (p. 3). Ellegaard, Johansen and Drejer (2013) elaborate on this by showing that an expected value can positively influence suppliers to start collaborating with its customers.

Nyaga, Whipple and Lynch (2013) state that when a suppliers level of satisfaction is higher it is more likely to invest in a relational collaboration with that customer. Also, Dyer and Hatch (2006) elaborate on this in means of reciprocity. When a supplier has several relationships with its customers, and therefore has several satisfaction levels, it is likely to invest more in the relationship with the highest level of satisfaction. In contrast to this Ellegaard and Koch (2012) state that when a supplier is less satisfied with a customer it is less likely to invest in a relationship with that customer compared to a customer with which it is more satisfied. Pulles et al. (2015) add to this by saying that ‘If one firm is capable of consistently reaching higher levels of relative supplier satisfaction, then suppliers should prefer collaborating with this firm over the other (competing) firms’ (p. 4).

Schiele et al. (2012) mentioned factors that are concerned with receiving a preferential treatment from suppliers. These factors are supplier satisfaction and customer attractiveness and these will most likely lead to a preferred customer status. Steinle and Schiele (2008) defined that a buyer is a preferred customer “if the supplier offers the buyer preferential resource allocation” (p.11), but as Trent (2005) indicated that the preferred customer is equal to the preferred supplier. This preferential resource allocation can lead to competitive advantage according to Dyer and Singh (1998) if the buyer creates an exclusive combination of third party resources. By creating supplier satisfaction and customer attractiveness the expected value and outcomes of a relationship increase. This can arouse the interest of a supplier to increase the

level of collaborating with a customer and engage into a more intense relationship (Mortensen, Freytag & Arlbjørn, 2008). Since it has been proven that supplier satisfaction and customer attractiveness lead to advantages, this thesis tries to find if this also leads to higher willingness to collaborate in NPD or CSR projects.

- H3a:** Supplier satisfaction is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.
- H3b:** Supplier satisfaction is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.
- H4a:** Customer attractiveness is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.
- H4b:** Customer attractiveness is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.

## **4. Method section**

While writing this thesis several methods have been used in order to get results on the factors mentioned in the introduction. This theory together with the methods, the supplier selection, justification and specification, bias and validity will be enlightened in this method section.

### **4.1 Theory**

This thesis builds on social exchange theory (SET) to examine several factors that might help ZGT to find suppliers with which ZGT can collaborate in NPD and/or CSR projects. The concept of SET is based on the theory that the way in which a company behaves and exchanges its resources in a relationship can be explained by relational factors. (Blau, 1964; Zhao et al., 2008). SET has been used to develop the hypotheses on Buyer-supplier knowledge, supplier satisfaction, customer attractiveness, trust and dependency on willingness to collaborate in NPD and CSR projects. This theory will also be used in the analysis that will be done based on data that has been gathered from suppliers and the supplier network.

### **4.2 Methods**

The first method used for this final master thesis is an online questionnaire. The online questionnaire has two versions; one for the supplier and one for the buyer of which the measures can be found in Appendix 2. These measures are build up out of several questions in the online questionnaire and were tested based on a five or seven point Likert-scale. Some of the measures in the online questionnaire have not been used in this thesis, but these have been added because of academic purposes. The online questionnaire was filled in anonymously to prevent bias. This also made it possible to map the different opinions from ZGT about the supplier and the other way around. Several questions regarding the variables of ZGT (i.e. willingness to collaborate in CSR projects and willingness to collaborate in NPD projects) as presented in the introduction have been enclosed to create a bigger value from this master thesis for ZGT. Examples of the key variables treated by the supplier are trust, dependency, customer attractiveness, supplier satisfaction and competitiveness. Besides these key variables some intelligence variables have been added as well as control variables.

The second method which has been used in order to gain a deeper understanding of the buyer-supplier relationships that are present at ZGT is interviews. Several semi-structured interviews have been conducted at selected suppliers in order to highlight one or more of the factors of ZGT.

The data from the online questionnaire had to be analysed. This has been done by using SPSS Statistics and SmartPLS 3 for the questionnaire data. SmartPLS 3 made it possible to perform Structural Equation Modelling (SEM) based on variance. SmartPLS 3 was chosen over other SEM software since Smart PLS 3 is able to analyse data of small sample groups as is the case in this thesis. SPSS has been used to perform several tests to assess the reliability and validity.

#### 4.3 Supplier selection, justification and specification

ZGT has approximately 1,800 suppliers which provide them with all the products and services the hospital needs to stay operational. Some of these suppliers, such as suppliers that sell medical machines or technology, account for large amounts of money. Others only sell one type of medicine that ZGT needs to operate according to their standards. Because of these differences selection, justification and specification is necessary. For the two different methods, which require suppliers to react, used in this thesis different selection methods have been used. This has been done after consultation with and in cooperation with the Purchasing department in order to select the suppliers which fit the method's criteria the best.

##### 4.3.1 Online questionnaire

In order to select the suppliers for the online questionnaire the internal database SAP of ZGT has been used. The data that has been used concerns data from the first of January 2015 until and including September 2016. The total suppliers list then got divided into categories based on the total spend of ZGT at these suppliers and the purchasing volume.

The purchasing spend of ZGT at their suppliers has been taken into account to check whether suppliers are relevant enough for ZGT in the context of this thesis to approach. If suppliers are too small to be able to make a difference in the way of operating of ZGT, these suppliers did not take part the online questionnaire. In consultation with the purchasing manager and the first internal supervisor it was decided that the total spend of ZGT at a supplier, for a supplier to become relevant, has to be at least €30,000.00 per year or between €10,000.00 and €30,000.00 but with five or more orders per year. Besides these suppliers also the suppliers which were present at the 'ZGT Smartup Innovation 2016' event received the questionnaire since the purchasing manager thought it was interesting to hear their opinion as well. After selection, a total of 384 suppliers appeared to be fit to fill in the online questionnaire.

#### 4.3.2 Semi-structured interviews

The semi-structured interviews (Appendix 3) were held with the contact persons of the two most interesting suppliers for CSR projects and with the two most interesting suppliers for NPD projects. These suppliers had already answered in the online questionnaire that they were interested in a follow up interview. Based on this answer, the answers on certain CSR/NPD related questions and after consultation with the Purchasing department the interviewees were chosen. The participants first received an e-mail to thank them that they fulfilled the online questionnaire and to invite them to an interview. The day after the e-mail the participants were called to once again thank them and plan the interview.

#### 4.4 Data collection

The 384 suppliers that are fit to fill in the online questionnaire all received three emails. The first one was send by the purchasing manager to stimulate the suppliers to cooperate in the survey. The second email included an invitation to cooperate and a link to the survey. After the second email 54 suppliers filled in the questionnaire. The third email was send two weeks after the second email and was a reminder with once again the link to the questionnaire. The questionnaire was accessed by 225 different suppliers, but eventually only 83 suppliers filled in the questionnaire. This results in a response rate of 21.61 percent and a non-response rate of 78.39 percent. This high non-response rate probably has multiple causes. One of these causes is the inclusion of the suppliers which were present at the ‘ZGT Startup Innovation 2016’ event. Suppliers who were present at this event often emailed that questions were not applicable for them and that they therefore did not complete the questionnaire. A second cause concerns the contact email addresses. ZGT mostly had general email addresses which they used for their purchases, but no personal email addresses. Because of this the emails which have been send most likely ended in a general e-mail folder without being read. A last cause for the high non-response rate lies with the LimeSurvey software which has been used to spread the survey. Servers of companies several times refused to accept the emails and automatically replied with an email delivery fault. For the 83 suppliers that filled in the online questionnaire ZGT had to fill in a survey as well. This was necessary to compare the exact values (of the suppliers) to the expected values (of ZGT). By doing this it was possible to calculate absolute values for the variables trust and dependency. Based on these absolute values, which is the exact value minus the expected value, the concept of Buyer-supplier knowledge could be tested.

Of the 83 suppliers that did fill in the questionnaire 80 are based in the Netherlands. The other three suppliers stated that the company group they are part of are based in Belgium, USA

and New Zealand. On average the suppliers supply ZGT for 14,75 years and ZGT counts for approximately 4.43 percent on their annual income. Two suppliers' data became invalid and could not be used for the analysis after the data got coded and the link between the suppliers and their questionnaire could not be verified anymore. Other suppliers' data could not be used because these suppliers were not known at the Purchasing department because of Maverick buying. Also some suppliers' data could not be used because contact persons within ZGT did not find the online questionnaire applicable to the products/services the supplier supplied or due to absence of the contact person. This led to a loss of 26 suppliers, leaving only 55 suppliers suitable for the analysis. Since there have been two moments of responding to the questionnaire (i.e. invitation and reminder) a t-test has been conducted to examine whether there are statistical differences between the early and late responders (i.e. first and last 20 respondents). The results are shown in appendix 4.1 and show that there are no significant differences between the variables except for SUPSatisfaction5 and SUPAttractiveness4 (with  $p < 0.05$ ). For all others Levene's test has shown that there are no significant differences and equal variances is assumed. Also between respondents and non-respondents a t-test has been conducted (Appendix 4.2) based on their spend at ZGT. This t-test shows that there equal variances can be assumed since the p-value is bigger than 0.05.

#### 4.5 Bias

Several types of bias could be present while conducting the research. Selection bias and exclusion bias might have occurred while selecting the suppliers for the two different methods applied in this thesis. This was prevented by discussing with both the purchasing manager as the first internal supervisor which suppliers would be selected rather than individually selecting the population and the suppliers in it. Non response bias could pose a threat since there is a large non response rate apparent in this research, but since Levene's showed that there is no significant difference between the variables this chance is minimized.

#### 4.6 Validity

Table 1 shows some SPSS descriptive statistics of the variables that were used in the analysis. In Table 1 the two variables BskDependency and BskTrust are shown. These are the two measures of Buyer-supplier knowledge that were calculated by using the absolute values of the expected and exact values of Trust and Dependency. Customer attractiveness and Supplier satisfaction were calculated based on four indicators. Willingness to collaborate in CSR projects and Willingness to collaborate in NPD projects are both single item measures.

	Minimum	Maximum	Mean	Std. Deviation	Variance
BskTrust	-180,00	80,00	-17,9038	56,98168	3246,912
BskDependency	-5,00	9,00	1,2727	3,19406	10,202
Customer_attractiveness	9,00	25,00	21,1807	3,15898	9,979
Supplier_satisfaction	7,00	17,00	12,2651	2,94703	8,885
Willingness_to_collaborate_in_NPD_projects	3	7	4,29	1,486	2,208
Willingness_to_collaborate_in_CSR_projects	2	5	3,34	,686	,470

*Table 1: Descriptive statistics*

In order to analyse the results the data has to be reliable and valid. If this is the case can be tested due to multiple tests. Chronbach's Alpha can be used to test internal consistency of the data. Nunally (1971) recommends a minimal threshold of 0.70. Dillon Goldstein's rho has been calculated to assess the composite reliability. According to J. Henseler (personal communication, May, 2016) the composite reliability value should be interpreted like Chronbach's Alpha which means a recommended threshold of 0.70. A third test can be done to test the convergent validity. The test that is fit for this is the Average Variance Extracted (AVE) and will be performed for the non-Buyer-supplier knowledge measures. The AVE is a test which is equal to the proportion of explained variance test in factor analysis. Fornell and Larcker (1981) state that the AVE value is between zero and one but should be above 0.50. The results of these tests can be seen in Table 2. Since Willingness to collaborate in CSR projects and Willingness to collaborate in NPD projects are both single item measures Chronbach's Alpha is set on 1.000 by SmartPLS 3.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
B-skDependency	1.000	1.000	1.000	1.000
B-skTrust	1.000	1.000	1.000	1.000
Customer attractiveness	0.776	0.792	0.842	0.573
Supplier satisfaction	0.742	0.742	0.838	0.565
Willingness to collaborate in CSR projects	1.000	1.000	1.000	1.000
Willingness to collaborate in NPD projects	1.000	1.000	1.000	1.000

*Table 2: Results tests*

As can be seen from Table 2 all measurement items' values fulfil the threshold for every test.

After the calculation of the AVE the square roots of the AVE were calculated in order to assess the discriminant validity. Heterotrait-monotrait (HTMT) Ratio of Correlations for small

sample sizes has to be smaller than 0.90 according to J. Henseler (personal communication, May, 2016). The results of the HTMT are shown in Table 3 below.

	B-skDependency	B-skTrust	Customer attractiveness	Supplier satisfaction	Willingness to collaborate in CSR...	Willingness to collaborate in NPD...
B-skDependency						
B-skTrust	<b>0.920</b>					
Customer attractiveness	0.132	0.175				
Supplier satisfaction	0.237	0.172	0.335			
Willingness to collaborate in CSR ...	0.095	0.109	0.041	0.420		
Willingness to collaborate in NPD...	0.085	0.113	0.144	0.311	0.157	

*Table 3: HTMT results*

The data of Table 3 shows that the HTMT threshold is exceeded for every variable correlation except for dependency and trust ( $0.920 > 0.9$ ) meaning that the concept of B-skTrust and B-skDependency, which should be unrelated, actually is related. For all other variables it can be concluded that discriminant validity exists between the variables.

## 5. Results

Figure 3 shows the results of SmartPLS 3 after calculating the PLS algorithm and performing Bootstrapping. The data shown between the latent variables is displayed as 'Path coefficient (T-value)'. The data shown within the variables are the  $R^2$  values. The control variable competitiveness did not show any significant differences within the model. In appendix 5 also the T-values between the latent variable and the indicators are shown.

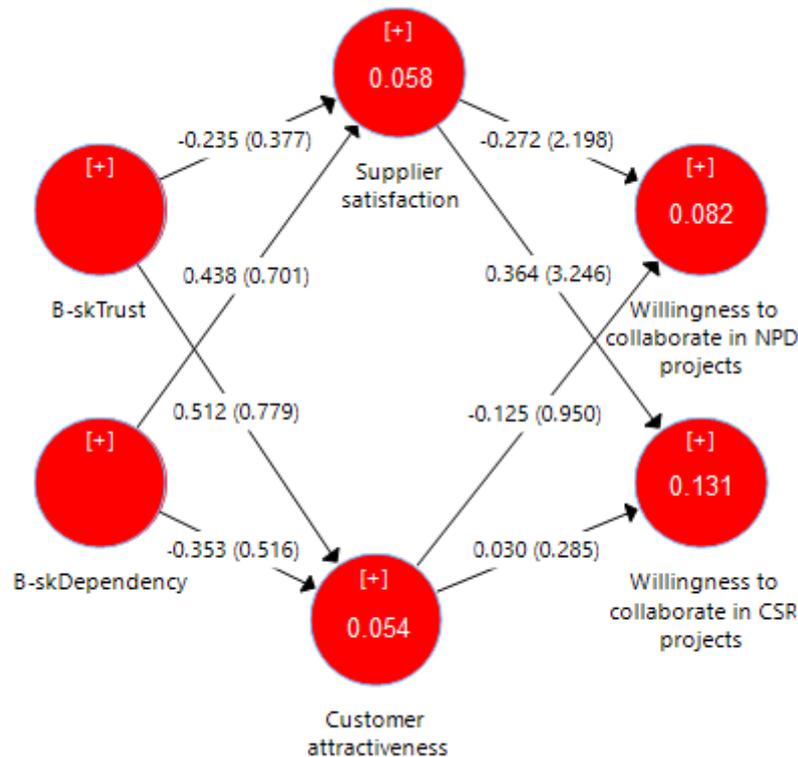


Figure 3: Results SmartPLS 3

Figure 3 shows that the concept of Buyer-supplier knowledge is partly positively related to the variables customer attractiveness and supplier satisfaction and partly negative. But, these relationships are insignificant. For a path coefficient ( $\beta$ ) to be significant the T-value has to be higher than 1.65 (one tailed test with 95% confidence level and 50 degrees of freedom). B-skTrust has a  $\beta$  of -0.235 with a T-value of 0.377 for supplier satisfaction and a  $\beta$  of 0.512 with a T-value of 0.779 for customer attractiveness. B-skDependency has a  $\beta$  of 0.438 with a T-value of 0.701 for supplier satisfaction and a  $\beta$  of -0.353 with a T-value of 0.516 for customer attractiveness. Since all T-values are smaller than 1.65 H1 and H2 should be rejected.

Supplier satisfaction is significantly negative related to suppliers' willingness to collaborate in NPD projects with a  $\beta$  of -0.272 and a T-value of 2.198. Besides, supplier

satisfaction is significantly positive related to suppliers' willingness to collaborate in CSR projects with a  $\beta$  of 0.364 and a T-value of 3.246. Based on these results H3a should be rejected since the effect is negative instead of positive. H3b should be accepted since it is both significant and positively related.

As can be seen in Figure 3 Customer attractiveness is negatively related to the willingness of suppliers to collaborate in NPD projects with a  $\beta$  of -0.125, but also this effect is insignificant since the T-value is 0.950. Customer attractiveness is, very minimal, positively related to the willingness of suppliers to collaborate in CSR projects with a  $\beta$  of 0.030, but this effect is also insignificant with a T-value of 0.285. Therefore H4a and H4b should be rejected despite the forecasted positive effect of H4b.

The last step of this analysis is the calculation of the  $R^2$ . This has been done to see for which percentage the structural model accounts. The outcome of the  $R^2$  test is shown in Table 4.

	R Square
Customer attractiveness	0.054
Supplier satisfaction	0.058
Willingness to collaborate in CSR projects	0.131
Willingness to collaborate in NPD projects	0.082

*Table 4:  $R^2$  test results*

Table 4 shows that customer attractiveness can be explained for 5.4 percent based on the model. Also, Supplier satisfaction can be explained for 5.8 percent, Willingness to collaborate in CSR projects for 13.1 percent and Willingness to collaborate in NPD projects for 8.2 percent.

To conclude Table 5 gives a brief overview of the hypotheses, their values and if they got accepted or rejected.

<b>Hypotheses</b>	<b><math>\beta</math>-value</b>	<b>T-value</b>	<b>Accepted/rejected</b>
<b>1.</b> Buyer-supplier knowledge is positively related to supplier satisfaction.	Trust -0.235 Dependency 0.438	Trust 0.377 Dependency 0.701	Rejected
<b>2.</b> Buyer-supplier knowledge is positively related to customer attractiveness.	Trust 0.512 Dependency -0.353	Trust 0.779 Dependency 0.516	Rejected
<b>3a.</b> Supplier satisfaction is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.	-0.272	2.198	Rejected
<b>3b.</b> Supplier satisfaction is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.	0.364	3.246	<b>Accepted</b>
<b>4a.</b> Customer attractiveness is positively related to suppliers' willingness to collaborate in NPD projects together with ZGT.	-0.125	0.950	Rejected
<b>4b.</b> Customer attractiveness is positively related to suppliers' willingness to collaborate in CSR projects together with ZGT.	0.030	0.285	Rejected

*Table 5: Hypothesis overview*

## 6. Discussion

The reason for ZGT to allow this research on behalf of University of Twente is to see whether suppliers are interested in collaborating with ZGT. Therefore two research questions and six hypotheses have been formulated. This chapter provides a conclusion of this thesis and answers these research questions. Besides it gives insight in the impact of this thesis and a reflection on this thesis.

### 6.1 Conclusion

This thesis measured the concept of Buyer-supplier knowledge's direct effect on supplier satisfaction and customer attractiveness and its indirect effect on suppliers' willingness to collaborate in NPD or CSR projects. Based on the analysis this thesis found that the effect of the pillar Trust of Buyer-supplier knowledge is positive towards customer attractiveness and negative to supplier satisfaction. That B-skTrust would have a positive effect on customer attractiveness is in line with most of the literature found and the hypotheses and is therefore not argued, but the negative effect on supplier satisfaction is unexpected. This effect could be explained by stating that only smaller suppliers responded to the online questionnaire. These smaller suppliers cannot build their trust on only one buyer because this could mean a complete loss of sales and even bankruptcy if the buyer would decide to switch to a different supplier. So smaller suppliers could be more satisfied when they build their trust on multiple buyers instead of high trust in one buyer. The pillar Dependency is the other way around. B-skDependency has a positive effect on supplier satisfaction and a negative effect on customer attractiveness. This can be confirmed by explaining that a higher dependency on one another is likely to increase the relationship and therefore the satisfaction. The negative effect on customer attractiveness can be caused by the higher position of power of the buying firm making it more unattractive or because of the will of suppliers to spread their sales volume among multiple buyers. But, all of the above mentioned effects are non-significant. Therefore this thesis concludes that Buyer-supplier knowledge has no significant effect on either customer attractiveness or supplier satisfaction.

Besides, this thesis can conclude that, even though unexpected, there is a significant negative effect of supplier satisfaction on ZGT's suppliers' willingness to collaborate in NPD projects. This is odd and can be the results of a too small sample size. Also, supplier satisfaction shows a significant positive effect on suppliers' willingness to collaborate in CSR projects. Therefore, according to these results, if ZGT wants to collaborate with suppliers in CSR projects

ZGT should keep their suppliers satisfied. While if ZGT wants to collaborate with suppliers in NPD projects this would have the opposite effect.

Finally, customer attractiveness has proven to have an insignificant negative effect on suppliers' willingness to collaborate in NPD projects and an insignificant positive effect on suppliers' willingness to collaborate in CSR projects.

As can be seen from the results suppliers' willingness to collaborate in NPD projects is negatively influenced by both Supplier satisfaction and Customer attractiveness. This is strange since based on the literature the opposite effect was expected. These unexpected results can have multiple causes. One of these causes is the fact that Willingness to collaborate in NPD was a single item measure providing only limited insight in the situation. A second cause could be because of the limited data collection of this research and the loss of perhaps interesting other data in the process. It could also be that the two variables of willingness to collaborate are too similar to each other and therefore were mixed up by the respondents. Another possibility of these results could be that ZGT is focused on CSR and not on NPD causing ZGT to be an unreliable partner for NPD projects. If suppliers would know this kind of information it would draw a negative impression of ZGT. This can be linked to supplier satisfaction because the more satisfied the supplier is, the better it would know this unreliability in NPD projects and the less it would like to collaborate with ZGT in NPD projects.

But, to answer the research questions based on the current data, if ZGT would want to collaborate with its suppliers in NPD projects it has to become less attractive to its suppliers and make its suppliers less satisfied. But, this is not recommended since the literature on which this thesis builds shows the opposite effect. Controversially, if ZGT would want to collaborate with its suppliers in CSR projects it has to become more attractive to its suppliers and make its supplier more satisfied. Also, if ZGT would want to increase their CSR and NPD projects with suppliers it should keep in mind that several difficulties could occur. Based on the interview results it can be concluded that finding the right supplier can already be a bottleneck for these kind of projects. Besides this also difficulties with ISO-certifications, trust, transparency, risk management and cost inflation could occur.

## 6.2 Contribution to the literature

This thesis contributes to the literature by adding a new concept of Buyer-supplier knowledge. This new concept has been tested with regard to the already existing concepts of supplier satisfaction and customer attractiveness and has shown to have certain, although insignificant,

effects on these concepts. Third this thesis contributes by showing that supplier satisfaction and customer attractiveness have both positive effects on the willingness of a supplier to collaborate in CSR projects while have a negative effect on a supplier's willingness to collaborate in NPD projects. These results can be used for further research with a bigger sample size or as a base to start a new research.

### 6.3 Contribution for ZGT's management

ZGT's management can use this thesis and its results to build on if they are planning to change their managerial policy for CSR and NPD projects. Based on this report it can take certain actions to influence the factors that have been measured in compliance with CSR and NPD projects. ZGT's management can also use this thesis as a guide while looking for suppliers that meet their requirements and are fit to collaborate with. Finally ZGT's management can use this thesis at the start of a buyer-supplier relationship to check for bottlenecks or tips which other suppliers provided based on their experience.

## 7. Semi-structured interviews

Four different companies (two for CSR and two for NPD) have been approached in order to see whether these suppliers already have buyer-supplier relationships based on CSR or NPD projects. These interviews could provide information about best and worst practices for CSR or NPD projects. Besides this the interviews focused on getting an insight of which policy these companies use while working together with other companies. The results provide guidelines for ZGT's management, but do not provide insights in buyer-supplier relationships as hoped. This is caused by the suppliers that were interviewed. These suppliers did not have in depth buyer-supplier relationships themselves and could therefore not answer most of the questions that were prepared for the interviews.

### 7.1 CSR Interviews

After the interviews had been conducted it appeared that the suppliers which have been approached both invest in CSR, but not in a specific CSR buyer-supplier relationship. When the suppliers were asked about their buyer-supplier relationships in the field of CSR the answers given were general and not case specific. They suppliers elaborated about how they use a CSR checklist while acquiring new suppliers or customers and stated that by doing that they had an CSR buyer-supplier relationship. Even though this is a buyer-supplier relationship in a very early state, it is not the kind of in depth relationship this thesis searches for.

Still, based on the two interviews, a couple of things have come up which might be interesting for ZGT if they want to work in a more socially responsible way. One of these points is that ZGT should check the possibility to get ISO-certified. ISO is the International Organization for Standardization and provides companies with a quality label when the company fulfils certain requirements. With this label ZGT can show that it already works according to a certain standard and perhaps attract interesting suppliers. A second point of interest for ZGT lies within their cost focus. One of the suppliers mentioned that within the Purchasing department an extreme focus on cost dominates. The purchasers of ZGT were so called 'Google purchasers', meaning that they would compare products of the company with cheaper products on the internet. He advises to let this focus a bit more loose while focussing on CSR projects since CSR products and services are often more expensive than regular products or services. The third point that came forward is that ZGT should be transparent if they want to operate according to CSR standards. If necessary it should be possible to trace back where the products of ZGT come from and who made them. This is possible if ZGT focuses on suppliers who themselves already have quality labels or by visiting the suppliers.

Operating in a CSR way has a couple advantages according to the interviewees. Apart from the fact that it is good for the environment it directly affects employees. If employees have a well decorated office (i.e. chairs and desks which are adjustable in height) this influences their performance positively. CSR has become a big issue among entrepreneurs and therefore operating according CSR often increases sales. But, CSR can also cause that the price of products or services rise. Because of this it is important for companies to find a balance between these.

How a CSR project policy should look like remains unclear since both suppliers did not have any buyer-supplier relationship based on CSR projects. Though the advice based on previous experiences of the interviewees is that open communication between both parties is the key to start a healthy buyer-supplier relationship. Also, even though CSR projects in its core are not focusing on financial results it is important to set measurable targets. This in order to check whether the policy ZGT would be handling is effective in matters of people, planet and profit.

## 7.2 NPD interviews

The NPD interviews concerned the same questions as the CSR interviews only the questions core was focused on a different type of buyer-supplier relationship. One of these companies appeared to have multiple NPD buyer-supplier relationships. Besides servicing medical products this supplier also develops its own products as OEM which made this interview even more interesting.

Based on both interviews some points came forward which ZGT should keep in mind while contacting suppliers for a NPD buyer-supplier relationship. The first point of attention is the capability of the supplier with whom ZGT would want to collaborate. The Purchasing department of ZGT should discuss with the concerning department what improvements on medical products would directly improve their way of working. Subsequently the Purchasing department can use this information to look for a matching NPD partner to accomplish the project with. The suppliers did not mention what in their eyes would be a good NPD buyer-supplier project policy, but they did mention the ISO-certification. With NPD projects there is a certain amount risk present. If a supplier has the ISO14971 certification for risk management the chance of starting a project which will lead to a failure probably is smaller than when a supplier does not have this ISO-certification. For NPD projects focusing on medical devices there are different rules and regulations than for regular NPD projects. ISO13485 is one of these

certifications and is the certificate for quality management of medical devices. Another tip for ZGT while considering NPD projects is to have open communication with the interested departments of ZGT as well as with the supplier about their expectations. While communicating with the supplier, ZGT should draft a contract including among other things a non-disclosure and certain guarantees to avoid problems in the future.

An advantage of NPD projects are products becoming more specific to certain needs. These products are better useable by the end-users and therefore likely to improve performance and/or efficiency. Since it is also possible that NPD projects fail ZGT should calculate the costs in prior of starting the project in order to limit any possible disadvantages.

A last tip based on the experience of one of the interviewees is to include employees from several departments in a project. Currently the experience was that 'Facilitair bedrijf' would do the talking for other departments resulting in return of the product to the supplier. As stated by the supplier this was because there had been a miscommunication between the department and 'Facilitair bedrijf'. This can be solved by including someone from the department in the NPD project.

## **8. Limitations and further research**

Because every research that is conducted brings along limitations because of the specific case, this research does as well.

### **8.1 Limitations**

One of the limitations of this research is that the conclusions are based on the literature found by using certain keywords and that there could be additional literature which has not been reviewed. A second limitation is the specific case of ZGT being a hospital and its operations in a different industry than most of the other existing companies. This leads to different suppliers supplying the case company and could therefore lead to different results compared to when the research would be conducted at a typical manufacturing company. A third limitation is the high non-response rate of this thesis. Important suppliers who could possibly influence the outcome may not have replied resulting in a different outcome than currently is the case. This is also the case for the interviews which have been conducted. Because the large and likely interesting suppliers did not respond to the invitation the outcome of these interviews was not as hoped for at the start.

### **8.2 Further research**

Several points of interest are present while thinking of further research. This thesis looked for instance at NPD in general and presented results based on these outcomes. Literature teaches us that there are two types of NPD and therefore that there might be different outcomes for these types. Also, during this research trust and dependency have been used to test the concept of Buyer-supplier knowledge, while other factors such as commitment might be interesting to test as well. Especially since literature has shown that commitment is an important factor when focussing on NPD projects. Third, trust has also been tested in general in this research, but as literature has proven trust can be split up in competence trust and goodwill trust. Besides these possibilities for further research this research could also be repeated with a bigger sample size to see whether the results will be the same and if they become significant at a certain point. This could be done in order to give a better advice to the management of ZGT with regard to their ambition to collaborate with suppliers.

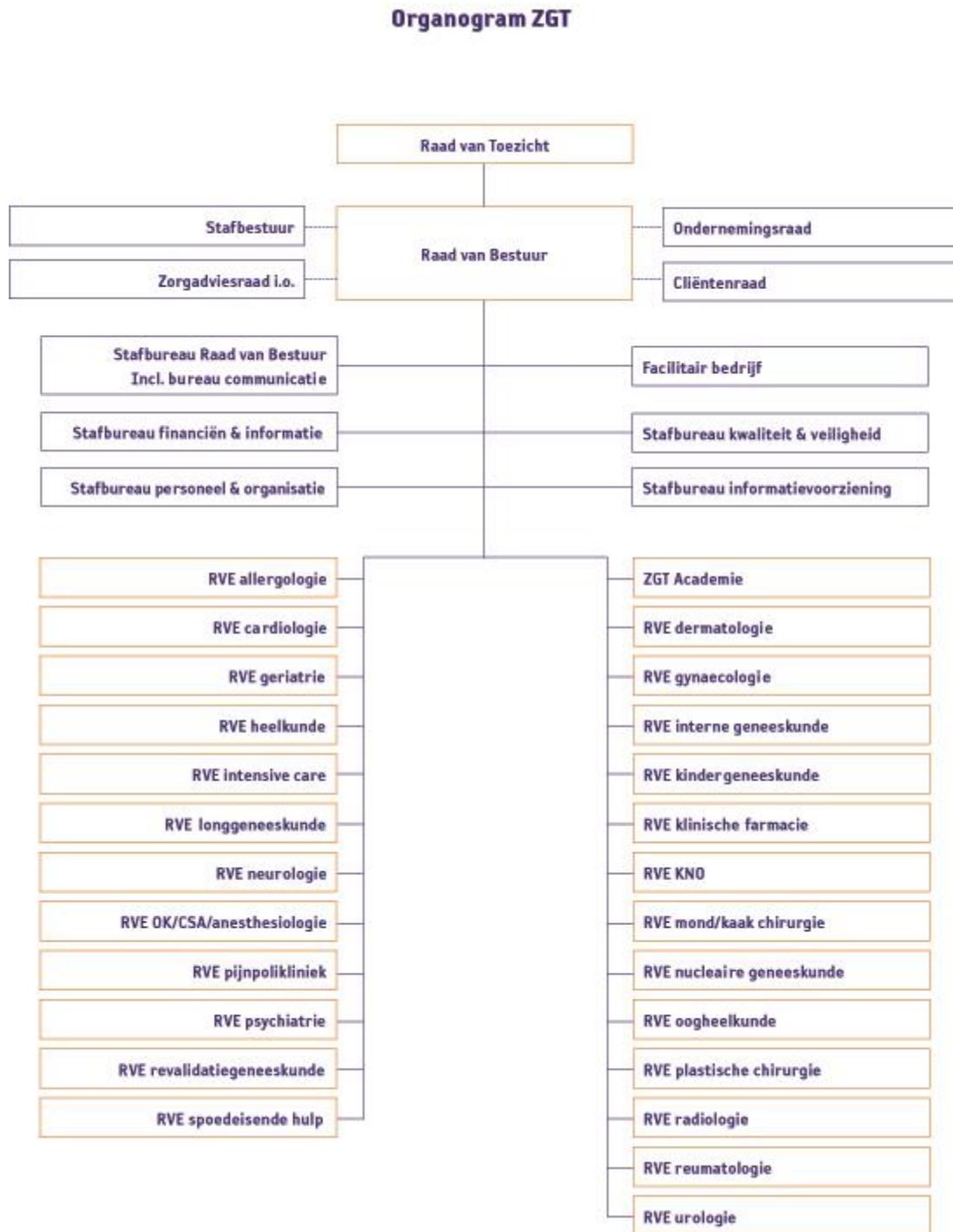
### **8.3 Reflection on this thesis**

At the end of this thesis it can be said that it was very interesting to conduct this research, even though the results for ZGT may be minimal. For ZGT it would be very interesting if their major suppliers would have responded and that the interviews, which now have been conducted with

small suppliers, would have been conducted with them. Unfortunately these major suppliers did not respond to the online questionnaire and were therefore not approached for an interview. The concept of Buyer-supplier knowledge has proven to have certain effects, but these were insignificant. All of the hypotheses were rejected except for one, which is interesting since this was unexpected and provides possibilities for further research. Even though the somehow disappointing response of suppliers and therefore results this thesis was not a disappointment to work on. The guidance from University of Twente as well as the help from colleagues of ZGT made it an intriguing topic to work on which was done with pleasure.

## Appendices

### Appendix 1: ZGT organogram (in Dutch)



## Appendix 2: Measures online questionnaire

Supplier (XXX; around 10 minutes)	Buyer (38 items; around 6 minutes)
<p><u>Key variables</u></p> <ul style="list-style-type: none"> <li>- Preferential Res. All. (Physical;3 items)</li> <li>- Preferential Res. All. (Innovation;3 items)</li> <li>- Poaching (3 items)</li> <li>- Attractiveness of customer(3 items)</li> <li>- Satisfaction with customer (4 items)</li> <li>- Perceived division of Power (3 items)</li> <li>- Supplier Dependence (3 items)</li> <li>- Supplier development (4 items)</li> <li>- Supplier integration (3 items)</li> <li>- Expert power (3 items)</li> </ul> <p><u>Intelligence variables</u></p> <ul style="list-style-type: none"> <li>- Share in turnover (0-100%; 1 item)</li> <li>- Competitiveness (# of competitors; 2 items)</li> <li>- Trust (0-100%; 2 items)</li> <li>- Product spec. influence (0-100%; 1 item)</li> </ul> <p><u>Other/Controls</u></p> <ul style="list-style-type: none"> <li>- Turnover (1 item)</li> <li>- Number of employees (1 item)</li> <li>- Country (1 item)</li> <li>- Length of Relationship (1 item)</li> <li>- Tenure of Respondent (2 items)</li> </ul> <p><u>Additional measures</u></p> <p>Aantrekkelijkheid (5 items)</p> <p>Toegewijd ZGT (4 items)</p> <p>Tevreden met ZGT (9 items)</p> <p>ZGT vergelijkbaar (3 items; open vragen)</p> <p>Substitutie (4 items)</p> <p>NPD Aanpassingen (1 item)</p> <p>NPD ter sprake (3 items)</p> <p>MVO Aanpassingen (1 item)</p> <p>MVO ter sprake (3 items)</p> <p>Aantrekkelijkheid van ZGT NPD (1 item)</p> <p>Aantrekkelijkheid van ZGT MVO (1 item)</p>	<p><u>Key variables</u></p> <ul style="list-style-type: none"> <li>- Supplier Operational Performance (3 items)</li> <li>- Supplier Competitive Performance (4 items)</li> <li>- Supplier Innovation Performance (3 items)</li> <li>- Coercive Power (3 items)</li> <li>- Reward Power (3 items)</li> <li>- Relational Investments (3 items)</li> <li>- Buyer Dependence (3 items)</li> </ul> <p><u>Intelligence variables</u></p> <ul style="list-style-type: none"> <li>- Share in turnover (0-100%; 1 item)</li> <li>- Competitiveness (# of competitors; 2 items)</li> <li>- Trust (0-100%; 2 items)</li> <li>- Product spec. influence (0-100%; 1 item)</li> </ul> <p><u>Other/Controls</u></p> <ul style="list-style-type: none"> <li>- Pricing (1 item)</li> <li>- Share in spent (1 item)</li> <li>- Tenure of Respondent (not in survey)</li> </ul> <p><u>Additional measures</u></p> <p>Aantrekkelijkheid van leverancier NPD (1 item)</p> <p>Aantrekkelijkheid van leverancier MVO (1 item)</p> <p>Prestatie NPD (2 items)</p> <p>Prestatie MVO (2 items)</p>

### Appendix 3: Semi-structured interview (in Dutch)

Naam: \_\_\_\_\_

Bedrijf: \_\_\_\_\_

1. Wat is de huidige situatie van uw bedrijf met betrekking tot MVO / NPD?
2. Heeft u veel zakenpartners waar u op het gebied van MVO / NPD projecten mee heeft lopen?
3. Hoe ziet volgens u een goed MVO / NPD projectbeleid tijdens een klant-leverancier relatie eruit?
4. Hoe is de relatie met betrekking tot deze MVO / NPD projecten tot stand gekomen met deze klant/leverancier?
5. Heeft u nadat de relatie tot stand is gekomen nog moeten investeren om ervoor te zorgen dat er een betere projectsamenwerking uit voort kwam?
6. Hoe verloopt de samenwerking met deze klant/leverancier met betrekking tot MVO / NPD projecten?
7. Welke voordelen heeft de samenwerking tot op heden u opgeleverd?
8. Welke voordelen heeft de samenwerking tot op heden voor uw klant/leverancier opgeleverd?
9. Heeft de samenwerking ook nadelen voor u of uw klant/leverancier op het gebied van MVO / NPD?
10. Wat is er tot op heden mis gegaan in uw samenwerking? Of wat had er beter gekund?
11. Heeft u op de voorhand verwachtingen van uw zakenrelatie wanneer u samenwerkt op het gebied van MVO / NPD? Zo ja, op welk gebied en wat waren deze?
12. ZGT wil zich ook richten op MVO met behulp van leveranciers. Wat zijn tips die u heeft op basis van uw ervaringen?
13. Wat zou ZGT kunnen verbeteren in haar opereren om een dergelijke samenwerking tot stand te brengen?
14. Wat zijn volgens u de belangrijkste aspecten (voor ZGT) ten opzichte van MVO / NPD?
15. In welke fase van het NPD proces zou u ZGT willen betrekken en waarom?

Idea generation, idea screening, concept development and testing, marketing strategy and development, business analysis, product development, test marketing, commercialisation

## Appendix 4: T-test results

## Appendix 4.1: early and late respondents

Group Statistics

	ResponseTime	N	Mean	Std. Deviation	Std. Error Mean
SUPTrust1_Suppliers	Early respondents	20	80,00	25,079	5,608
	Late respondents	20	82,25	12,405	2,774
SUPTrust2_Suppliers	Early respondents	20	51,50	27,820	6,221
	Late respondents	20	50,80	31,046	6,942
SUPSupplierDependence 1	Early respondents	20	3,90	,968	,216
	Late respondents	20	4,35	,587	,131
SUPSupplierDependence 2	Early respondents	20	3,65	,988	,221
	Late respondents	20	4,00	,858	,192
SUPSupplierDependence 3	Early respondents	20	3,50	1,192	,267
	Late respondents	20	4,10	,968	,216
supplier5attractiven_SQ1	Early respondents	20	4,50	,827	,185
	Late respondents	20	4,50	,827	,185
supplier5attractiven_SQ2	Early respondents	20	4,50	1,000	,224
	Late respondents	20	4,35	,745	,167
supplier5attractiven_SQ4	Early respondents	20	3,95	1,146	,256
	Late respondents	20	4,40	,883	,197
supplier5attractiven_SQ3	Early respondents	20	4,60	,995	,222
	Late respondents	20	4,60	,754	,169
SUPSatisfaction1	Early respondents	20	2,70	,923	,206
	Late respondents	20	2,85	,671	,150
SUPSatisfaction6	Early respondents	20	3,05	1,050	,235
	Late respondents	20	3,20	,616	,138
SUPSatisfaction5	Early respondents	20	2,50	,607	,136
	Late respondents	20	2,70	,733	,164
SUPSatisfaction4	Early respondents	20	2,95	1,791	,400
	Late respondents	20	3,75	1,713	,383
SUPSatisfaction3	Early respondents	20	2,45	,605	,135
	Late respondents	20	2,75	,967	,216
SupplierAttractivenessNP D1	Early respondents	20	4,05	1,395	,312
	Late respondents	20	4,45	1,432	,320
SupplierAttractivenessMV O1	Early respondents	20	3,20	,768	,172
	Late respondents	20	3,40	,598	,134



**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SUPTrust1_Suppliers	Equal variances assumed	3,124	,085	-,360	38	,721	-2,250	6,256	-14,915	10,415
	Equal variances not assumed			-,360	27,772	,722	-2,250	6,256	-15,070	10,570
SUPTrust2_Suppliers	Equal variances assumed	,250	,620	,075	38	,941	,700	9,321	-18,170	19,570
	Equal variances not assumed			,075	37,552	,941	,700	9,321	-18,178	19,578
SUPSupplierDependence 1	Equal variances assumed	2,302	,137	-1,778	38	,083	-,450	,253	-,962	,062
	Equal variances not assumed			-1,778	31,316	,085	-,450	,253	-,966	,066
SUPSupplierDependence 2	Equal variances assumed	1,545	,221	-1,196	38	,239	-,350	,293	-,942	,242
	Equal variances not assumed			-1,196	37,272	,239	-,350	,293	-,943	,243
SUPSupplierDependence 3	Equal variances assumed	3,085	,087	-1,747	38	,089	-,600	,343	-1,295	,095
	Equal variances not assumed			-1,747	36,462	,089	-,600	,343	-1,296	,096
supplier5attractiveness_SQ1	Equal variances assumed	,000	1,000	,000	38	1,000	,000	,262	-,530	,530
	Equal variances not assumed			,000	38,000	1,000	,000	,262	-,530	,530
supplier5attractiveness_SQ2	Equal variances assumed	,084	,773	,538	38	,594	,150	,279	-,415	,715
	Equal variances not assumed			,538	35,128	,594	,150	,279	-,416	,716
supplier5attractiveness_SQ4	Equal variances assumed	5,400	,026	-1,391	38	,172	-,450	,323	-1,105	,205
	Equal variances not assumed			-1,391	35,674	,173	-,450	,323	-1,106	,206
supplier5attractiveness_SQ3	Equal variances assumed	,043	,837	,000	38	1,000	,000	,279	-,565	,565
	Equal variances not assumed			,000	35,413	1,000	,000	,279	-,566	,566
SUPSatisfaction1	Equal variances assumed	2,069	,159	-,588	38	,560	-,150	,255	-,667	,367
	Equal variances not assumed			-,588	34,686	,561	-,150	,255	-,668	,368
SUPSatisfaction6	Equal variances assumed	6,271	,017	-,551	38	,585	-,150	,272	-,701	,401
	Equal variances not assumed			-,551	30,680	,586	-,150	,272	-,705	,405
SUPSatisfaction5	Equal variances assumed	,757	,390	-,940	38	,353	-,200	,213	-,631	,231
	Equal variances not assumed			-,940	36,729	,353	-,200	,213	-,631	,231
SUPSatisfaction4	Equal variances assumed	,177	,676	-1,444	38	,157	-,800	,554	-1,922	,322
	Equal variances not assumed			-1,444	37,925	,157	-,800	,554	-1,922	,322
SUPSatisfaction3	Equal variances assumed	3,061	,088	-1,177	38	,247	-,300	,255	-,816	,216
	Equal variances not assumed			-1,177	31,901	,248	-,300	,255	-,819	,219
SupplierAttractivenessNP D1	Equal variances assumed	,274	,603	-,895	38	,376	-,400	,447	-1,305	,505
	Equal variances not assumed			-,895	37,974	,376	-,400	,447	-1,305	,505
SupplierAttractivenessMV O1	Equal variances assumed	,956	,334	-,919	38	,364	-,200	,218	-,641	,241
	Equal variances not assumed			-,919	35,857	,364	-,200	,218	-,641	,241

Appendix 4.2: Respondents and non-respondents

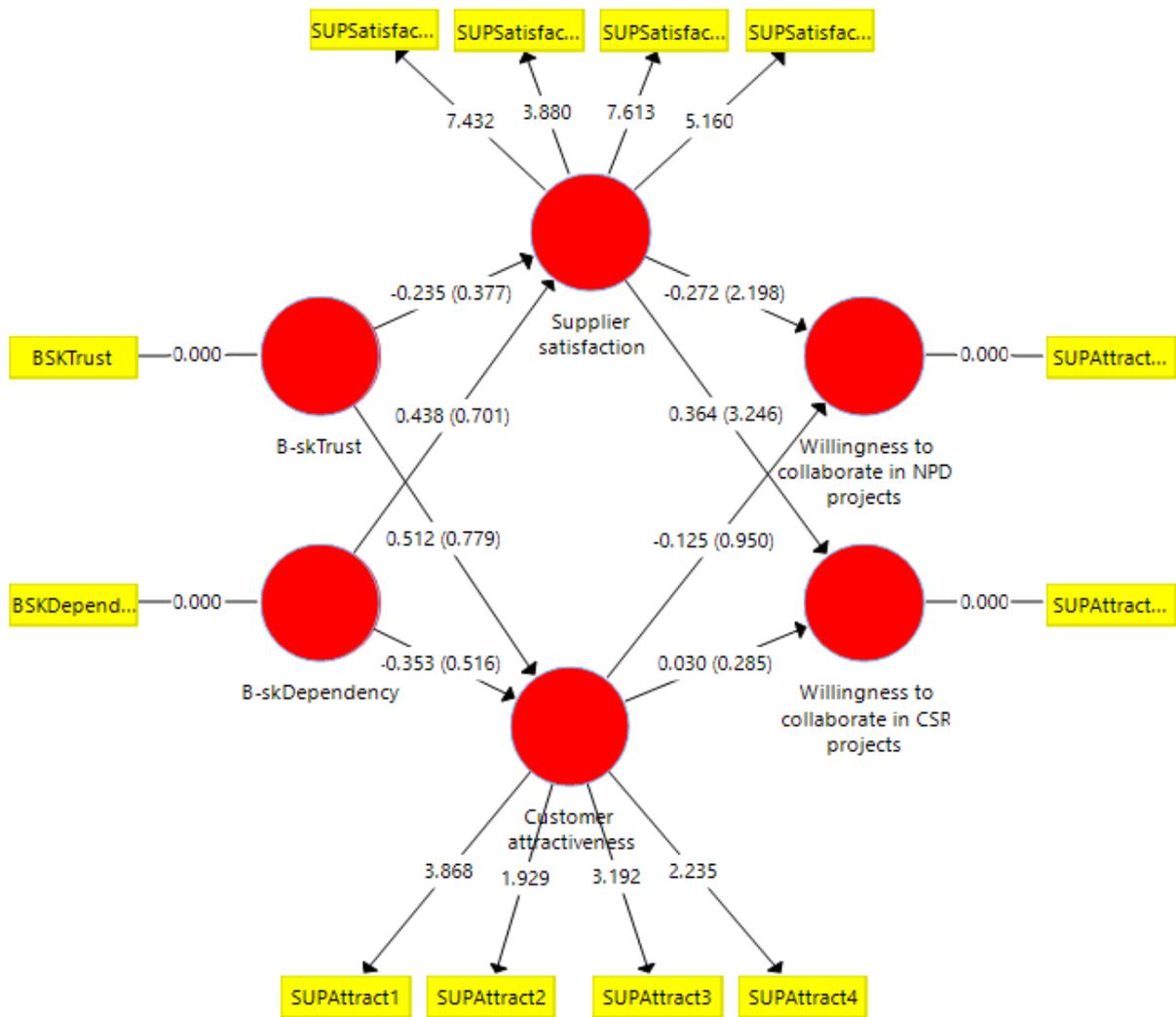
**Group Statistics**

	Replied	N	Mean	Std. Deviation	Std. Error Mean
Spend	yes	83	219754,7041	786818,1226	86364,50897
	no	301	186417,6557	389691,9703	22461,47175

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Spend	Equal variances assumed	3,262	,072	,535	382	,593	33337,04835	62255,25853	-89068,83675	155742,9334
	Equal variances not assumed			,374	93,351	,710	33337,04835	89237,58246	-143862,3131	210536,4098

Appendix 5: SEM results



- The data shown between the variables is shown as ‘Beta value (T-value)’.
- The data shown between the variables and the indicators are T-values.

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