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Supplier satisfaction: The importance of achieving excellence as a buying company to create satisfied suppliers

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## Abstract

For many firms there is not only competition for customers, but also for suppliers. Buying firms try to get competitive advantages from their supplier to outperform their competitors. A necessary condition for gaining these advantages from their suppliers is supplier satisfaction. Supplier satisfaction is also necessary for getting a better performance from these suppliers. This research extends previous research by adding new antecedents that improve supplier satisfaction. This research tested the influence of Operational Excellence (OPEX) and Purchasing Excellence (PUREX) on supplier satisfaction. The findings indicate that PUREX has a direct influence on supplier satisfaction and that OPEX has an indirect influence on supplier satisfaction. To get a broader picture of the influence of supplier satisfaction, this paper used mechanisms of the Social Exchange Theory (SET). The mechanisms that were used are competence trust and expert power. By using these mechanisms it is shown that the relationship between OPEX and supplier satisfaction is completely mediated by competence trust. The data of this research is gathered amongst suppliers of Bons en Evers, a Dutch forging brass company and is analysed with PLS path modelling software. Ultimately, this study provides new antecedents for buyers to achieve more satisfied suppliers and give the purchasers knowledge of the influence of trust and power within the relationship.

**Keywords:** Supplier satisfaction, Operational Excellence, Purchasing Excellence, Competence Trust, Expert Power, Social Exchange Theory.

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## List of abbreviations

OPEX = Operational Excellence PUREX = Purchasing Excellence R&D = Research and Development TPS = Toyota Production System JIT = Just-in-Time TPM = Total Productive Maintenance TQM = Total Quality Management SET = Social Exchange Theory VIF = Variance Inflation Factor AVE = Average Variance Extracted

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## **1. Introduction**

#### 1.1 interest in supplier satisfaction

A collaborative relationship between buyer and supplier is important to achieve efficiency, flexibility and a competitive advantage.<sup>1</sup> In the classical view of marketing, suppliers are competing for buyers. Contrary to the classical view of marketing, this paper will focus on buyers competing for suppliers, so-called "reverse marketing".<sup>2</sup> Buyers want to achieve a preferred customer status, so they can receive preferential treatment from their suppliers. An important condition for achieving preferred customer status is "supplier satisfaction".<sup>3</sup> When the suppliers are satisfied with the buyer, they could provide the buyer with their best personnel for joint new product development, customise products, innovations, and privileged treatments if bottlenecks occur. In contrast to this, when suppliers are not satisfied they could provide poor quality goods and services to their buyer.<sup>4</sup> Therefore this paper will focus on supplier satisfaction.

According to Essig et al. (2009, p. 104) supplier satisfaction can be defined as: "a supplier's feeling of fairness with regard to buyer's incentives and supplier's contributions within an industrial buyer–seller relationship as relates to the supplier's need fulfilment". Schiele et al. (2012, p. 1181) stated that supplier satisfaction could be achieved if the quality of outcomes meets or exceeds the supplier's expectations. So buyers who meet or exceed the supplier's expectations can receive the best resources. Vos et al. (2015, p. 40) found antecedents that are important for creating supplier satisfaction. They found that growth opportunity, reliability and profitability can positively affect supplier satisfaction. These antecedents can help to improve the buyer's attractiveness and buyer's attractiveness has a major impact on supplier satisfaction.<sup>5</sup>

#### **1.2 OPEX and PUREX**

Despite all the research that has been done in the field of supplier satisfaction, there is still enough space for improvement. Vos et al. (2016, p. 43) tested the direct influence of operational excellence (OPEX) on supplier satisfaction, but an indirect influence of OPEX

<sup>&</sup>lt;sup>1</sup> See (Nyaga, Whipple, & Lynch, 2010), p. 101

<sup>&</sup>lt;sup>2</sup> See (Blenkhorn & Banting, 1991), p. 187

<sup>&</sup>lt;sup>3</sup> See (Huttinger, Schiele, & Veldman, 2012), p. 1194-1195

<sup>&</sup>lt;sup>4</sup> See (Schiele, Calvi, & Gibbert, 2012), p. 1178

<sup>&</sup>lt;sup>5</sup> See (Pulles, Schiele, Veldman, & Huttinger, 2016), p. 137

on supplier satisfaction is never tested before. OPEX can be defined as: "The state of achievement for the good work one does to fulfil the desired objectives in the delivery of products and services that satisfies customers and the ability to continuously improve the work". OPEX is a collective term of different methods that help to become more efficient and effective. The different OPEX methods are mentioned and explained in chapter 2.2.2 of this paper. The goal of OPEX is to lead its industry in price and convenience. Companies that pursue OPEX are constantly searching for ways to minimize overhead costs, eliminate intermediate production steps, reduce transaction costs and to optimize business processes across functional and organizational boundaries.<sup>6</sup>

Within a buyer-supplier relationship, the purchasers of the buying company are the contact point for the suppliers, but current literature never tested the influence of purchasing excellence (PUREX) on supplier satisfaction. PUREX stands for continuously improving the company's purchasing skills and to be a leading company within the industry. This definition is derived from OPEX, because there is no definition available in current literature. According to Sheikhzadeh and Heidari (2012, p. 2480) PUREX consists of three stages: supplier management, purchasing organisation and process optimisation, and systematic commodity management. In this paper, PUREX is a combination of relational behaviour and operational performance, while OPEX is purely focused on operational performance. OPEX and PUREX can be seen as specific dimensions of customer attractiveness.

#### **1.3 Expert power and competence trust**

In an exchange relationship, one or both of the parties are expected to make adaptations to the needs of the counterpart. For these adaptations two mechanisms can be used. The first mechanism is power. There are many different types of power, such as: expert power, referent power, legitimate power, rewarded power, coercive power and manipulative power.<sup>7</sup> Power can be used to influence the behaviour of the buyer by either threatening with sanctions or by promising some sort of benefit.<sup>8</sup> With expert power the buyer has knowledge, expertise or skills that are desired by the supplier.<sup>9</sup> Therefore, this paper will focus on expert power, because companies that achieve excellence (OPEX and PUREX)

<sup>&</sup>lt;sup>6</sup> See (Treacy & Wiersema, 1993), p. 85

<sup>&</sup>lt;sup>7</sup> See (Benton & Maloni, 2005), p. 4; (Terpend & Ashenbaum, 2012), p. 54

<sup>&</sup>lt;sup>8</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 22

<sup>&</sup>lt;sup>9</sup> See (Zhao, Huo, Flynn, & Yeung, 2008), p. 370

will be seen as an expert in the industry. Excellence refers to the quality of being outstanding or extremely good. Expert power is the perception that the buyer has valuable knowledge that is desirable for the supplier, so that the supplier is able to use this knowledge to become a better supplier.<sup>10</sup> Expert power is a non-mediated power and firms are usually not aware of the existence of this power. If the perceived expert power is high, suppliers will share more knowledge with the buyer and would like to work with them.<sup>11</sup>

The second mechanism is trust. Trust is a multidimensional concept, which consists of two dimensions. The two dimensions are goodwill trust and competence trust.<sup>12</sup> This paper will focus on competence trust, because this paper tests the ability of the buyer (OPEX and PUREX) and competence trust refers to the confidence one has in the ability of the other.<sup>13</sup> Trust exists when a firm has confidence in the reliability and integrity of the partner and can help to create an atmosphere in which both companies do the most to keep each other satisfied.<sup>14</sup>

In current literature there is little information about the influence of the performance of a buyer on supplier satisfaction. Previous research has mainly been focused on relational antecedents that could influence supplier satisfaction and was less focused on the influence of the buyer's operational performance. Hüttinger et al. (2012, p. 1202) already mentioned that antecedents of supplier satisfaction are particularly compromised by factors of a more operational nature. For this reason it is important to test the influence of buyer's operational performance on supplier satisfaction. Suppliers will see buying companies that score high on operational performance, as attractive. The concept of attractiveness and satisfaction has their roots in social exchange theory (SET). SET is based on the idea that exchanges are not limited to material goods, but also include intangible goods.<sup>15</sup> In an exchange relationship one or both of the parties are expected to make adaptations to the needs of the counterpart. Expert power and competence trust are two mechanisms that can be used for these adaptations.<sup>16</sup> Although, different paper mentioned that these antecedents could have influence on each other and on supplier

<sup>&</sup>lt;sup>10</sup> See (Chen, Zhoa, Lewis, & Squire, 2016), p. 419

<sup>&</sup>lt;sup>11</sup> See (Chen, Zhoa, Lewis, & Squire, 2016), p. 421

 <sup>&</sup>lt;sup>12</sup> See (Das & Teng, 2001), p. 252
 <sup>13</sup> See (Lui, 2009), p. 334

<sup>&</sup>lt;sup>14</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 18-19

<sup>&</sup>lt;sup>15</sup> See (Pulles, Schiele, Veldman, & Huttinger, 2015), p. 3

<sup>&</sup>lt;sup>16</sup> See (Hallen, Johanson, & Seyed-Mohamed, 1991), p. 31

satisfaction, it is never tested before as one model.<sup>17</sup> Therefore, this paper will test the direct effect of OPEX and PUREX on supplier satisfaction and the indirect effect of OPEX and PUREX on supplier satisfaction. For the indirect effect of OPEX and PUREX on supplier satisfaction this paper will use mediators. The mediators are expert power and competence trust. OPEX and PUREX will be tested separately, so that the full effect of both antecedents on supplier satisfaction can be measured.

This paper is structured as follows: After the research question and some general information, this paper will give a theoretical background of supplier satisfaction, OPEX, PUREX, power and trust. After the theoretical background the hypotheses will be formulated and the method of research will be discussed. In the end the results and conclusion of this research will be given.

#### **1.5 Research question**

How do buying firms' OPEX and PUREX influence supplier satisfaction and what is the role of power and trust in this relationship?

#### 1.6 The company Bons en Evers

Bons en Evers is a Dutch private company, founded in 1949 by Henk Bons, Herman Evers, Eef Evers and Teun Evers. Bons en Evers is one of the market leaders in forging brass. They produce more than 7.000 different highly innovative products for well-known manufacturers in Europe and the United States. The production site of Bons en Evers is settled in Borne (Netherlands). They produce parts for all types of equipment, such as: complex parts in sanitary faucets, water meters, heating equipment, tubing, beer dispense systems, trucks, personal cars and electrical devices. In total Bons en Evers has 175 employees (148 full timers and 27 part timers), 187 suppliers and a revenue of €45 million. The total purchasing costs of Bons en Evers are €35 million, which is almost 78% of the total revenue. This is very high for the metal industry, because normally it is between the 60% and 70%. The high purchasing costs already shows that there is need of improvement for Bons en Evers, because they pay on average more than the other buyers in the same industry. Therefore, Bons en Evers were wondering if improving their performance could help to create more satisfied suppliers and if eventually more satisfied suppliers will lead to a higher supplier performance.

<sup>&</sup>lt;sup>17</sup> See (Pulles, Schiele, Veldman, & Huttinger, 2015); (Huttinger, Schiele, & Veldman, 2012)

## 2. Theoretical background

The goal of this theoretical background is to provide background information on the topic of this study. The following topics will be discussed in the theoretical background: The importance of suppliers and supplier satisfaction, OPEX, PUREX, expert power and trust.

#### 2.1 The importance of suppliers and supplier satisfaction

Over the past 20 years, industrial firms started to refocus on operations as one of the most important cost winners for the company.<sup>18</sup> The supply chain is important for the operations, because a supply chain consists of suppliers, manufacturers and distributors. So when industrial firms wants to deliver high quality goods they have to depend on the capabilities of their suppliers. Benton and Maloni (2005, p. 2) mentioned that a supply chain is as strong as its weakest link. Therefore, it is important for an industrial firm to have good and satisfied suppliers.

Industrial firms increasingly outsource both non-core and core activities to their suppliers.<sup>19</sup> In the 1990s only 22% of the top R&D firms relied heavily on external partners for innovation, but in the end of that decade it was already 85% that relied heavily on their external partners.<sup>20</sup> Because of these increased outsource activities, suppliers became more important. As a consequence, competing industrial firms have to depend more on their suppliers, which eventually will lead to higher competition. In many industries there are no more than two or three leading suppliers, so these suppliers have the possibility to be highly selective in choosing the customer they want to work with.<sup>21</sup> In order to get the best resources, the supplier should be satisfied about the relationship with the buying firm and the operations of the buying firm. A co-operative culture with the suppliers can successfully help to create supplier satisfaction.<sup>22</sup>

According to Essig et al. (2009, p. 104) supplier satisfaction can be defined as: "a supplier's feeling of fairness with regard to buyer's incentives and supplier's contributions within an industrial buyer-seller relationship as relates to the supplier's need fulfilment". Several papers already found different antecedents that have influence on supplier

 <sup>&</sup>lt;sup>18</sup> See (Benton & Maloni, 2005), p. 1
 <sup>19</sup> See (Vos, Schiele, & Huttinger, 2016), p. 3
 <sup>20</sup> See (Schiele, Calvi, & Gibbert, 2012), p. 1178
 <sup>21</sup> See (Schiele, Scott, Essig, Henke, & Kull, 2015), p. 133

<sup>&</sup>lt;sup>22</sup> See (Wong, 2000), p. 429

satisfaction. Hüttinger et al. (2014, p. 711) found out that growth opportunity, reliability and relational behaviour have a significant positive influence on supplier satisfaction. After this research Vos et al. (2016, p. 43) found again a significant positive effect of these three antecedents on supplier satisfaction, but they also found a direct significant positive effect of OPEX on supplier satisfaction. Vos et al. (2016, 43) also made a distinction between direct and indirect procurement. Direct procurement includes all purchases that are necessary for the production process and indirect procurement includes all purchases that are necessary to ensure everyday business. They found that profitability and relational behaviour have more influence on supplier satisfaction with direct procurement, and for growth opportunity and OPEX it was the other way around.

Supplier satisfaction can lead to a "preferred customer status" and eventually to "preferential treatment".<sup>23</sup> For many suppliers a preferred customer will get the goods and services first, and all other customers have to wait, which will be a major problem in cases of uncertainty.<sup>24</sup> When a buyer has a preferential treatment status with a supplier, the supplier will offer the buyer preferential resource allocation. This can be done in several ways. The supplier can give their best personnel to the buyer for new product development, can deliver customise products to the wishes of the buyer or offer their innovations as first to them.<sup>25</sup>

As mentioned above, a co-operative culture with the suppliers can help to create supplier satisfaction. One of the leaders in developing a co-operative relationship with the suppliers is The Daimler-Chrysler Corporation. When they designed new cars they outsource more than 70% of its parts to a limited number of suppliers. For this partnership arrangement they invited several key-suppliers early on in the developing stage, so that they could help in the development process. The advantages of this were that the bidding process was eliminated and that the full developing responsibility was for the suppliers and their sub-contractors. In the end Daimler-Chrysler developed a new car from scratch in only 39 months versus the usual 5-6 years and between 1991 and 1993 they saved over 2.3 billion on their supply chain.<sup>26</sup>

<sup>&</sup>lt;sup>23</sup> See (Vos, Schiele, & Huttinger, 2016), p. 43
<sup>24</sup> See (Schiele, Scott, Essig, Henke, & Kull, 2015), p. 133
<sup>25</sup> See (Schiele, Calvi, & Gibbert, 2012), p. 1178

<sup>&</sup>lt;sup>26</sup> See (Benton & Maloni, 2005), p. 2

#### **2.2 OPEX**

In 1960 the first researcher mentioned the importance of organizational efficiency and effectiveness.<sup>27</sup> However in the 1920s and 1930s, Taylor and Ford were the first two practitioners who focused on operational efficiency. A few important objectives they used were: measuring costs, productivity, throughput time, and volume speed.<sup>28</sup> Most of these objectives are still used in today's measurement systems. OPEX can according to Luong (2012, p. 6) be defined as: "The state of achievement for the good work one does to fulfil the desired objectives in the delivery of products and services that satisfies customers and the ability to continuously improve the work".

The main advantages of achieving OPEX are quick and reliable deliveries, short lead times, high resource utilisation and low inventories.<sup>29</sup> By use of these advantages of OPEX companies gain competitive advantages and greater market share, because they can provide quality products for competitive prices.<sup>30</sup> Huttinger et al. (2015, p. 43) showed that another advantage of OPEX is that it has a positive effect on supplier satisfaction. OPEX also has a positive influence on responsiveness to key customers, value added services, order flexibility, delivery dependability, order fill consistency, problem avoidance, supply disruption avoidance, lower logistic costs, standardisation of operations and delivery speed.<sup>31</sup> So, OPEX has many advantages for companies.

The main disadvantage of OPEX is that employees need training, which costs money and is time consuming.<sup>32</sup> Companies should also pay attention to other constructs if they want to succeed in OPEX. For OPEX several constructs need attention, such as: the role of top management leadership, the role of the quality department, quality data and reporting, process management and supplier quality management. If these constructs are not well executed by the company they will turn into disadvantages.<sup>33</sup> Also other members within the supply chain can create problems. Other members of the supply chain should also incorporate with the by the company integrated quality management, otherwise it is meaningless and the quality of the products is still not very good.<sup>34</sup>

<sup>&</sup>lt;sup>27</sup> See (Movahedi & Miri-Lavassani, 2016), p. 467

<sup>&</sup>lt;sup>28</sup> See (Lu, Betts, & Croom, 2011), p. 1269

<sup>&</sup>lt;sup>29</sup> See (Olhager & Persson, 2006), p. 113; (Rai, Patnayakuni, & Seth, 2006), p. 236

<sup>&</sup>lt;sup>30</sup> See (Zukuan, Yusof, Laosirihongthong, & Shaharoun, 2010), p. 185

<sup>&</sup>lt;sup>31</sup> See (Morash , 2001), p. 43

<sup>&</sup>lt;sup>32</sup> See (Zukuan, Yusof, Laosirihongthong, & Shaharoun, 2010), p. 190

<sup>&</sup>lt;sup>33</sup> See (Zukuan, Yusof, Laosirihongthong, & Shaharoun, 2010), p. 190

<sup>&</sup>lt;sup>34</sup> See (Wong, 2002), p. 567

#### 2.2.1 OPEX Toyota example

To get a better view of what OPEX is, this paper will give an example of a leading OPEX company. Toyota is one of the best OPEX examples in the world and has their own OPEX philosophy, so-called "Toyota Production System".<sup>35</sup> TPS consists of a set of principles that have been proven day-to-day over many years. The three desired outcomes of TPS are:

- To provide the customer with the highest quality vehicles, at lowest possible cost, in a timely manner with the shortest possible lead times.
- To provide members with work satisfaction, job security and fair treatment.
- It gives the company flexibility to respond to the market, achieve profit through cost reduction activities and long-term prosperity.

The TPS philosophy is based on different philosophies, such as: KAIZEN, Just-in-Time (JIT) and Jidoka. The first and most important philosophy for Toyota is KAIZEN, which is a Japanese business philosophy of continuous improvement. This philosophy requires that all tasks, both human and mechanic, should be very precisely defined and standardised to ensure maximum quality, elimination of waste and improved efficiency. The second philosophy is JIT, which was invented by an employee of Toyota. According to the JIT philosophy, the right parts and materials should be manufactured and provided in the exact amount on the exact time. The third and last philosophy is Jidoka, which simply means "automation", but for Toyota it means automation with a human touch. The most visible manifestation of automation with a human touch is that every employee can stop the production if abnormalities occur. Toyota is not only able to deliver high quality for low prices, but because they are masters in operational excellence, and through their breakthroughs in the automotive industry, they are also moving ahead in product leadership.<sup>36</sup>

<sup>&</sup>lt;sup>35</sup> See (Toyota, 2016)

<sup>&</sup>lt;sup>36</sup> See (Treacy & Wiersema, 1993), p.86

#### 2.2.2 OPEX methods

Table 1 shows an overview of different OPEX methods and a short description of these methods. These methods will not be tested in this paper, but it is only intended to get a broader picture of what OPEX is.

Author(s)	OPEX	Short description		
	Method			
(Andersson, Eriksson, &	Lean	A systematic approach to identifying and eliminating		
Torstensson, 2006)		waste through continuous improvement, flowing the		
		product at the pull of the customer in pursuit of perfection.		
(Magnusson, Kroslid,	Six sigma	A business process that allows companies to drastically		
Bergman, Hayhanen, &		improve their bottom line by designing and monitoring		
Mills 2003)		everyday business activities in ways that minimise waste		
Willis, 2005)		and resources while increasing customer satisfaction by		
		some of its proponents		
(Salah, Rahim, &	Lean six	A combination of lean and six sigma. Lean and six sigma		
Carretero, 2010)	sigma	have a complementary relationship.		
, , ,				
(Brunet & New, 2003)	Kaizen	Kaizen literally means "Improvement" in Japanese. Kaizen		
		consist of pervasive and continual activities, outside the		
		contributor's explicit contractual roles, to identify and		
		achieve outcomes he believes contribute to the		
		organisational goals.		
(Kannan & Tan, 2005)	Just-In-Time	The JIT philosophy advocates de elimination of waste by		
		simplifying production processes. Reduction in setup		
		times, controlling material flows and emphasizing		
		preventive maintenance are ways to reduce or eliminate an		
		excess of inventories.		

#### Table 1 – Different OPEX methods

(E:.h 1000)	Dolta Volta	Daka Vaka is Japanese for mistake proofing and the			
(Fisher, 1999)	Рока-токе	r oka- i oke is japanese for inistake proofing and the			
		approach is based around the removal of the causes of			
		defects, or, where this is impossible, the simple and			
		inexpensive inspection of each item to determine that it			
		passes the quality threshold - with no defects.			
(Huttmeir, Treville,	Heijunka	The assumption underlying Heijunka is that the producer			
Ackere, Monnier, &		has a choice concerning the amount of variability in the			
Prenninger, 2009)		job arrival sequence to accept. Rather than naively			
Trenninger, 2009)		accepting all jobs that arrive in the order received, the			
		producer can choose to sort orders so that the arrival			
		sequence seen by production is relatively smooth.			
(Hinckley, 2007)	Jidoka	Jidoka means, automation with a human touch. Jidoka has			
		three essential attributes. 1. The work of the equipment			
		and operators is distinguished. 2. The equipment and			
		operators work independently. 3. The setup, loading and			
		unloading of equipment is mistake-proofed.			
(Chan, Lau, Ip, Chan, &	Total	TPM is a maintenance system, which covers the entire life			
Kong, 2005)	Productive	of equipment in every division including planning,			
	Maintenance	manufacturing, and maintenance. It describes a synergistic			
	(TPM)	relationship among all organisational functions, but			
		particularly between production and maintenance, for			
		continuous improvement of product quality, operational			
		efficiency, capacity assurance and safety.			
(Friedli, Goetzfried, &	Total	TQM means people management, commitment from top to			
Basu, 2010)	Quality	down, and strive for continuous improvement across the			
, ,	Management	entire organization. Sustainably improving the quality of			
	(TQM)	products, processes, and overall company quality is the			
		objective of TQM.			

As mentioned before this paper will not define OPEX as one of these methods, because these methods are internal processes and suppliers can not exactly know how buyers execute these methods. Therefore, this paper will measure OPEX as production efficiency, exact and in-time forecasts of future demands and knowledge of the best processes and systems. Buying companies that implemented one or more OPEX methods will be able to score higher on these measures. Scoring high on these measures can also help their suppliers to improve their businesses.

#### **2.3 PUREX**

For many years purchasing and supply chain management has been a subject for researchers and management consultants, but it is only for a few years a topic within medium and large-scale manufacturers. Reasons for the upcoming interest in purchasing and supply chain management are: downsizing, outsourcing, partnerships and networking.<sup>37</sup> In recent years, purchasing volume expressed as a percentage of a firm's total turnover has risen substantially.<sup>38</sup> Nowadays the purchase volume is 60 to 70 per cent of the total revenue in the metal, automotive and electronic industries.<sup>39</sup> So the purchase costs have a high influence on the operating results of companies in these industries. A better performance by the purchasing function can help to reduce this percentage, which results in better operating result.<sup>40</sup> An effective purchasing strategy can add up 4 per cent of sales value, or 30 per cent to profitability and there is also evidence that improvements in supply chain management can boost productivity and profits.<sup>41</sup> Therefore, purchasing is no longer seen as a tactical function, but more as a strategic function. This is because purchasing has become increasingly involved in formulation and implementation of strategies within many organisations.<sup>42</sup> Thompson (1996, p. 7) found five key principles for good purchasing, these five principles are shown in table 2.

#### Table 2: Key principles for good purchasing

1. Effective purchasing is not just about price (short term), but also about total cost of acquisition.

2. Professional procurement teams that base their expertise on negotiation and transaction skills alone are not sufficient to implement an effective procurement approach.

3. Applying a strategic approach to a poorly purchased good or service generates a saving of between 20 per cent and 40 per cent in expenditure.

4. Close relationships with suppliers restrict price rises to below market norms.

5. An effective purchasing strategy improves the quality of the supplier's service in terms of product, delivery, response times and customer service as well as price.

<sup>&</sup>lt;sup>37</sup> See (Thompson, 1996), p. 6
<sup>38</sup> See (Schiele, 2007), p. 274
<sup>39</sup> See (Schweiger, 2014), p. 533
<sup>40</sup> See (Schiele, 2007), p. 283

<sup>&</sup>lt;sup>41</sup> See (Thompson, 1996), p. 6-7

<sup>&</sup>lt;sup>42</sup> See (Ogden, Rossetti, & Hendrick, 2007), p. 2

In this paper "good purchasing" will be mentioned as PUREX, which stands for continuous improvement of the companies purchasing skills and being a leading company within the industry. This definition is derived from OPEX, because there is no definition mentioned in current literature. Sheikhzadeh and Heidari (2012, p. 2480) mentioned that PUREX consists of three stages. The three stages are:

- Stage 1: Systematic commodity management
- Stage 2: Purchasing organisation and process optimisation
- Stage 3: Supplier management

A better performance on these three stages will result in improved competitiveness and a higher PUREX. In this paper PUREX will be tested on: efficient purchasing processes, exemplar for good purchasing, truthful picture when negotiating and good faith bargaining perspective. The expectation is that when buying companies score high on these variables the satisfaction of the suppliers will rise.

#### **2.4 Expert power and competence trust**

One of the most influential conceptual paradigms in organisational behaviour is Social Exchange Theory (SET). SET consists of interactions between people and these interactions are usually seen as interdependent.<sup>43</sup> Within these interactions the potential exists to generate high-quality relationships, however these will only occur within certain circumstances. According to SET a relationship will over time evolve into trusting, loyal and mutual commitments. The main focus of SET is on expectations of reciprocity.<sup>44</sup> Muthusamy and White (2005, p. 418) defined SET as: "a situation in which the actions of one person provide the rewards or punishments for the actions of another person and vice versa in repeated interactions". In an exchange relationship one or both of the parties are expected to make adaptations to the needs of the counterpart. For these adaptations two mechanisms can be used. The two mechanisms that can be used are "power" and "trust".<sup>45</sup> This paper will focus on these two mechanisms and look for the connection between these two and supplier satisfaction.

 <sup>&</sup>lt;sup>43</sup> See (Cropanzano & Mitchell, 2005), p. 874
 <sup>44</sup> See (Cropanzano & Mitchell, 2005), p. 875

<sup>&</sup>lt;sup>45</sup> See (Hallen, Johanson, & Seyed-Mohamed), p. 31

In current literature there are different types of power. Power is a multidimensional construct and can be divided in mediated and non-mediated power. Nonmediated power is a form of power, which is not used to exercise influence on the other. In fact, many companies do not even know the existents of this power.<sup>46</sup> Non-mediated power consists out of different types of power. The different types of non-mediated power are: expert power, referent power and legitimate power.<sup>47</sup> In contrast to non-mediated power, mediated power is used to exercise influence on the other. There are different types of mediated power, such as: rewarded power, coercive power and manipulative power.<sup>48</sup> These types of mediated power are all used by the source (buyer) to influence their target (seller). This paper will focus on expert power, because OPEX and PUREX can be seen as an expertise. A definition of expert power according to French and Raven (1959, p. 161) is: "The strength of expert power varies with the extent of the knowledge or perception which the power recipient attributes to the power holder within a given area". When a buying company has a high expert power, then the supplier wants to profit from the expertise of the buyer and would like to work with this buyer. For example: if a buying company is an expert in Lean management, the seller wants to take advantage of this knowledge, so they can improve their own Lean management. So if buying companies know of the existence of expert power, they can use this to get the best and most satisfied suppliers.

Trust is an important requirement for successful supply chain management.<sup>49</sup> According to Mayer, Davis and Schoorman (1995, p. 712) trust can be defined as: "The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". If there is trust between partner firms, then both firms are willing to exceed the minimum requirements of a relationship. Trust consists out of ability, integrity and benevolence. Violation of one of these three can result in a decrease of trust.<sup>50</sup> When these three are well executed, it will result in a higher success rate for both firms within the relationship.<sup>51</sup>

<sup>&</sup>lt;sup>46</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 19

<sup>&</sup>lt;sup>47</sup> See (Terpend & Ashenbaum, 2012), p. 54
<sup>48</sup> See (Benton & Maloni, 2005), p. 4

<sup>&</sup>lt;sup>49</sup> See (Kwon & Suh, 2004), p. 4

<sup>&</sup>lt;sup>50</sup> See (Bell, Oppenheimer, & Bastien, 2002), p. 65

<sup>&</sup>lt;sup>51</sup> See (Ireland & Webb, 2007), p. 484

There are different types of trust. Ireland et al. (2007) mentioned that there is difference between trust in a situation and trust in a person. Pulles et al. (2014) divided trust in: competence trust and goodwill trust. Competence trust refers to the technical ability and expertise of the partner firm and goodwill trust refers to the degree the partner trusts the other that he will exceed the contractual agreement without asking for it. This paper will mainly focus on competence trust, because when a buying firm scores high on OPEX and PUREX, they will have high managerial and technical capabilities. So the supplier could trust on the competence of the buyer. For developing trust certain conditions must exist.<sup>52</sup> First, it is necessary that organisations and firms interact, so interaction is important. Second, buyer and supplier should be willing to depend on another and should not be afraid of taking risks. Third and last, trust is context-dependent. Important contextual factors are: stakes involved, balance of power in relationship, level of risk and the available alternatives.<sup>53</sup>

<sup>&</sup>lt;sup>52</sup> See (Bell, Oppenheimer, & Bastien, 2002), p. 67
<sup>53</sup> See (Bell, Oppenheimer, & Bastien, 2002), p. 67

## 3. Hypotheses

In this chapter existing literature will be used to formulate hypotheses. The hypotheses are mainly build on Social Exchange Theory (SET) reasoning. A social exchange is a situation in which the actions of one person provide the rewards or punishments for the actions of another person and vice versa in repeated interactions.<sup>54</sup> When there are repeated interactions between the buyer and seller, the relationship grows and develops and can eventually lead to a social exchange. A social exchange is based on trust, because it is difficult for buyer or supplier to bargain or force each other to reciprocate. The benefits resulting from a social exchange are often provided voluntary and are not explicitly contracted.<sup>55</sup> As mentioned before, this paper will focus on power and trust, which are two core variables of SET. The following hypotheses are formulated on SET reasoning: (H1) link supplier satisfaction to supplier performance, (H2a-H2b) link OPEX and PUREX with supplier satisfaction, (H3-H5) will look for the mediating role of competence trust between the relationship of OPEX/PUREX and supplier satisfaction and (H4-H6) will look for the mediating role of expert power between the relationship of OPEX/PUREX and supplier satisfaction. This research will test OPEX and PUREX separately from each other to a get better view of the influences of both concepts. Figure 1 and 2 displayed both the models, which will be tested in this research. Figure 1 and 2 also show that this research used dyadic data, data from the supplier and data from the buyer.

<sup>&</sup>lt;sup>54</sup> See (Muthusamy & White, 2005), p. 418

<sup>&</sup>lt;sup>55</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014) p. 18



Figure 1: OPEX model 1

Figure 2: PUREX model 2



#### 3.1 The effect of supplier satisfaction on supplier performance

Satisfied suppliers can help to improve the performance of the buying company. Suppliers can help by reducing costs, improve the quality or increase the efficiency.<sup>56</sup> A close partnership between buyer and supplier can result in technical and economic benefits for both.<sup>57</sup> Supplier satisfaction can also lead to preferential treatment. When a buying firm gains preferential treatment from its supplier, they could get the best personnel for new product development, customise products and the latest innovations from their suppliers.<sup>58</sup> Thus, the expectation is that the supplier's performance will improve, when the supplier is more satisfied. Nyaga et al. (2013, p. 3) mentioned that according to SET, partners adjust their behaviour and actions towards each other based on relational benefits and the expectations that these benefits are reciprocated. When these relational benefits meet or exceed the expectations of the supplier, the supplier's satisfaction will increase.<sup>59</sup> It is expected that a supplier show more commitment to a buyer, if they experience more relational benefits.<sup>60</sup> For example, when a buyer make adjustments to help out their supplier, the supplier will become more satisfied and has the feeling that they have a debt, not necessarily contractually but socially. The supplier will have the feeling that he has to do a favour in return (e.g. shorter delivery time). Therefore, investing in a relationship by the buyer often leads to more satisfied suppliers and more commitment from these suppliers. We can expect that supplier satisfaction lead to more commitment and a better performance from their suppliers, based on SET, which implies that benefits are reciprocated. Therefore we expect that supplier satisfaction will have a positive impact on supplier performance.

#### H1: Supplier satisfaction has a positive impact on supplier performance.

#### 3.2 The effect of OPEX and PUREX on supplier satisfaction

When buying companies achieve high OPEX, they will have high production efficiency, on time forecast of future demands and knowledge of best processes and systems. When buying companies achieve high PUREX, they will have efficient purchasing processes, will be an example for good purchasing, give a truthful picture when negotiating and will do this from a good bargaining perspective. If all these variables of OPEX and PUREX are

<sup>&</sup>lt;sup>56</sup> See (Barringer, 1997), p. 65

<sup>&</sup>lt;sup>57</sup> See (Essig & Amann, 2009), p. 103

<sup>58</sup> See (Schiele, Calvi, & Gibbert, 2012), p. 1178

<sup>&</sup>lt;sup>59</sup> See (Pulles, Schiele, Veldman, & Huttinger, 2016), p. 131

<sup>&</sup>lt;sup>60</sup> See (Pulles, Schiele, Veldman, & Huttinger, 2015), p. 4

well executed by the buyer, they will become more attractive for the supplier. The reason that they become more attractive is that the supplier knows exactly what they can expect from the buyer in the future and they could also benefit from the knowledge the buyer has about processes and systems. According to Schiele et al. (2012, p. 1180): "a customer is perceived as attractive by a supplier if the supplier in question has a positive expectation towards the relationship with this customer". Pulles et al. (2016, p. 131) mentioned that being attractive is necessary for suppliers to intensify the relationship with the buyer and as mentioned earlier in this paper a co-operative culture between buyer and supplier can help to create supplier satisfaction. In this paper we see OPEX and PUREX as specific dimensions of customer attractiveness. When a customer is unattractive, the supplier is unlikely to start a relationship in which supplier satisfaction could develop.<sup>61</sup> So attractiveness allows supplier satisfaction to develop, not only in new relationships, but also in long-term relationships. For example, if there is a satisfied relationship between buyer and supplier, but there is for the supplier an even more attractive customer, than the possibility exists that the supplier will go to a competitor. Therefore it is important for a buying company to continuously improve their excellence to become more attractive and allow supplier satisfaction to develop. According to Aminoff and Tanskanen (2013, p. 166) a supplier will make voluntary efforts to become also attractive in the eyes of the buyer, when they think that a customer is attractive. Therefore this paper hypothesises that:

# H2a: OPEX has a positive impact on supplier satisfactionH2b: PUREX has a positive impact on supplier satisfaction

# **3.3** Competence trust mediates the effect of OPEX and PUREX on supplier satisfaction

An important mechanism of SET is trust. When there is high trust between buyer and supplier there will be a better supplier resource allocation, such as physical resources and innovation resources.<sup>62</sup> By building trust with the supplier, the buying company can ensure that they get the best ideas from the supplier instead of the competitors.<sup>63</sup> Terpend and Ashenbaum (2012, p. 68) found that within a buyer-supplier relationship trust has a positive effect on delivery, quality, cost, innovation and flexibility. In this paper the focus is on competence trust, which mean that the supplier has trust in the managerial and

<sup>&</sup>lt;sup>61</sup> See (Pulles, Veldman, & Schiele, 2014), p. 4

<sup>&</sup>lt;sup>62</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 28

<sup>63</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 17

technical capabilities of the buyer.<sup>64</sup> This paper already mentioned that OPEX has a positive impact on supplier satisfaction (H2a) and that PUREX has a positive impact on supplier satisfaction (H2b), but we also expect an indirect effect of OPEX and PUREX on supplier satisfaction. We expect that OPEX and PUREX will be mediated by competence trust, because suppliers trust that they can profit from the competences of the buyer. For example, if a buyer is excellent in high production efficiency, a supplier can learn from this buyer to become also more efficient. If a buying company has high competences (OPEX and PUREX) and the supplier trusts that he can benefit from these competences in the future, it will motivate the supplier to reciprocate with behaviour that will benefit the buyer.<sup>65</sup> Thus, competence trust can improve reciprocity between buyer and supplier. From a SET perspective, trust in a partner's competences, relates to an actor's motivation to intensify the interaction between him and the other actor and interaction is a necessary condition for supplier satisfaction.<sup>66</sup> Therefore we expect that the relationship between OPEX/PUREX on supplier satisfaction will be mediated by competence trust, because the supplier believes that it could benefit from the supplier and that the supplier will then reciprocate a benefit to the buyer.

*H3: The effect of OPEX on supplier satisfaction is mediated by competence trust H5: The effect of PUREX on supplier satisfaction is mediated by competence trust* 

# **3.4 Expert power mediates the effect of OPEX and PUREX on supplier satisfaction**

Another important mechanism of SET is power. Power can be used to influence the behaviour of the supplier. A buyer can influence the supplier by either threatening with sanctions or by promising some sort of benefit.<sup>67</sup> The problem with expert power is that expert power is a non-mediated power and that therefore the buyer is normally not aware of the existence of this power. With expert power the buyer has knowledge, expertise or skills desired by the supplier.<sup>68</sup> OPEX and PUREX can be seen as a demonstration of having knowledge, expertise and skills. We already mentioned the direct effect of OPEX and PUREX (H1 & H2) on supplier satisfaction and we also already mentioned the indirect effect of OPEX and PUREX on supplier satisfaction, which is mediated by competence

<sup>64</sup> See (Ireland & Webb, 2007), p. 484

<sup>65</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 21

<sup>&</sup>lt;sup>66</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 21; (Vos, Schiele, & Huttinger, 2016), p. 6

<sup>&</sup>lt;sup>67</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014) p. 22

<sup>&</sup>lt;sup>68</sup> See (Zhao, Huo, Flynn, & Yeung, 2008), p. 370

trust. Additionally, we expect an indirect effect, which is mediated by expert power. This expectation is based on the notion that non-mediated power (expert power) increases the value of a relationship and the level of effective cooperation.<sup>69</sup> Cooperation and having a relationship are necessary conditions for creating supplier satisfaction. According to Zhoa et al. (2008, p. 371) suppliers want to work with buyers with high expert power, because the suppliers believe they can benefit from this expertise. This paper expects that the supplier will reciprocate these benefits based on SET reasoning. Therefore this paper hypothesises that:

*H4: The effect of OPEX on supplier satisfaction is mediated by expert powerH6: The effect of PUREX on supplier satisfaction is mediated by expert power* 

<sup>69</sup> See (Zhao, Huo, Flynn, & Yeung, 2008), p. 371

## 4. Method

This chapter explains and describes how the data were collected and if the data can be used for this research. First the sample and data collection will be explained, followed by the measures and finally the data analysis and validity.

#### 4.1 Sample and dyadic data collection

The data of this study were collected with collaboration of Bons en Evers, a forging brass company in the Netherlands. This company helped with sending out the questionnaire to all their suppliers, with whom they have had contact in the past two years. For this company the suppliers are very important, because the purchase costs are almost 78% of their total revenue. In addition to this, they also outsource some of their production to ten different suppliers. For this reason they were curious what the suppliers think of them and how satisfied they are with the relationship.

In September 2016, an e-mail was sent by the strategic purchaser of the company to a sample of 187 suppliers. In this e-mail the strategic purchaser asked if the sales representatives of the suppliers would like to participate in a survey, which will be distributed within a week after this e-mail was sent. The e-mail also informed the potential respondents that the survey could not be traced back to the individual respondents and that only aggregate results would be presented to Bons en Evers. We explained to the respondents that there were no "good" or "bad" answers and asked them to choose the answers that best fitted their firm's situation. The respondents were motivated to answer the survey by promising a summary report. If they want to receive this report, we asked them to fill in their e-mail address in the last question. The survey consisted of 62 questions and all questions in the survey were mandatory, except the last two questions. The online survey was accessed 88 times. After removing all incomplete questionnaires, 40 complete questionnaires remained, which is a small amount of questionnaires and is normally not enough to draw good conclusions from. This amount represents a response rate of 21,39%, which is comparable to other studies in the field of supply chain management.<sup>70</sup> The response rate was maximized by use of the following procedures: (1)sending three reminders to respondents who have not completed the questionnaire and (2) a direct request by phone. To verify the appropriateness of the respondents, the survey asked about "how long the respondent has personal contact with Bons en Evers". The

<sup>&</sup>lt;sup>70</sup> See (Caniels, Gehrsitz, & Semeijn, 2013), p. 138

mean was 10.35 years with a standard deviation of 8.589, which suggested that the majority of the respondents are well known with this company. Table 3 shows an overview of the respondents.

Table 3 -	Overview	of the	sample
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Country	Frequency	Annual turnover (€)	Frequency	Work experience (years)	Mean
Netherlands	72,50%	0 - 10 million	80,00%	Years supplier is supplying B&E	14.18
Germany	15,00%	11 - 50 million	17,50%	Years working for current firm	14.73
France	5,00%	> 51 million	2,50%	Years personally involved with B&E	10.35
Italy	2,50%	Type of supplier			
Switzerland	2,50%	Direct	32,50%		
Denmark	2,50%	Indirect	67,50%		

A general concern in survey studies is nonresponse bias. This paper tested for nonresponse bias based on the assumption that the responses of late responders represent the responses of non-responders.<sup>71</sup> In Table 2 the different means for the first 25% respondents and last 25% respondents is shown. It shows that the first 25% scores always equal or higher than the last 25% of the respondents. The results of the t-test yield two significant differences, only ExpertPow1 (0,001) and CompetenceTrust2 (0,007) scored significantly (P<0,05) lower on the last 25% compared to the first 25%.

<sup>&</sup>lt;sup>71</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 24

#### **Table 4: Nonresponse Bias**

	TwentyFive	Ν	Mean	Sample mean	T-value	Std. Deviation	Std. Error Mean
Satisf1	<25%	10	4.40	3.93	1.301	.843	.267
	>75%	10	3.90			.876	.277
Satisf2REV	<25%	10	4.70	3.98	2.105	.675	.213
	>75%	10	3.90			.994	.314
Satisf3	<25%	10	4.10	3.83	1.144	.738	.233
	>75%	10	3.70			.823	.260
Satisf4	<25%	10	4.60	4.13	1.555	.516	.163
	>75%	10	4.10			.876	.277
BEOPEX1	<25%	10	4.10	3.73	1.555	.568	.180
	>75%	10	3.60			.843	.267
BEOPEX2	<25%	10	3.60	3.50	.287	.699	.221
	>75%	10	3.50			.850	.269
BEOPEX3	<25%	10	3.40	3.40	.268	.843	.267
	>75%	10	3.30			.823	.260
BEOPEX4	<25%	10	3.70	3.63	1.188	.823	.260
	>75%	10	3.30			.675	.213
BEPUREX1	<25%	10	4.10	3.88	.552	.876	.277
	>75%	10	3.90			.738	.233
BEPUREX2	<25%	10	3.80	3.70	.000	.919	.291
	>75%	10	3.80			.789	.249
BEPUREX3	<25%	10	4.30	4.08	.758	.949	.300
	>75%	10	4.00			.816	.258
BEPUREX4	<25%	10	4.20	4.23	.000	.919	.291
	>75%	10	4.20			.919	.291
CompetenceTrust1	<25%	10	4.70	4.43	2.090	.675	.213
	>75%	10	4.00			.816	.258
CompetenceTrust2	<25%	10	4.30	3.90	3.051	.823	.260
	>75%	10	3.20			.789	.249
CompetenceTrust3	<25%	10	4.60	4.28	1.976	.516	.163
	>75%	10	3.90			.994	.314
ExpertPow1	<25%	10	4.60	4.10	3.973	.516	.163
	>75%	10	3.50			.707	.224
ExpertPow2	<25%	10	4.60	4.28	1.964	.516	.163
	>75%	10	4.00			.816	.258

In addition, this paper compared the means of revenue of the respondents who did participate and who did not participate. Table 5 shows that the revenue of respondents who did participate in the survey is clearly higher than those that did not participate, but the ttest did not yield a significant difference between those two. Other reasons why respondents did not participate are: (1) no time, (2) questions were not applicable to them, (3) they were no supplier of the forging brass company, (4) supplier did not understand the questions and (5) they were on holiday. Based on almost only insignificant differences, it is unlikely that nonresponse bias poses a serious threat in this research.

#### Table 5: Nonresponse Bias Revenue

	Group Statistics					
Revenue		Participate	N	Mean	Std. Deviation	Std. Error Mean
	Revenue	Yes	40	272798.30	773.397.601	122.284.898
L		No	147	158951.00	801.169.087	66.079.313

Next to this, this paper also tests if there is a difference between the two buyers who filled in the buyer questionnaire. In table 6 the different means of the two buyers (Irma & Marco) are given. Only BUYOperationalPerformance4 (0,007) showed a significant (p<0.05) difference between the answers of Marco and Irma.

	Purchaser	N	Mean	Sample mean	T-value	Std. Deviation	Std. Error Mean
BUYOperationalPerformance1	Marco	14	4.14	4.20	-0.319	.663	.177
	Irma	26	4.23			.908	.178
BUYOperationalPerformance2	Marco	14	4.29	4.12	0.815	.914	.244
	Irma	26	4.04			.916	.180
BUYOperationalPerformance3	Marco	14	4.50	4.35	0.802	1.019	.272
	Irma	26	4.27			.778	.152
BUYOperationalPerformance4	Marco	14	4.86	4.50	2.880	.363	.097
	Irma	26	4.31			.838	.164

#### Table 6: Differences between buyers

#### 4.2 Measures

Table 7 lists this study's measures. All these measures were measured on a five-point Likert scale, ranging from 1 (no, strongly disagree) to 5 (yes, strongly agree). The supplier satisfaction measures are based on Cannon et al. (1999) and Pulles et al. (2016) and measures the satisfaction of the suppliers. OPEX is measured based on scales of Vos et al. (2016). The survey items of OPEX measured the buyers OPEX capabilities from the view of the suppliers. The survey items of PUREX are also measured from the view of the suppliers. PUREX is not measured based on scales of previous research, because it is never tested before. PUREX tests the negotiation skills of the purchasers and if the purchasers purchase efficiently. Competence trust is measured with items based on studies of Sako and Helper (1998), Miyamoto and Rexha (2004) and on the conceptual works of Roy et al. (2004) and Ireland and Webb (2007). Competence trust reflects the trust a supplier has in the capabilities of the buyer and to which extent the advice of the buyer is useful for the supplier.

Constructs	Measurement items	Outer loadings Model 1	Outer loadings Model 2
Supplier satisfaction based on Cannon et al. (1999) and Pulles et al. (2016) Cronbach's Alpha: 0.880, Composite reliability: 0.919, Average variance extracted: 0.741	<ul> <li>We are very pleased with what this customer does for us.</li> <li>Our firm is <u>NOT</u> completely happy with what this customer does for us (reversed).</li> <li>Our firm is satisfied with the value we obtain from the relationship with this customer.</li> <li>Our firm is very satisfied with the relationship with this customer.</li> </ul>	0,920 0,688 0,910 0,905	0,918 0,687 0,912 0,905
OPEX based on Vos et al. (2016) Cronbach's Alpha: 0.845, Composite reliability: 0.896, Average variance extracted: 0.685.	<ul> <li>In our relationship with Bons en Evers, they have demonstrated to organize their production efficiently.</li> <li>In our relationship with Bons en Evers, they have demonstrated to be an exemplar organization for operational excellence.</li> <li>In our relationship with Bons en Evers, they have demonstrated to have exact and in time forecasts about future demand.</li> <li>In our relationship with Bons en Evers, they have demonstrated to have exact and in time forecasts about future demand.</li> <li>In our relationship with Bons en Evers, they have demonstrated to have valuable knowledge on the best processes and systems.</li> </ul>	0,889 0,870 0,672 0,862	
PUREX Cronbach's Alpha: 0.916, Composite reliability: 0.947, Average variance extracted: 0.857.	<ul> <li>In our relationship with Bons en Evers, they have demonstrated to organize their purchasing processes efficiently.</li> <li>In our relationship with Bons en Evers, they have demonstrated to be an exemplar firm for excellent purchasing.</li> <li>In our relationship with Bons en Evers, they have demonstrated to provide a truthful picture when negotiating.</li> <li>In our relationship with Bons en Evers, they have demonstrated to provide a truthful picture when negotiating.</li> <li>In our relationship with Bons en Evers, they have demonstrated to negotiate from a good faith bargaining perspective.</li> </ul>		0,640 0,910 0,951 0,883
Competence trust (Sako & Helper, 1998; Miyamoto & Rexha, 2004; also based on: Roy et al., 2004; Ireland & Webb, 2007) Cronbach's Alpha: 0.845, Composite reliability: 0.906, Average variance extracted: 0.764.	<ul> <li>We feel that Bons en Evers is a highly capable partner.</li> <li>Bons en Evers is very capable of providing value to our firm.</li> <li>We trust that Bons en Evers has the managerial and technical capabilities to do what it says it will do.</li> </ul>	0,880 0,858 0,884	0,883 0,869 0,869

#### Table 7: Measurement Items

Expert Power (Nyaga et al. 2013)	-	This buyer/supplier is an expert in the industry.	0,941	0,974
	-	We respect the judgment of buyer	0,821	0,747
Cronbach's Alpha:		's/supplier's representatives.		
0.732, Composite	-	I his buyer/supplier has business expertise	Domourod	Damand
Average variance		proper thing to do	Kemoved	Removed
extracted: 0.775.		proper uning to do.		
Supplier performance		Please indicate the performance of this		
(Heide, Kumar &		supplier:		
Wathne, 2014)	-	Cycle time (total time from beginning to the end of the process).	0,886	0,887
Cronbach's Alpha:	-	On-time shipments.	0,781	0,781
0.859, Composite	-	Quality of deliveries.	0,700	0,698
reliability: 0.891,	-	Responsiveness to requests for change.	0,899	0,898
Average variance				
extracted: 0.673.				

Expert power is based on the study of Nyaga et al. (2013) and reflects the expertise a buyer has through the eyes of their supplier. The last construct that is measured is supplier performance. Supplier performance measures the performance of a supplier and is based on the study of Heide et al. (2014). Finally, the questionnaire asked some general questions as: annual turnover, number of employees, country of site, how long the supplier is supplying this customer, how long the respondent is personally involved with the buyer and how long the respondent is working for his company.

#### 4.3 Data analysis and validity

Partial least squares (PLS) structural equation modelling (SEM) is used to test the hypotheses. PLS is a technique that is regression-based and PLS does not make assumptions about data distribution.<sup>72</sup> This study uses PLS for the following reasons: (1) PLS is easy to use, (2) PLS gives a clear picture that is easy to interpret and (3) it allows formative and reflective indicators.<sup>73</sup> This research used SmartPLS3 and SPSS22 for testing the data.

First we started with an Outer Loadings analysis in SmartPLS. An Outer Loadings analysis is used to check if the right indicators measure the right constructs (indicator reliability).<sup>74</sup> Within an Outer Loadings analysis the indicator reliability factor should be above 0.4, but a threshold of 0.7 is preferred.<sup>75</sup> In this Outer Loadings analysis is

<sup>&</sup>lt;sup>72</sup> See (Pulles, Veldman, & Schiele, 2014), p. 413

<sup>&</sup>lt;sup>73</sup> See (Wong K., 2013), p. 3-6

<sup>&</sup>lt;sup>74</sup> See (Wong K., 2013), p. 21-22

<sup>75</sup> See (Osborne & Costello, 2009), p. 138

ExpertPower3 the only indicator that scores below the threshold of 0.4 (0.203) and is therefore removed. After removing ExpertPower3 all thresholds are between 0.640 and 0.974.

After the indicator reliability test, this study tested the Composite Reliability. The Composite Reliability checks the internal consistency of the model. The Composite Reliability ranged between the thresholds of 0.857 and 0.919. This is above the preferred threshold of 0.7, so high levels of internal consistency reliability have been demonstrated among all latent variables.<sup>76</sup> After these reliability tests, this paper also tested the validity of the data. To test the validity this paper used Convergent Validity. In this test the Average Variance Extracted (AVE) should be above the threshold of 0.5. The AVE for all constructs was between 0.673 and 0.779, which exceeds the threshold of 0.5.77 After the Convergent Validity we have to examine if there is multicollinearity within the data. A commonly used test to check for multicollinearity is the Variance Inflation Factor (VIF). If the VIF is higher than 5.0 then there is multicollinearity within the data. In this data the VIF scores ranged between 1.403 and 1.872, so there is no multicollinearity within the data.<sup>78</sup> Finally, we have to fulfil the requirement for discriminant validity. The factor analysis (appendix E) showed that there is discriminant validity within the data, but if the square roots of the AVE values are greater than their correlation coefficient with the other constructs there is no discriminant validity.<sup>79</sup> In table 8 is shown that the square roots of the AVE values are greater.

	м	SD	1	2	3	4	5	6
1 Supplier Satisfaction	3.96	0.97	0.861					
2 Expert Power	4.19	0.65	0.312	0.868				
3 OPEX	3.56	0.66	0.199	0.620	0.828			
4 PUREX	3.97	0.76	0.621	0.434	0.529	0.854		
5 Competence Trust	4.20	0.72	0.484	0.526	0.504	0.443	0.874	
6 Supplier Performance	4.29	0.70	0.183	-0.03	0.035	0.107	0.012	0.820

Table 8 - Means, Standard Deviations and Correlations of the construct

M, mean; SD, standard deviation. Bold elements on the diagonal represent the square roots of the AVE. Off diagonal elements are correlations between the constructs.

<sup>&</sup>lt;sup>76</sup> See (Wong K., 2013), p. 22

<sup>&</sup>lt;sup>77</sup> See (Wong K., 2013), p. 21

<sup>&</sup>lt;sup>78</sup> See (Wong K., 2013), p. 26

<sup>&</sup>lt;sup>79</sup> See (Pulles, Veldman, Schiele, & Sierksma, 2014), p. 26

## 5. Results

To test the size and statistical significance of the hypothesized paths, a bootstrapping procedure is used of 5000 resamples. The main objective of this analysis is to test the influence of different constructs on supplier satisfaction. This research will test two models, (1) the influence of OPEX on supplier satisfaction and the mediating role of competence trust and expert power within this relationship and (2) the influence of PUREX on supplier satisfaction and the mediating role of supplier satisfaction on supplier satisfaction is the influence of supplier satisfaction on supplier performance is tested.

### 5.1 Results Model 1 - OPEX

Figure 3 and 4 show the results of the OPEX model of this study. The complete OPEX model with all indicators of the latent variables can be found in Appendix A. The results of model 1.1 (fig. 3) reveal a positive but non-significant relationship between OPEX and supplier satisfaction ( $\beta$ =0.230;p>0.05), which does not support H2a. Also H1, the relationship between supplier satisfaction and supplier performance is positive, but non-significant ( $\beta$ =0.229;p>0.05). Therefore, H1 is also not supported. Model 1.1 accounts for 5.3 per cent of the explained variance in supplier satisfaction (R<sup>2</sup>=0.053).

Model 1.2 (fig. 4) adds competence trust and expert power. Competence trust has a positive and significant effect on supplier satisfaction ( $\beta$ =0.486;p<0.01). Expert power has a positive and non-significant effect on supplier satisfaction  $\beta$ =0.197;p>0.05). Model 1.2 is indicative of a mediation effect. OPEX has a positive and significant effect on competence trust ( $\beta$ =0.530;p<0.01) and expert power ( $\beta$ =0.640;p<0.01), which supports H3a and H4a. Model 1.2 accounts for 27.7 per cent of the explained variance in supplier satisfaction ( $R^2$ =0.277), which indicates the relevance of adding competence trust and expert power to the construct. Compared to model 1.1 the direct effect of OPEX on supplier satisfaction has become negative instead of positive and remained non-significant ( $\beta$ =0.170;p>0.05). The effect of supplier satisfaction on supplier performance reduced and remained non-significant ( $\beta$ =0.226;p>0.05). To test in model 1.2 the mediation effect of competence trust and expert power on the relationship between OPEX and supplier satisfaction we used an Explicit Procedure.<sup>80</sup> Rungtusanatham et al. (2014, p.104) suggested to construct a percentile bootstrap confidence interval in which the sampling distribution is based on the

<sup>&</sup>lt;sup>80</sup> See (Rungtusanatham, Miller, & Boyer, 2014), p. 104

estimated paths bootstrap samples. This paper followed this procedure and used 5000 resamples to determine the product terms of the constituent mediation pathways. This procedure showed that the indirect effect of OPEX on supplier satisfaction through competence trust is significant (95 per cent confidence interval of 0.065 to 0.220), so there is a significant mediation effect of competence trust in the relationship between OPEX and supplier satisfaction. The indirect effect of OPEX on supplier satisfaction through expert power is non-significant (95 per cent confidence interval of -0.075 to 0.360), so there is no significant mediation effect of expert power in the relationship between OPEX and supplier satisfaction. Therefore, H3 is accepted and H4 is not accepted in the OPEX model.



Figure 3 - OPEX model 1.1

\* p < 0.05, \*\* p < 0.01, all others are not significant.



Figure 4 - OPEX model 1.2

\* p < 0.05, \*\* p < 0.01, all others are not significant.

#### 5.2 Results Model 2 - PUREX

Figure 5 and 6 shows the results of the PUREX model of this study. The complete PUREX model with all indicators of the latent variables can be found in appendix B. The results of model 2.1 (fig. 5) reveal a positive and significant relationship between PUREX and supplier satisfaction ( $\beta$ =0.523;p<0.01), which supported H2b. The relationship between supplier satisfaction and supplier performance is positive, but non-significant ( $\beta$ =0.226;p>0.05). Therefore, H1 is not supported. Model 2.1 accounts for 41.2 per cent of the explained variance in supplier satisfaction ( $R^2$ =0.412).

Model 2.2 (fig. 6) adds competence trust and expert power. Competence trust has a positive and non-significant effect on supplier satisfaction ( $\beta$ =0.279;p>0.05). Expert power has a negative and non-significant effect on supplier satisfaction  $\beta$ =-0.012;p>0.05). Model 2.2 is indicative of a mediation effect. PUREX has a positive and significant effect on competence trust ( $\beta$ =0.446;p<0.01) and expert power ( $\beta$ =0.490;p<0.01), which supports H3b and H4b. Model 2.2 accounts for 47.2 per cent of the explained variance in supplier satisfaction ( $R^2$  =0.472), which indicates the relevance of adding competence trust and expert power to the construct. Compared to model 2.1, the direct effect of PUREX on supplier satisfaction was substantially reduced but remained positive and significant ( $\beta$ =-0.523; p<0.01). The effect of supplier satisfaction on supplier performance reduced and remained non-significant ( $\beta$ =0.225;p>0.05).

To test the mediation effect in model 2.2 of competence trust and expert power on the relationship between PUREX and supplier satisfaction we used the same procedure as in model 1.2. This procedure showed that the indirect effect of PUREX on supplier satisfaction through competence trust is non-significant (95 per cent confidence interval of -0.025 to 0.117), so there is no significant mediation effect of competence trust in the relationship between PUREX and supplier satisfaction. The indirect effect of PUREX on supplier satisfaction through expert power is also non-significant (95 per cent confidence interval of -0.164 to 0,089), so there is no mediation effect of expert power in the relationship between PUREX and supplier satisfaction. Therefore, H5 and H6 are not accepted in the OPEX model.





\* p < 0.05, \*\* p < 0.01, all others are not significant.



Figure 6 - PUREX model 2.2

\* p < 0.05, \*\* p < 0.01, all others are not significant.

## 6. Discussion and conclusion

The goal of this paper was to extend existing literature of the antecedents of supplier satisfaction. First we discuss the models without the mediators "competence trust" and "expert power". In these models both OPEX and PUREX have a positive effect on supplier satisfaction, as expected. The effect of OPEX on supplier satisfaction is not significant and weaker than the positive effect of PUREX on supplier satisfaction. The effect of PUREX on supplier satisfaction is significant. Thus, PUREX appears to be a more important antecedent for creating satisfied suppliers than OPEX in these models.

Second we tested the model with the mediators "competence trust" and "expert power". The findings show that PUREX still has a direct significant positive effect on supplier satisfaction, but is a little bit lower than in the previous model, so competence trust and expert power have little mediating effect on the relationship between PUREX and supplier satisfaction. Surprisingly, OPEX does not have a positive effect on supplier satisfaction anymore and is still not significant. The effect of OPEX on supplier satisfaction even became negative instead of positive. This finding is unexpected, since OPEX should have a positive effect on supplier satisfaction.<sup>81</sup> A possible explanation for this is the positive significant mediation effect of competence trust between the relationship of OPEX and supplier satisfaction. PUREX does not have a significant indirect effect (with the mediation of competence trust) on supplier satisfaction. Expert power does not have a significant mediation effect in the relationship between OPEX/PUREX and supplier satisfaction.

However, PUREX and OPEX do have a significant positive effect on expert power and competence trust. Benton et al. (2005, p. 13) found a positive significant indirect effect of expert power on supplier satisfaction, when expert power is mediated by "relationship". So a possible explanation could be that competence trust and expert power also are mediated by another variable. Pulles et al. (2016, p. 137) found that supplier satisfaction leads to preferential resource allocation. Vos et al. (2016, p. 43) found that supplier satisfaction could indirectly lead to preferential treatment. So both papers found that supplier satisfaction leads to a better performance from the supplier. This research did not find a significant positive effect of supplier satisfaction on supplier performance. An

<sup>81</sup> See (Vos, Schiele, & Huttinger, 2016), p. 43

explanation of this could be the low sample size, because we used dyadic data for this hypothesis.<sup>82</sup> So we can conclude that PUREX appears to have a greater influence on supplier satisfaction than OPEX and that PUREX also explains a higher variance in supplier satisfaction.

#### **6.1 Contribution to the literature**

This paper makes several contributions to the literature. First, we contribute to the latest stream in the literature that tries to give a broader picture of how supplier satisfaction can be achieved.<sup>83</sup> This paper found a new antecedent (PUREX) that has a direct significant effect on supplier satisfaction. Researchers could explain a higher variance in supplier satisfaction in the future, by adding PUREX to their research. Second, previous research found that OPEX has a direct effect on supplier satisfaction. In this research we could not confirm this result, but this research found that competence trust completely mediates the relationship between OPEX and supplier satisfaction. This finding shows that OPEX is sensitive for mediation and future research should look for more antecedents that mediate OPEX in the relationship with supplier satisfaction. This result could also help to declare a higher variance in supplier satisfaction. Third, this research found that PUREX is a more effective antecedent than OPEX for creating supplier satisfaction. PUREX is a more relational measure than OPEX, so we could say that relational behaviour from the buyer is more important than being an efficient and effective buyer for satisfying the suppliers. Fourth, we found a strong relationship between OPEX/PUREX and competence trust/expert power. So we could confirm that when a buyer reaches excellence a supplier believes in their competence and expertise. Fifth, this paper believes that it provides additional insights of SET's application within the SCM literature. SET is driven by the central concept of exchanging resources via a relational exchange. SET believes that an exchange cannot only be explained by economic factors, but also by social factors.<sup>84</sup> This study adds a new application of SET in the SCM literature by examining the mediating effect of trust and power within a buyer-supplier relationship. The contribution this paper makes to the SET is that competence trust appears to be more important for creating supplier satisfaction than expert power. In additional to this, this paper also found that competence trust and expert power are stronger influenced by the operational antecedent (OPEX) than by the more relational antecedent (PUREX).

<sup>&</sup>lt;sup>82</sup> See (Wong K., 2013), p. 5
<sup>83</sup> See (Huttinger, Schiele, & Schroer, 2014); (Vos, Schiele, & Huttinger, 2016)
<sup>84</sup> See (Zhao, Huo, Flynn, & Yeung, 2008), p. 371

#### **6.2 Implications for practice**

This paper provides several tools for managers to reach a higher supplier satisfaction, which will result in increased strategic benefits for the buying company. The purchasing manager of Bons en Evers was wondering if improving their OPEX and PUREX could result in more satisfied suppliers and could eventually lead to a better supplier performance. This research confirmed that being excellent is important for suppliers and that this could lead to supplier satisfaction. So for managers of buying firms it is important to achieve higher excellence, if they want a better treatment from their suppliers. Purchasers have a crucial role in achieving higher supplier satisfaction, because PUREX has a huge impact on supplier satisfaction. The following subjects are tasks for which purchasers are responsible and could improve the satisfaction of their suppliers:

- Efficient purchasing processes
- Being an example of 'good purchasing'
- Providing a truthful picture when negotiating
- Negotiate from a good faith bargaining perspective
- Have exact and in time forecasts about future demands

If purchasers keep in mind that performing well on these tasks can help to improve their supplier's satisfaction, they will eventually get a better supplier performance. A better performance from the suppliers can help the company to outperform their competitors and reach a better operating result for the entire company.

Next to this it is also important that the suppliers trust in the competences of the buyer, because this will have a positive mediation effect on the relation between OPEX and supplier satisfaction. By being excellent, buying firms will also generate higher expert power and competence trust, which could result in being a more attractive buying firm for suppliers to work with. This could be important when the suppliers for certain goods are scarce and the buying firm does not want to stop their production, because not all the materials were delivered. This research mentioned that trust appears to be more important than power for creating satisfied suppliers. So, buying companies should focus more on building trust with their suppliers than on using power.

## 7. Limitations and future research

The findings of this study should be viewed in light of some limitations that suggest the need for caution in drawing conclusions, but also provide opportunities for future research.

#### 7.1 limitations

The main limitation of this research was the small sample size. Therefore it could be that some relationships were not found. Because the small sample size it was also not possible to make a distinction between direct and indirect procurement, which could have resulted in a broader view on this subject. The findings of this paper were based on the forging brass industry only. Although focusing on a single industry could have its benefits, it could be that this approach is not sufficient to fully estimate the scope of the results presented here. Next to this, the data of this survey is only based on subjective data, which relies on the perception of the respondent. This kind of data collection could be subject to misinterpretation, although the pre-tests do not reveal any of these misinterpretations. Another limitation is that some of the constructs seems to be quite overlapping and multidimensional. The factor analysis showed that supplier satisfaction and PUREX loaded high on the same factor, which may indicate that there is discriminant validity within the data. When the measurement items of different constructs load high on the same factor, the possibility exists that different measurement items measure the same construct. Although the square roots of the AVE are greater than the correlation coefficient, it may still indicate that there is discriminant validity between supplier satisfaction and PUREX, because the correlation coefficient is only a little bit smaller than the square roots of AVE. The last limitation is that this forging brass company is relative small, with only a few large suppliers. This could also be the cause for the small sample size.

#### 7.2 Future research

There are several recommendations for future research. First, a larger sample size is necessary to detect more relationships and effects within this model. With a larger sample size it is also possible to find differences between direct and indirect procurement. Second, future research should focus on a broader range of industries to find out if these results are also applicable on other industries. Third, it is important to use objective data in the future instead of subjective data, which could be subject to misinterpretation. However, this will be difficult, because "satisfaction" is subjective and depends on personal perception. Fourth, future research should introduce new measurement items or improve the current

measurement items of the PUREX construct, so that discriminant validity is prevented in the future. The last recommendation is that future research should be done within a larger company with more major suppliers. Although the results of the nonresponse bias (revenue) were not significant, we can still conclude that larger suppliers are more willing to fill out a questionnaire.

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## 9. Appendix

## Appendix A: Model 1.2 with indicators





## **Appendix B: Model 2.2 with indicators**

## **Appendix C: Survey Suppliers**

#### Supplier satisfaction Cannon (1998) and Pulles et al. (2016)

These questions are about the current relationship with this customer

1 ("no, strongly disagree") to 5 ("yes, strongly agree")

- we are very pleased with what this customer does for us.
- our firm is <u>NOT</u> completely happy with what this customer does for us
- our firm is satisfied with the value we obtain from the relationship with this customer
- our firm is very satisfied with the relationship with this customer

### Expert Power Nyaga (2013) adopted

1 ("no, strongly disagree") to 5 ("yes, strongly agree")

- This buyer/supplier is an expert in the industry
- We respect the judgment of buyer 's/supplier's representatives
- This buyer/supplier has business expertise that makes them likely to suggest the proper thing to do

### **Operational Excellence**

1 ("no, strongly disagree") to 5 ("yes, strongly agree")

In our relationship with Bons en Evers, they have demonstrated to...

- ... organize their production efficiently
- ... be an exemplar organization for operational excellence
- ... have exact and in time forecasts about future demand
- ... have valuable knowledge on the best processes and systems

### **Purchasing Excellence**

#### 1 ("no, strongly disagree") to 5 ("yes, strongly agree")

In our relationship with Bons en Evers, they have demonstrated to...

- ... organize their purchasing processes efficiently
- ... be an exemplar firm for excellent purchasing
- ... provide a truthful picture when negotiating
- ... negotiate from a good faith bargaining perspective

#### **Competence trust**

Please assess the following statements 1 ("no, strongly disagree") to 5 ("yes, strongly agree")

We feel that Bons en Evers is a highly capable partner

Bons en Evers is very capable of providing value to our firm

We trust that Bons en Evers has the managerial and technical capabilities to do what it says it will do

#### Final Questions General information

Please share the following general information about your company. If your company belongs to a group of companies please share the information and data of your site.

Annual Turnover Number of employees Country of your site How long has your firm been supplying this customer (in years) How long have you personally been involved with this customer (in years) How long have you been working for your firm (in years)

## Appendix D: Survey Purchasers

Supplier Operational Performance		Scale	
Please indicate the performance of this supplier on the dimensions below	Poor	Average	Good
(on a 5 point scale from "1, Poor performance; 3, Average performance; 5, Good performance")		-	
Cycle time (total time from beginning to the end of the process)	1 2	3	4 5
On-time shipments			
Quality of deliveries			
Responsiveness to requests for change			
Supplier Competitive Performance		Scale	
The relationship with this supplier	Strongly disagree		Strongly agree
(on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")			-
has provided B&E with strategic advantages over competitors	1 2	3	4 5
enabled B&E to reduce cost to a highly competitive level			
enabled B&E to defend against competitive threats			
Supplier Innovation Performance		Scale	
B&E's relationship with this supplier	Strongly disagree		Strongly agree
(on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")	C C		C
	1 2	3	4 5
has a positive effect on B&E's ability to make improvements/adaptations to existing products			
has a positive effect on B&E's ability to develop successful new products for markets			
has helped B&E to achieve a great number of product adaptations/improvements in the last three years			
		Scale	
Coercive power	Strongly		Strongly
(on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")	disagree		agree
B&E made it clear to this supplier that failing to comply with B&E's request will result in penalties	1 2	3	4 5
against them			
If this supplier did not do as asked, they did not receive the award offered by B&E			
If they do not go along with us, B&E threatened to withdraw certain services			

Reward power			
on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")		Strongly	
	disagree		agree
	1 2	3	4 5
B&E offers this supplier rewards so that they will go along with B&E's wishes			
If this supplier did not do as asked, they did not receive the award offered by B&E			
If this supplier agrees with our requests, B&E offer them rewards			
Relational Investment			
(on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")	Strongly		Strongly
	disagree		agree
	1 2	3	4 5
If B&E switches to another partner, B&E would lose a lot of the investment made in this relationship		_	
B&E made a substantial investment in personnel development dedicated to this partner			
B&E has invested a great deal in building up the relationship with this partner			
Buyer Dependence		Scale	
(on a 5 point scale from "1, Strongly disagree" to "5, Strongly agree")	Strongly		Strongly
	disagree		agree
	1 2	3	4 5
B&E could easily replace this supplier's volume with purchases from some other suppliers			
There are many competitive suppliers for this component			
B&E's production system can be easily adapted to use components from a new supplier			

#### Share in turnover

Please indicate B&E's share (from 0-100%) in the supplier's turnover

B&E account for .....% in this supplier's turnover

Number of competitors (competitiveness)

Please indicate how many customers this supplier has that are similar to B&E

This supplier has ..... customers that account for a similar share in their turnover as B&E

This supplier has ..... customers that buy similar products as B&E

Trust						
Please indicate how much trust (from 0-100%) this supplier has in B&E						
When B&E makes a promise, this supplier trusts that B&E has the managerial and technical capabilities to do what they say they will do	%					
This supplier believes that B&E would make sacrifices for them to support their firm	%					
Product specification						
Please indicate how much influence (from 0-100%) B&E has on the product design specification of this						
supplier						

B&E has ............ % influence on the product design specifications of this supplier

## **Appendix E: Factor analysis**

Rotated Component Matrixa	Component					
	1	2	3	4	5	
SUPSatisfaction1	.848	.028	.324	.074	.039	
SUPSatisfaction2	.782	064	045	058	.285	
SUPSatisfaction3	.762	.111	.390	.238	099	
SUPSatisfaction4	.759	017	.321	.196	125	
SUPExpertPower1	.405	.494	.276	063	.523	
SUPExpertPower2	079	.275	.287	.169	.831	
SUPBEOPEX1	.047	.791	.296	.099	.193	
SUPBEOPEX2	094	.855	.253	.087	.015	
SUPBEOPEX3	.207	.675	112	.117	.219	
SUPBEOPEX4	003	.657	.503	.068	.202	
SUPCompetenceTrust1	.255	.178	.825	074	.147	
SUPCompetenceTrust2	.272	.107	.771	.219	.028	
SUPCompetenceTrust3	.201	.305	.710	.024	.324	
SUPBEPUREX1	.195	.148	.101	.931	.134	
SUPBEPUREX2	.604	.477	.018	.555	046	
SUPBEPUREX3	.660	.521	.091	.245	.083	
SUPBEPUREX4	.644	.578	.128	.067	043	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						

- Detertion and a discrimination

a Rotation converged in 8 iterations.