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Operative excellence in buyer-supplier relationships: The influence of operative antecedents on supplier satisfaction

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Abstract

The purchasing department of organizations is developing towards a strategic function. Due to the increasing awareness and importance of strategic supplier relationship, organizations are trying to become a preferred customer of their key suppliers. The benefits of preferred customer status can lead to competitive advantage. To achieve preferred customer status, organizations should emphasize on satisfying their suppliers. The supplier can be satisfied by being profitable, offering growth opportunities, positive relational behavior, and being operationally excellent. Although several researchers have shown an increased interest in operative excellence in purchasing studies as a strategic enabler. Therefore, this study emphases on new operative excellence factors influencing supplier satisfaction. As a result of the literature research, several operative factors have been identified. Subsequently, empirical data was collected to test the relationship between the factors.

The results of the study with SmartPLS 3.0 path modelling show that demand forecasting, contact accessibility, and quality of processes positively influence supplier satisfaction. Also, this research shows that the quality of processes positively influences demand forecasting, payment, order process, and contact accessibility. Finally, the order process and payment did not show a significant effect on supplier satisfaction.

The finding shows that buying firms can satisfy their suppliers by offering suppliers reliable demand forecasting, high quality if processes, and providing access to contacts. Also, buying firms would benefit from investing in IT-systems to enable a higher quality of processes, since it positively influences the other antecedents as well.

Content

1. The evaluation of the purchasing towards a strategic role: operational purchasing activities are leading to competitive advantage.

The purchasing function gained its relevance over time, due to the increasing trend toward outsourcing, globalization, and technological advancements in the business environment (Schoenherr et al., 2012, p. 4556; Spina, Caniato, Luzzini, & Ronchi, 2013, p. 1202; Weele & Raaij, 2014, p. 62). The outsourcing activities have arisen in many sectors together with a decreasing number of suppliers; as a consequence, the importance of suppliers for the competitive positioning of the firm increased (Schiele, Calvi, & Gibbert, 2012, p. 1178; Schoenherr et al., 2012, p. 4556; Weele & Raaij, 2014, p. 57). The improvement of supplier performance has gained attention after organizations realized that suppliers are responsible for creating a sustainable competitive advantage (Joshi, 2009, p. 113). Accordingly, the organizations are challenged to enhance the contribution of supplier more than its competitors.

Through the increasing outsourcing activities of organizations a shift from a buyer-perspective to a more cooperative buyer-supplier relationship emerged, as an example the buying organization trying to become a preferred customer of their key suppliers (Schiele et al., 2012, p. 1178; Spina et al., 2013, p. 1208; Weele & Raaij, 2014, p. 68). The ability of an organization to create a strong relationship with its suppliers is positively linked to the buyers' competitive advantage (Li, Humphreys, Yeung, & Cheng, 2012, p. 9; Pulles, Veldman, & Holger, 2016, p. 1472). Autry and Golicic (2010, p. 96) found in their study a positive connection between relationship strength and performance; they suggest that the connection is recurrent. Zimmermann and Foerstl (2014, p. 47) argue that purchasing function has a strong effect on the buying firm's performance and is an essential strategic resource. In addition, they argue that higher performance can be attained through a buyer-supplier relationship. The purchasing department evolved into a strategic function, at which the department aims for gaining competitive advantage (Steinle & Schiele, 2008, p. 12; Weele & Raaij, 2014, p. 57). Hence, buyer-supplier relationship and supplier performance can be viewed as strategic leverage that can contribute to an organization's competitive position. However, Steinle and Schiele (2008, p. 12) argue that purchasing can be accounted for a strategic function, only once it contributes to the competitive position of an organization.

A buyer-supplier relationship is not a guarantee for a competitive advantage since competitors pursue comparable benefits from the same supplier (Pulles, Schiele, Veldman, & Hüttinger, 2016, p. 138). An organization that has better access to the resources of the supplier than competitors from the same supply base can gain a competitive advantage. For this reason, being a preferred customer signifies receiving better treatment than other customers. The reducing number of suppliers in the supply market makes it necessary to pay increased attention to the preferred customer status to secure access to critical suppliers (Vos, Schiele, & Hüttinger, 2016, p. 4613). In addition, gaining fewer resources than competitors through not being a preferred customer can be considered a strategic risk that is threatening the competitive advantage (Pulles, Schiele, et al., 2016, p. 138; Reichenbachs, Schiele, & Hoffmann, 2017, p. 352).

An organization that achieves preferred customer status from their supplier receive preferential treatments. The benefits for attaining this status for the buyers are advantages such as preferential allocation of supplier resources, first access to exclusive innovation, and price reduction (Schiele, 2012, p. 47; Schiele, Veldman, & Hüttinger, 2011, p. 16). These benefits of preferred customer status can lead to competitive advantage. Therefore, organizations may benefit from approaching the buyer-supplier relationship from a different perspective and become a preferred customer.

Preferred customer status can be obtained if the supplier perceives the buyer as attractive, and if the supplier is more satisfied with the buyer than with alternative customer (Schiele et al., 2012, p. 1181). By investigating the factors that are attractive to suppliers and by determining what is satisfactory in a buyer-supplier relationship, the buying organization can obtain a preferred customer status. Vos et al. (2016) created a multidimensional construct with contingencies affecting supplier satisfaction and preferred customer status. The results of their study revealed that relational factors, such as operational excellence, reliability, and relational behavior, explain comparable or even higher variance in supplier satisfaction than economic factors like growth potential and profitability (Vos et al., 2016, p. 4621). This means for buyers who are not able to offer substantial economic value, still can satisfy their supplier by being reliable, operationally excellent, and showing good relational behavior.

In the past ten years, researchers have shown an increased interest in operational purchasing activities as a strategic enabler (Essig & Amann, 2009, p. 103; Rozemeijer, 2008, p. 206;

Schiele, 2012, p. 49). Essig and Amann (2009) started investigating several influential factors influencing supplier satisfaction; however, they did not clarify in their study on the theoretical part why certain items are included in their satisfaction concept. Secondly, Hüttinger, Schiele, and Schröer (2014, p. 712) found that operative excellence is an essential factor influencing supplier satisfaction, which still needs attention to the significance level. They acknowledge that there is little research on operative excellence in the literature. Thirdly, Vos et al. (2016, p. 4621) suggested researching further the dimensions of supplier satisfaction because of the low explanatory and predictive power in their study. Mainly, it is essential that the interrelationships among the operational antecedents of supplier satisfaction are treated. Therefore, this paper aims to explain further how to attain supplier satisfaction and improve the understanding of operative antecedents influence supplier satisfaction. Based on the aforementioned research gap in the literature, this study attempts to answer the following research questions:

Which operative excellence antecedents significantly influence the satisfaction of suppliers' in achieving preferred customer status and what is their causal relationship with operative excellence.

The current research on suppliers satisfaction is still not fully developed. Therefore, this work further extends the insights of factors influencing supplier satisfaction. The results of this research provide implications for buying companies as well. For instance, organizations that want to become a preferred customer but are not able to offer considerable economic value. These buyers still can satisfy their supplier by being operationally excellent, since operational excellence and other relational aspects are equally important as economic factors in influencing supplier satisfaction (Vos et al., 2016, p. 4621). Therefore, this study provides recommendations for practitioners to improve their organization's operational purchasing performance towards the suppliers in order to achieve preferred customer.

This study is built on several aspects. First, a literature review will discuss supplier satisfaction and investigated antecedents. Then, based on the extant literature hypothesis are generated, and the conceptual model of this research is developed. Afterward, the model will be tested and revised using data collected from the focal firms' suppliers. Lastly, the implications and limitations of the study will be discussed.

2. A social exchange framework: the role of purchasing in obtaining a competitive advantage.

2.1. Competitiveness: Developing a buyer-supplier relationship for attaining benefits from suppliers.

The reducing number of suppliers in the supply market makes it necessary to pay increased attention to a few close buyer-supplier relationships. Moreover, several investigations provide evidence that relationship with suppliers enhances the performance of the buying firm (Autry & Golicic, 2010, p. 96; Li et al., 2012, p. 353; Olivier, 2011, p. 22). In a buyer-supplier relationship, customers aim for developing and maintaining a long-term relationship with their supply chain partner, with the intention to achieve sustainable competitive advantage, flexibility, and efficiency (Z. Chen, Huang, & Sternquist, 2011, p. 569; Nyaga, Whipple, & Lynch, 2010, p. 101). Cooperative buyer-supplier relationships are related to lower costs, shorter delivery time, higher productivity, and improved quality (Li et al., 2012, p. 353). In addition, certain suppliers have the capability to offer innovation so that they can provide a competitive advantage for customers (Schiele, 2012, p. 49).

Despite the mentioned benefits, it is not easy for organizations to achieve the desired relationship with their supplier, because competitors also aim for similar benefits from the same supplier (Li et al., 2012, p. 353). Primarily, competitors aim for highly innovative suppliers or scarce resources. This kind of suppliers can often choose the customer they want to collaborate with. Ellis, Henke, and Kull (2012, p. 1260) found in their study from a social exchange theory perspective that the benefits of buyer-supplier relationships are mediated by preferred customer status. The buyer's behaviors affect a supplier's perception of preferred customer status; fair exchange stimulates the supplier to provide benefits reciprocally (Ellis et al., 2012, p. 1260). In addition, the concept of "reverse marketing" or "customer attractiveness" is emerged to attract the supplier in order to obtain these benefits (Schiele, 2012, p. 49).

Schiele et al. (2012, p. 1179) proposed reaching preferred customer status through switching from a buyer-perspective to a more cooperative buyer-supplier relationship and put effort to satisfy suppliers. Therefore, the buying organization should avoid behaving opportunistically, showing solidarity, mutuality, and flexibility (Ellis et al., 2012, p. 1265; Hüttinger et al., 2014, p. 712). In order to maintain preferential status, a relationship-driven

approach seems to be favorable instead of a transactional exchange relationship (Hüttinger et al., 2014, p. 712). Thus, preferred customer status can be reached to obtain benefits from the buyer-supplier relationship.

2.2 Preferred customer status: buyer-supplier relationship from a different perspective.

Being a preferred customer entails, according to Steinle and Schiele (2008, p. 11), receiving better treatment than other competing customers by the same supplier, mainly for valuable and scare resources. Strategic suppliers can be considered potentially valuable resources, which can enhance the competitive advantage of an organization (Steinle & Schiele, 2008, p. 6). Hence, purchasing can contribute to an organization's competitive advantage in achieving preferred customer status.

As a result of achieving this status, the supplier dedicates the buyer preferential resource allocation, such as providing best personnel to cooperative new product development projects, customizing of its products based on the wishes' of the buying organisation, technology access, and making exclusive agreements (Ellis et al., 2012, p. 1265; Steinle & Schiele, 2008, p. 11). In addition, Nollet, Rebolledo, and Popel (2012, p. 1190) argue that a preferred customer also benefits from the supplier in the matter of higher quality and availability, supporting sourcing process, delivery or/and price. Furthermore, not being a preferred customer can be considered a strategic risk that threatens the competitive advantage (Reichenbachs et al., 2017, p. 353).

In the extant literature, several researchers use social exchange theory (SET) to explore how to achieve and maintain preferred customer status. The concept of SET is originally defined to describe that a relationship between two individuals is created through a process of generating obligations (Cropanzano & Mitchell, 2005, p. 874). In other words, this theory measures the value of the relationship by weighing the advantages and disadvantages. If the relationship is in disproportion, one of the exchange partners may want to leave this situation if a good alternative is available. However, a high-quality relationship with mutual dependency has the potential to generate a special relationship, such as preferred customer status in inter-firm relationships (Cropanzano & Mitchell, 2005, p. 874).

Nowadays, social exchange theory became also popular in relationships among organizations. In order to achieve preferred customer status, Schiele et al. (2012, p. 1179) firstly introduced the circle of preferred customer status based on the social exchange theory. The necessary conditions in this model are customer attractiveness and supplier satisfaction in order to achieve this special status. Customer attractiveness is a condition that should be sufficient for a supplier's perception to attain this status. In other words, to achieve the preferred customer status, a buying organization should first become visible for a potential supplier through customer attractiveness. In the second place, the supplier's perception of satisfaction is an essential factor to distinguish from alternatives, which is not obligatory if there are no alternatives available. For example, an attractive customer without an available alternative can maintain this status even if the supplier is dissatisfied. However, with the arrival of an attractive alternative with higher value satisfaction, this status cannot be guaranteed. Therefore, Pulles, Schiele, et al. (2016, p. 138) argue that the customer distinguishes from the competitor in the supply market through supplier satisfaction because this aspect can positively influence customer attractiveness. In addition, a supplier who is highly satisfied with a buying firm, it considers this firm as an attractive partner for future collaboration. Therefore, supplier satisfaction is an essential factor in reaching the preferred customers status.

Figure 1. The cycle of preferred customer status (Schiele et al., 2012, p. 1180)
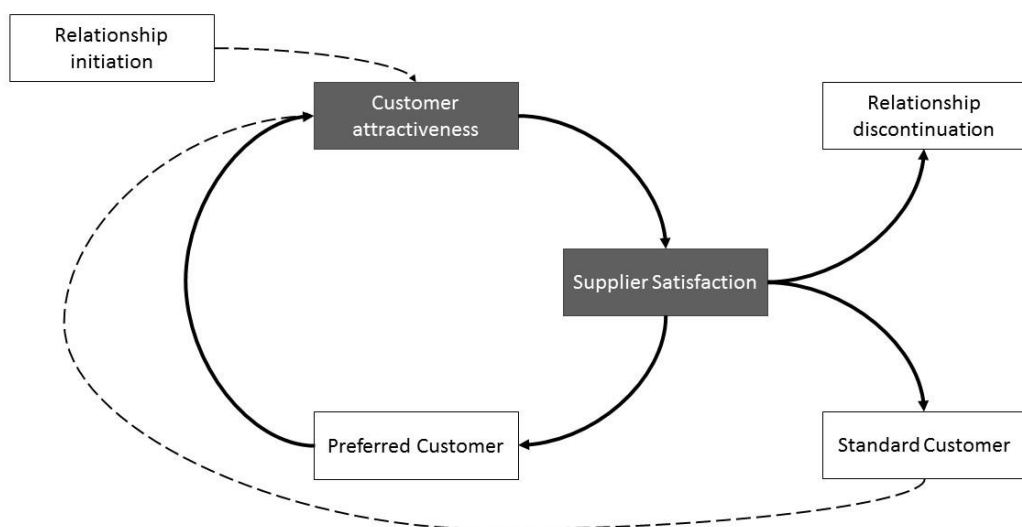
2.3 Supplier satisfaction: a critical factor for reaching preferred customer status

As mentioned before, one of the main factors that influence the tendency of suppliers to reward preferred customer status is supplier satisfaction. After the rise of the importance of preferential treatment, supplier satisfaction gained attention in preferred customer studies. Pulles, Schiele, et al. (2016, p. 137) argue that supplier satisfaction is a necessary condition for achieving preferred customer status. They found in their study that supplier satisfaction positively influences customer attractiveness and mediates the relationship between customer attractiveness and preferential resource allocation. Shortly afterward, a study conducted by Vos et al. (2016, p. 4621) confirms this previous finding that supplier satisfaction has a positive impact on the tendency to award preferred customer status. Hence, these findings support that supplier satisfaction as the necessary condition to achieve preferred customer status and ultimately preferential treatment.

Schiele et al. (2012, p. 1181) stated that "Supplier satisfaction is a condition that is achieved if the quality of outcomes from buyer-supplier relations meets or exceeds the supplier's expectations." Essig and Amann (2009, p. 104) define supplier satisfaction 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 fulfillment". Since the definition of Schiele et al. (2012) is derived from Social Exchange theory and is more recent, it better fits with achieving preferred customer status. Therefore, the definition by Schiele et al. (2012) is the most suitable use in this research.

Satisfied suppliers are more willing to provide valuable kinds of preferential treatment to their preferred customer compared with less- state suppliers. The buyers with highly satisfied suppliers receive better status and ultimately, better treatment than their competitors. In addition, Schiele, Ellis, Eßig, Henke, and Kull (2015, p. 137) explained that buyers should care about the satisfaction of their suppliers, in order to obtain the best resources from suppliers. On the other side, an unsatisfied supplier may produce poor quality output that lowers the quality of a buyer's products and thus influences the buyer's sale volumes and profitability (Essig & Amann, 2009, p. 107). Ellegaard and Koch (2012, p. 155) argue that a dissatisfied supplier is more inclined to invest their resources in other customers.

Benton and Maloni (2005, p. 2) claim that a supply chain is as strong as its weakest link. Since the buying companies are depended on the capabilities of their supplier in the supply

chain, it is essential for a buying company to have satisfied suppliers for their capabilities. In addition, satisfied suppliers in supplier base rivalry can lead to competitive advantage (Schiele et al., 2015, p. 137). Briefly, suppliers who are very satisfied with their customer, have a higher tendency to give the customer preferred status.

2.4 State of the art: Supplier satisfaction is a promising topic in the purchasing literature

To begin with, Wong (2000, p. 429) was one of the first researchers that explored the concept of supplier satisfaction. In his conceptual model, he argues that the performance of the buying companies is dependent on the performance of their supplier. Therefore, suppliers have to be satisfied with the relationship and operations with the buying company, because the dissatisfied supplier may not contribute their best to the company. In order to achieve supplier satisfaction, the companies should take emphasis on co-operative culture, commitment to supplier satisfaction, and constructive controversy. Furthermore, Wong (2000, p. 429) was the first one to link operational excellence with supplier satisfaction. However, his study did not provide any empirical evidence that operational excellence is related to supplier satisfaction

In the same year, Forker and Stannack (2000, p. 31) found in their empirical study that cooperative relationship enhances supplier satisfaction, which is in line with Wong (2000). According to Forker and Stannack (2000, p. 31), the buyer can increase supplier satisfaction by generating an intimate relationship in a manner that increases the suppliers' perception of reciprocity and transparency. Based on these assumptions, both studies recognize that cooperative approach towards suppliers can improve supplier satisfaction.

In 2002, Whipple, Frankel, and Daugherty (2002, p. 67) found in their research the importance of information sharing for improving supplier satisfaction along with buyer satisfaction. This empirically tested study found dyadic differences in perception. For buying companies, it seems the accuracy of the information exchanged was a critical factor. On the other side, suppliers appreciate the speed of information sharing as an essential factor in determining their satisfaction with the relationship. In addition, they found that providing new information to a supplier's internal planning process had a direct impact on the satisfaction experienced by the supplier (Whipple et al., 2002, p. 75).

Maunu (2003, p. 97) was the first who revealed the possible antecedents of supplier satisfaction. She collected the supplier satisfaction dimensions and labeled them under the 'harder' business-related and the 'softer' commination related antecedents. The business-related factors contain profitability, agreements, early supplier involvement, business continuity, and forecasting/planning. The communication-related dimension contains roles and responsibility, openness and trust, feedback, and the buying company's values. In addition, Maunu (2003, p. 97) created a survey tool for buying companies to improve their processes with suppliers by measuring supplier satisfaction. However, these possible antecedents are never empirically tested.

Table 1. Supplier satisfaction Dimensions (Maunu, 2003, p. 95)

Business Related Dimensions	Communication-Related Dimensions
Profitability	Roles & Responsibilities
Agreements	Openness & Trust
Early Supplier Involvement	Feedback
Business Continuity	'The Company' Values
Forecasting Planning	

Furthermore, Essig and Amann (2009, p. 104) explored the construct of supplier satisfaction as a factor of buyer-supplier relationship quality. They defined supplier satisfaction as a supplier's feeling of fairness with regard to buyer's incentives and supplier's contributions within an industrial buyer-seller relationship. The supplier satisfaction index contains 36 indicators that are subsumed to three dimensions and six factors. The three dimensions are distinguished into 'strategic level,' 'operational level,' and the 'accompanying level.'(Essig & Amann, 2009, p. 106). The operational level emphasizes the order process, forecasting, payment, and delivery performance of the customer. This study was one of the first to test operational factors comprehensively to increase supplier satisfaction within a buyer-supplier relationship. However, these operational factors have not yet been examined as drivers of the preferred customer status. In addition, Essig and Amann (2009) did not clarify in their study in the theoretical part why certain items are included in their satisfaction concept. The comprehensive survey they created is never used in further studies.

Figure 2. Proposed structure of the supplier satisfaction index by Essig and Amann (2009, p. 106)
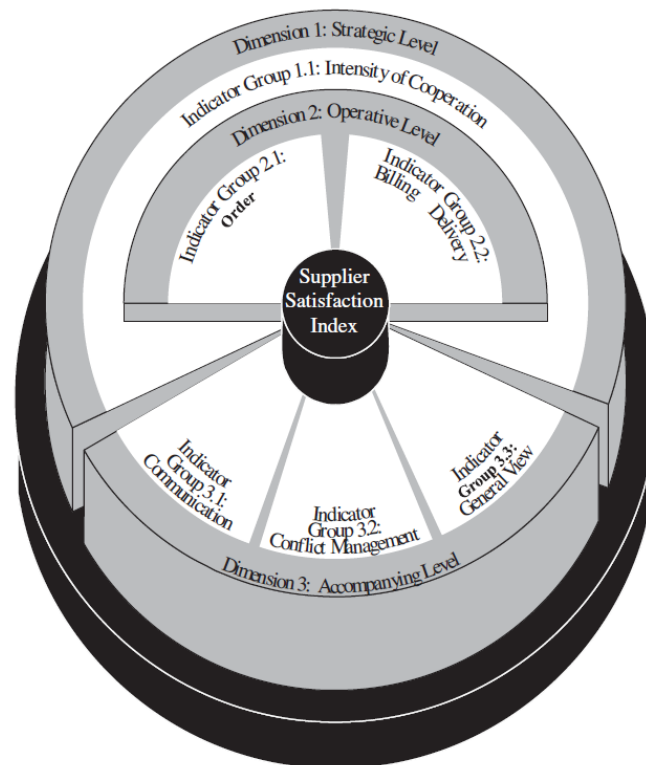
Benton and Maloni (2005, p. 18) empirically tested the influence of supply chain power on supplier satisfaction. The results of this study show that supplier satisfaction seems to be primarily driven by the nature of the buyer-supplier relationship rather than the performance (Benton & Maloni, 2005, p. 20). They argue that if the power holder is attempting to promote supplier satisfaction, it should emphasize a relationship-driven supply chain strategy rather than a performance-based strategy.

In 2010, Nyaga et al. (2010, p. 98) examined how collaborative activities such as information sharing, joint relationship effort, and dedicated relationships influence satisfaction and performance. The results show that all three collaborative activities lead to an increased level of trust and commitment (Nyaga et al., 2010, p. 101). In turn, these two factors have a positive impact on relationship satisfaction and performance. In the same year, Ghijsen, Semeijn, and Ernstson (2010, p. 19) investigated the effect of strategies and supplier development on supplier satisfaction. This research found that capital-specific development enhances supplier satisfaction (Ghijsen et al., 2010, p. 22). On the other hand, the most direct influencing strategies tend to make the suppliers dissatisfied. Accordingly, this study

recommended that indirect influencing strategies and capital-specific supplier development could enhance supplier satisfaction.

As one of the first, a systematic literature review from Hüttinger, Schiele, and Veldman (2012, p. 1203) provided a preliminary conceptual model with an overview of several antecedents of preferred customer status, supplier satisfaction, and customer attractiveness. Before the release of the study of Hüttinger et al. (2012, p. 1196), there was no research based on the combination of supplier satisfaction, customer attractiveness, and preferred customer status. So far, previous research studies investigated customer attractiveness, supplier satisfaction, and preferred customer status separately. As a result of their literature review, they concluded that the drivers of customer attractiveness, supplier satisfaction, and preferred customer status are still in its early stages. Notably, they argue that the antecedents of supplier satisfaction are more comprised of factors in a more operational nature, such as order processes, billing, and delivery (Hüttinger et al., 2012, p. 1202).

Figure 3. Drivers of preferential treatment by suppliers: a preliminary concept (Hüttinger et al., 2012, p. 1203)
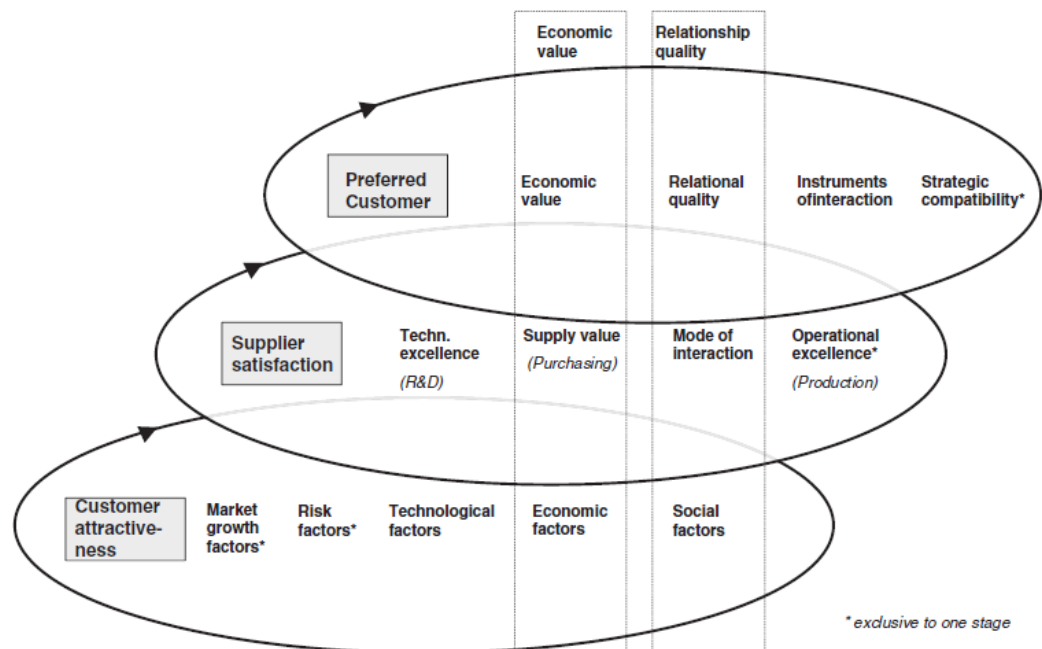
In the same year, Meena, Sarmah, and Sinha (2012, p. 64) established a scale and model to measure supplier satisfaction index in a buyer-supplier relationship. They identified four possible antecedents that positively influence supplier satisfaction as follows: purchase policy, payment policy, coordination policy, and corporate image (Meena et al., 2012, p. 71).

In addition, the purchase policy and corporate image seem to have a stronger impact on supplier satisfaction than the other factors.

Hüttinger et al. (2014, p. 698) further explored the antecedents of customer attractiveness, supplier satisfaction, and preferred customer status. A world-café method is utilized to formulate and test the hypothesis. They found in their study that relational behavior, reliability, operational excellence, involvement, growth potential, support, and accessibility are factors positively influencing supplier satisfaction (Hüttinger et al., 2014, p. 711). However, innovation potential, operative excellence, support, supplier involvement, and contact accessibility did not show any significant effect in their sample.

Figure 4. Overview of categories derived from inductive coding (Hüttinger et al., 2014, p. 702)

Vos et al. (2016, p. 4614)replicated the study in the context of indirect procurement and direct procurement, and added profitability to the existing model of Hüttinger et al. (2014). The findings of this study show that profitability, growth opportunity, and reliability are essential antecedents of supplier satisfaction in indirect procurement and direct procurement. In the context of direct procurement, this study found that first tier antecedents that positively impact supplier satisfaction are profitability, growth opportunity, relational behavior, and operative excellence (Vos et al., 2016, p. 4618). In addition, this study tested the second tier antecedents of supplier satisfaction. Innovation potential shows a positive impact on growth

potential. The first tier antecedent relation behavior, support, reliability, and involvement show a positive impact. Finally, contact accessibility has a positive impact on operative excellence.

Figure 5. Results of the revised model for direct and indirect procurement (Vos et al., 2016, p. 4620)
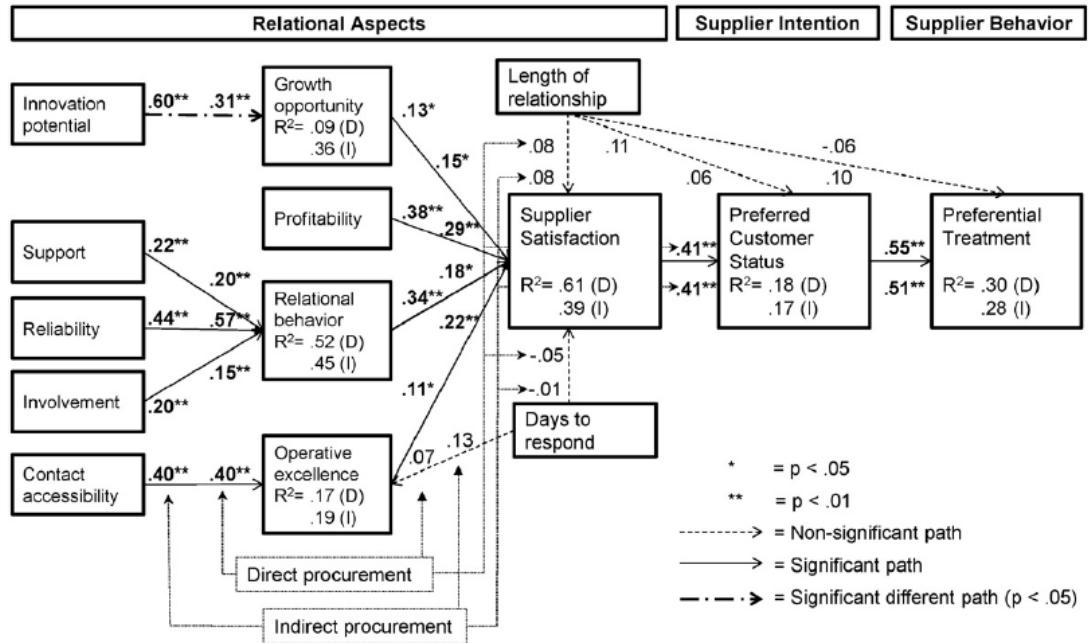
3. Operational purchasing as a strategic enabler: potential antecedents that can increase supplier satisfaction

3.1 Efficiency and cost leadership are the generators of operational excellence

Operational excellence has become a critical element of sustainable success in complex, competitive global marketplaces, where customer expectations were never so high (Carvalho, Sampaio, Rebentisch, Carvalho, & Saraiva, 2017, p. 1). Organizations that are operational excellent carry their products and services at competitive prices and with minimal inefficiency. This goes through targeting on reducing unnecessary costs and optimizing business processes (Mikalef, Pateli, Batenburg, & Wetering, 2015, p. 628). Albeit, several researchers found that most of the papers that are reviewed did not offer a concrete definition of operational excellence (Carvalho et al., 2017, p. 4; Found, Lahy, Williams, Hu, & Mason, 2018, p. 1021; Thürer, Tomašević, Stevenson, Fredendall, & Protzman, 2018, p. 23). Despite the fact that the researchers lack on an agreement of the definition of operational excellence, some studies have regularities and mutual themes around it, linking operational excellence to efficiency.

Firstly, Kamann (2007, p. 131) described operation excellence as *"providing the customer with reliable products or services at competitive prices and delivered with minimal difficulty and inconvenience."* Which is in line with the definition of Reimann, Schilke, and Thomas (2010, p. 191) who defined it as "*the value discipline of operation excellence aims to achieve efficiency and cost reduction.* Another definition is given by Zack, McKeen, and Singh (2009, p. 397) who state that " *Operational excellence represents competition based on efficient internal operations.*" The above-mentioned definitions are a general view on operational excellence, but when looking from a supply management perspective they are similar with the definition of buyer-supplier operational excellence defined by Hüttinger et al. (2014, p. 703): "*The supplier's perception that the buying firm's operations are handled in a sorrow and efficient way, which facilitates the way of doing business for the supplier"*. The previously mentioned definitions of operational excellence are generally defined as efficient operations and cost leadership. However, the last definition provided is more suitable to this study because it regards the perception of the supplier, while the other definitions are more from a general view. Nevertheless, Vos et al. (2016) applied the definition of Hüttinger et al. (2014) in his study of supplier satisfaction's effect on preferred customer status, which is the basis of this study.

3.2 Collaborative activities in creating efficiency and cost reduction

In the previous paragraph, it became clear that the critical elements of operational excellence are operational efficiency and cost leadership. This section will elaborate further on the critical elements from the buyer-supplier view. Efficiency from the buyer-supplier view targets on the alignment and optimization of co-operative processes in order to decrease costs, processes lead times or defects (Clauss & Spieth, 2016, p. 1045). Schiele (2012, p. 49) emphasized from a buyer-supplier view that an atmosphere of efficiency with the supplier creates a positive environment that improves the relationship quality. From a transactional cost theory perspective, aligning operation with the supplier makes the relationship more attractive, because it reduces the supplier's cost to sustain the relationship (Schiele, 2012, p. 49). From a social exchange perspective, cost reduction increases the value of the relationship with the exchange partner.

J. Yang, Xie, Liu, and Duan (2018, p. 990) state that operational collaboration in the supply chain brings several benefits such as enhancing operational productivity, improving efficiency and effectiveness. From a resource-based view, J. Yang et al. (2018, p. 988) suggests that a customer starts an operational collaboration with its key suppliers in order to obtain or get access to the resources. Zacharia, Nix, and Lusch (2009, p. 113) found in their study that operational outcomes between collaborating partners enhance the value of the relationship. On the other side, they argue that exchange partners with lacking operational outcome can suffer from conflicts and poor relationship (Zacharia et al., 2009, p. 115).

Nyaga et al. (2010, p. 111) found in their study that collaborative activities improve trust and commitment with the supplier, which results in enhanced satisfaction and performance. Hüttinger et al. (2014, p. 713) argue that customers benefit from creating an active working environment for the supplier through emphasizing on their systems and processes because it tends to have a positive effect on the expectation of the supplier. Ramsay and Wagner (2009, p. 128) argue that supplier value consists of elements of buyer's attributes that enhance the supplier's economic well-being and efficiency of operations. The higher the amount of supplier value, the more likely that a supplier will maintain the relationship. It will also increase the attractiveness of the customer.

3.3 The rise of operational excellence in supplier satisfaction studies as strategic enabler

Rozemeijer (2008, p. 206) debated the importance of operative purchasing processes in being perceived as an attractive customer. He argues that customers that are not in control of their operational processes such as paying promptly, sharing reliable forecast, and order processes can be perceived as unattractive for suppliers. He also argues that excellent operational activities can enhance competitive advantage through closer buyer-supplier relationship. Nollet et al. (2012, p. 1118), where they argue that a customer should ensure operational excellence in order to maintain the preferred customer status. For instance, the customer can improve the efficiency of operations in the interest of creating more value for the supplier. Thus, it can be assumed that higher efficiency of operations is attributed by a buyer, the higher the chance that the supplier will maintain the relationship.

Figure 5. The four steps in the process of becoming a preferred customer (Nollet et al., 2012, p. 1188)
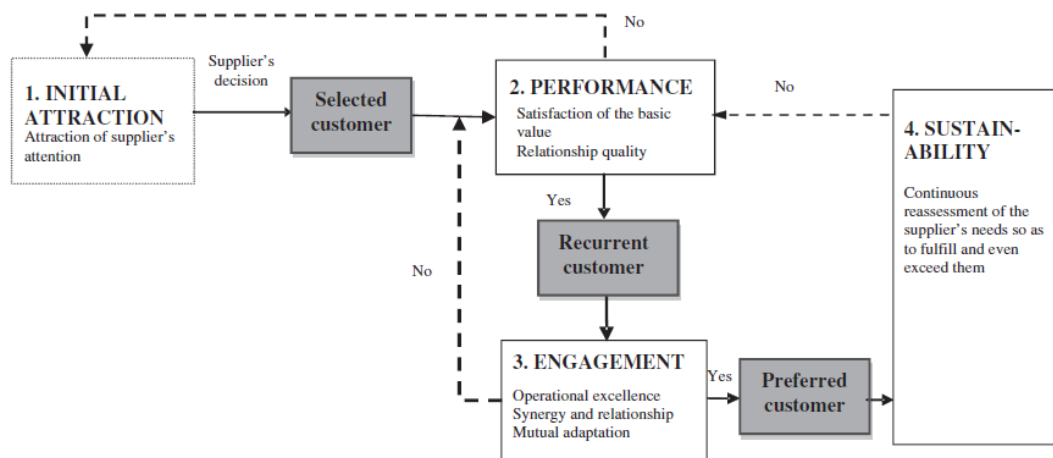
Hüttinger et al. (2012, p. 1200) derived several antecedents of operational excellence in their preliminary concept for the drivers of preferential treatment by suppliers from Essig and Amann (2009) and Maunu (2003). In this study, Hüttinger et al. (2012, p. 1202) argue that the antecedents of suppliers satisfaction primarily encompasses elements of a more operational nature. Two years later, Hüttinger et al. (2014, p. 711) found that operative excellence has a positive effect on customer attractiveness. Notably, the results of this study indicate that the influence of operative excellence is higher for small firms than for large firms. On the other hand, they could not find enough evidence that operative excellence influence supplier satisfaction. They advocate for more attention to the significance of

operative excellence. Although this element is recognized as a critical element in their study on the theory level, it is neglected.

Eringa and Groenveld (2016, p. 187) concluded that operational dimensions in the supplier satisfaction stage play more or less the same level as relational dimensions. In order to avoid operational risks, supplier appears to prefer continuity above achieving maximum profit. Owing to this, several operational antecedents seems to be essential in attaining preferred customer status. Based on the extended model of Hüttinger et al. (2014), the findings of Vos et al. (2016, p. 4618) have shown that operative excellence has a positive effect on supplier satisfaction in indirect procurement. However, the overall explanatory power of operative excellence on supplier satisfaction is low.

Table 3. Proposed operational purchasing factors influencing supplier satisfaction in the literature

Reference	Publication	Method	Suggested Antecedents
Maunu (2003)	-	Conceptual	Forecasting/planning
Rozemeijer (2008)	Journal of Purchasing & Supply Management	Debate/Conceptual	Reliable forecasting, agreed payment terms, ordering, expediting function
Essig and Amann (2009)	Journal of Purchasing & Supply Management	Survey	Order process, Time scheduling, Billing/delivery/ Payment habits/ Required effort needed for delivery and Business competence
Hüttinger et al. (2012)	Industrial Marketing Management	Conceptual	Forecasting/planning order process, Time scheduling, Billing/delivery/ Payment habits/ Required effort needed for delivery and Business competence
Hüttinger et al. (2014)	Supply Chain Management: An International Journal	Mixed-methods approach	Reliable forecast, planning reliability quick decision-making processes,

			simple internal processes
Schiele et al. (2015)	Australasian Marketing Journal	Conceptual	Billing, delivery, forecasting, and planning
Vos et al. (2016)	Journal of Business Research	Survey	Correct forecasts, contact accessibility

Table 4. Operational purchasing factors frequency

Antecedent of Operational excellence	Alternative label/group	Frequency researchers
Forecasting and Planning	Reliable forecasting, time scheduling, planning reliability, correct forecasts	7
Ordering process	Ordering expediting function, required effort needed for delivery and business competence, delivery.	4
Payment	Agreed payment terms, billing, payment habits	4
Quality of processes	Quick decision-making processes, simple internal processes	1
Contact accessibility		1

After consulting academic search engines such as Scopus, Google Scholar, JStor and Web of science with search terms as : "supplier satisfaction OR preferred customer status and operative excellence OR operational excellence" it pointed out in the overview hereabove, that reliable forecasting, payment, ordering process, quality of processes and contact accessibility are the suggested antecedents of operational excellence in the context of supplier satisfaction. Regarding the methodology used in these studies, four out the seven papers were conceptual in nature. Thus, the results indicate that the literature regarding the antecedents of operational excellence is still in its infancy.

Several labels have been merged since it has overlap or is similar. Although these antecedents are suggested in prior supplier satisfaction studies, however except for the contact accessibility, no study tested these antecedents in specific supplier satisfaction context that leads to preferred customer status. Furthermore, researchers have not treated operative excellence and the antecedents in much detail in the literature. Therefore, the next paragraphs will provide more depth on a theoretical level.

3.4 Sharing useful demand forecasting may increase the supplier flexibility and volume

Nowadays, the effect of a buyer's forecast accuracy has drawn a lot of attention recently in supply chain studies. Taylor (2006, p. 39) proposed that the suppliers are more willing to collaborate with the buyer after more accurate demand information is available. This is because more accurate demand information is always potentially valuable to the supplier. Based on a sample from a supplier perspective Dwaikat, Money, Behashti, and Salehi-Sangari (2018, p. 298) found that sharing demand forecast is a key enabler of supplier volume and delivery flexibility. Consequently, this has advantages for the suppliers as this improve their flexibility and response demand fluctuations, which may result in cost saving related procurement and inventory cost. D. Yang, Xiao, Choi, and Cheng (2018, p. 1974) found in their research that demand forecasting enhances the profitability of the supplier as well as the supply chain because reliable forecasting can reduce the unit reservation fee.

Furthermore, through demand forecasting, the supplier is able to optimize reservation pricing strategy and at the same time, generate a higher capacity reservation. Sandberg (2007, p. 280) emphasized in his study the general importance of having access to customer's forecast in the supply chain. However, a survey from logistics managers at Swedish manufacturing companies with 177 responses demonstrates that 94 percent of the respondents at least share forecast information once a month (Sandberg, 2007, p. 280). As a supplier, it does not only benefit from availability to customer's forecast information but also the usefulness of forecast information, which relies on the quality of the forecast information. Qualitative forecasting information contains according to Forslund and Jonsson (2007, p. 104) four factors: in time, accurate, convenient to access, and reliable. Therefore, should managers of buying firms consider together with suppliers the quality of the forecast information, in order to reduce supplier cost.

Based on the findings hereabove, it seems that demand forecasting is an important operative factor. Amornpetchkul, Duenyas, and Şahin (2015, p. 1740) argue that supplier can always benefit from a better accurate demand forecasting from the customer. In conclusion, demand forecasting enhance the profitability and economic value of the relationship.

3.5 The effectiveness of the ordering process depends on the ordering policy of the customer.

The ordering process is an essential business process between the buyer and supplier whereby the buyer's order is converted into production orders to achieve reasonable order agreements (Welker & de Vries, 2005, p. 397). In other words, this process starts with receiving buyers orders and end with delivering products to the buyer. The ordering process entails creating a commitment to product specifications, order quantities, and the timing of delivery. If this process is not managed correctly in the supply chain, this can cause operational inefficiencies, such as increasing the demand variability and the inventory volatility(Welker & de Vries, 2005, p. 408).

Sterman and Dogan (2015, p. 19) outline that uncontrolled ordering creates instability and inefficiency in the supply chain. Costantino, Di Gravio, Shaban, and Tronci (2015, p. 140) argue that poor ordering process is the main operational driver of the bullwhip effect, which is in line with the previously mentioned research. In order to, reduce the bullwhip effect they propose that slow information sharing model can reduce the bullwhip effect because this model provides information to the supplier about the actual customer demand with an interval equal to the ordering lead-time. An earlier study conducted by Zhao, Xie, and Zhang (2002, p. 39) demonstrates that placing early orders by the customers to the suppliers generally enhances the supply chain performance. In the condition of, demand uncertainty ordering co-ordination between the supplier and the customer enhances the performance of the supply chain. Consequently, a customer that place orders early can reduce total cost and improve service level for the supplier as well as the customer itself. Afterward, Hu, Lim, and Lu (2013, p. 692) emphasized that customers with flexible ordering policy can reduce the uncertainty in the supply chain and in addition improve the probable supply chain's turnover through co-ordination.

Based on the aforementioned studies, we can conclude that the ordering process is an essential operational driver of the supply chain's efficiency. The lack of good ordering policies can interrupt the efficiency of the supply chain. However, this can be prevented through a slow information sharing model, early order placement, flexible ordering policy, and coordination between the supplier and the customer. Finally, both sides of the supply chain can profit from a well-functioning order process.

3.6 High-quality processes of the customer can enable efficiency and cost reduction.

Quality of processes between the buyer and supplier is essential for ensuring effective collaboration. Consequently, good quality processes between buyer and supplier can lead to improved communications, decreased conflict and opportunism, and build a stable and long relationship (Spekman & Carraway, 2006, p. 14). In order to enhance the quality of inter-organizational processes, Spekman and Carraway (2006, p. 18) argue that reducing information asymmetry through a single information technology can beneficial. Interorganizational information systems can increase the information flows between the buyer and supplier, which ultimately enhances the processes efficiency (Spekman & Carraway, 2006, p. 15). IT systems are generally known that it enhances the coordination processes across supply chain member by improving information distribution, availability, presentation, and processing, altogether advances efficiency and lower costs (Fritz & Hausen, 2009, p. 443). Makkonen and Vuori (2014, p. 1057) argue that integrated IT systems creates reliable and agile execution of purchase orders and delivers, which enables operational excellence.

Integrated business processes between supply chain members arrange organizational transparency, which leads to committed suppliers and buyers to their own roles and responsibilities (Ha, Park, & Cho, 2011, p. 63). These processes involve supplier and customer resources together so that it creates co-creation in order to solve the problem together(Aarikka-Stenroos & Jaakkola, 2012, p. 23). Through this process, suppliers are able to offer their expertise and experience better to solve problems. In order to create value for the customer, the supplier needs to understand the customer's processes to align their own processes(Payne, Storbacka, & Frow, 2008, p. 93). Movahedi, Miri-Lavassani, and Kumar (2016, p. 482) found in their study that higher levels of the inter-organizational business process improve customer satisfaction, indirect financial, and operational benefits. Therefore, from the supplier perception understanding the customer's business processes are essential in order to be able to offer the most suitable resolution for the buyer

The integration of processes with suppliers allows organizations to enhance operational performance (Huo, Qi, Wang, & Zhao, 2014, p. 375). High quality of internal and external organization processes can increase information sharing and joint planning with the

suppliers. Schloetzer (2012, p. 1028) found in his empirical study evidence that process integration between supplier and buyer leads to favorable performance benefits such as sales growth, sales productivity, and profitability. In addition, he found in his study the extensive process integration influences suppliers' willingness to renew the contract. Also, integration of processes ensures more effective management of the processes in the supply chain (H. Chen, Daugherty, & Landry, 2009, p. 35) More specifically, process integration can contribute to the operational interfaces within and between organizations are coordinated to prevent duplication, redundancy, and waiting time. (Rodrigues, Stank, & Lynch, 2004, p. 71). I

3.7 Customers with reliable payment records are perceived as more attractive

Customers prefer to postpone payment periods as much as possible, while the suppliers want the payment as promptly as possible (Reiss & Präuer, 2004, p. 6). In an investigation of supplier value using case studies, Ramsay and Wagner (2009, p. 132) identified that paying punctual and the speed of payment appear to be attractive to the suppliers. This finding supports the previous conceptual research of Ramsay (2005, p. 556) were he stated that customers with an excellent reputation for prompt payment and lucrative payment terms are usually more attractive for suppliers. The supplier asses if the customer has the ability to meet their future payment obligation; for that reason, the suppliers are interested in the financial status of the customer. Furthermore, suppliers are concerned in the payment history and the suspect financial probity, because suppliers associate a negative payment of a customer with trading risk (Ramsay & Wagner, 2009, p. 132). In addition, it is essential that the payment terms are reasonable in order to satisfy the supplier. Strang (2012, p. 148) argues that suppliers are careful to allocate limited inventory to customers that are delaying payment as they will be unable to pay future orders and unlikely to continue competitively, accordingly suppliers will prefer customers with good payment history. The payment terms affect the continuity of the buyer-supplier relationship and efficiency, and longer payment terms demotivate the supplier to continue doing business with the customer(Zhan, Li, & Chen, 2018, p. 416). Verhoef, Franses, and Hoekstra (2001, p. 374) argue that paying slowly to suppliers can force the supplier to decide to go for cross-selling. According to Randall and Theodore Farris (2009, p. 681) earlier payment from a customer can increase the supply chain profitability and reduce the costs. The supplier can use the early payment to reduce the debt or use it for an investment (Randall & Theodore Farris, 2009, p. 676)

Meena et al. (2012, p. 64) developed as a scale and model to measure the supplier's satisfaction index in a buyer-supplier relationship. They found in their study that payment policy has a positive impact on supplier satisfaction. If a customer better performs on payment policy, for instance, paying on time, accessibility in payment schemes, and the cost of bidding gives the customer the advantage to satisfy their supplier expectancy. Eringa and Groenveld (2016, p. 187) argue that meeting payment deadlines appear to be one of the operational factors for gaining preferred customer status. In summary, there are theoretical arguments in support of prompt and reliable payment influence positively supplier satisfaction. However, the effect on operational excellence in the context of supplier satisfaction is still missing

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3.8 Being available to your supplier can prevent problems

Buying firm's contact accessibility is, according to Hüttinger et al. (2014, p. 703) the availability of the customer's contact person which is willing to reflect to enhance bonds with the supplier. Therefore the contact person develops and initiatives exchange processes. In the collaboration between buyer and supplier easy access and frequent contact with a close contact person seems to influence the level of attraction perceived by suppliers (Hüttinger et al., 2014, p. 703). According to Vos et al. (2016, p. 4620) contact accessibility gives the supplier the opportunity to brief their questions about operational problems directly to a contact person. In addition, Vos et al. (2016, p. 4621) found in his study that contact accessibility has a positive impact on operational excellence. Glas (2018, p. 107) found that service and communication quality of the buyer has a positive effect on supplier satisfaction, which includes the supplier's accessibility to the buyer's firm contact person. The communication quality of the procurement department should have a relevant influence on supplier satisfaction

4. Hypothesis and research model: operative antecedents that are hypothesized to have an effect on supplier satisfaction

Since research on suppliers satisfaction is not still fully developed, it is advised to deepen further our knowledge of contextual factors influencing supplier satisfaction and preferred customer status (Vos et al., 2016, p. 4620). As explained in the literature review, the critical elements of operational excellence are efficiency and cost leadership. Furthermore, an atmosphere of efficiency forms a positive environment which improves the relationship quality. Based on the transactional cost theory, efficiency reduces the supplier's cost to sustain the relationship. Therefore, operational excellence leads to more satisfied suppliers and attracted customers. The new operative antecedents of suppliers satisfaction contain elements of efficiency and cost leadership. From a social exchange perspective, cost reduction and efficiency make the relationship easier to maintain for suppliers. Therefore, it is plausible that the new operational antecedents enhance supplier satisfaction. The hypothesis concerning all the new operational antecedents will be derived in the following sections; they are demonstrated in the research model in Figure 6.
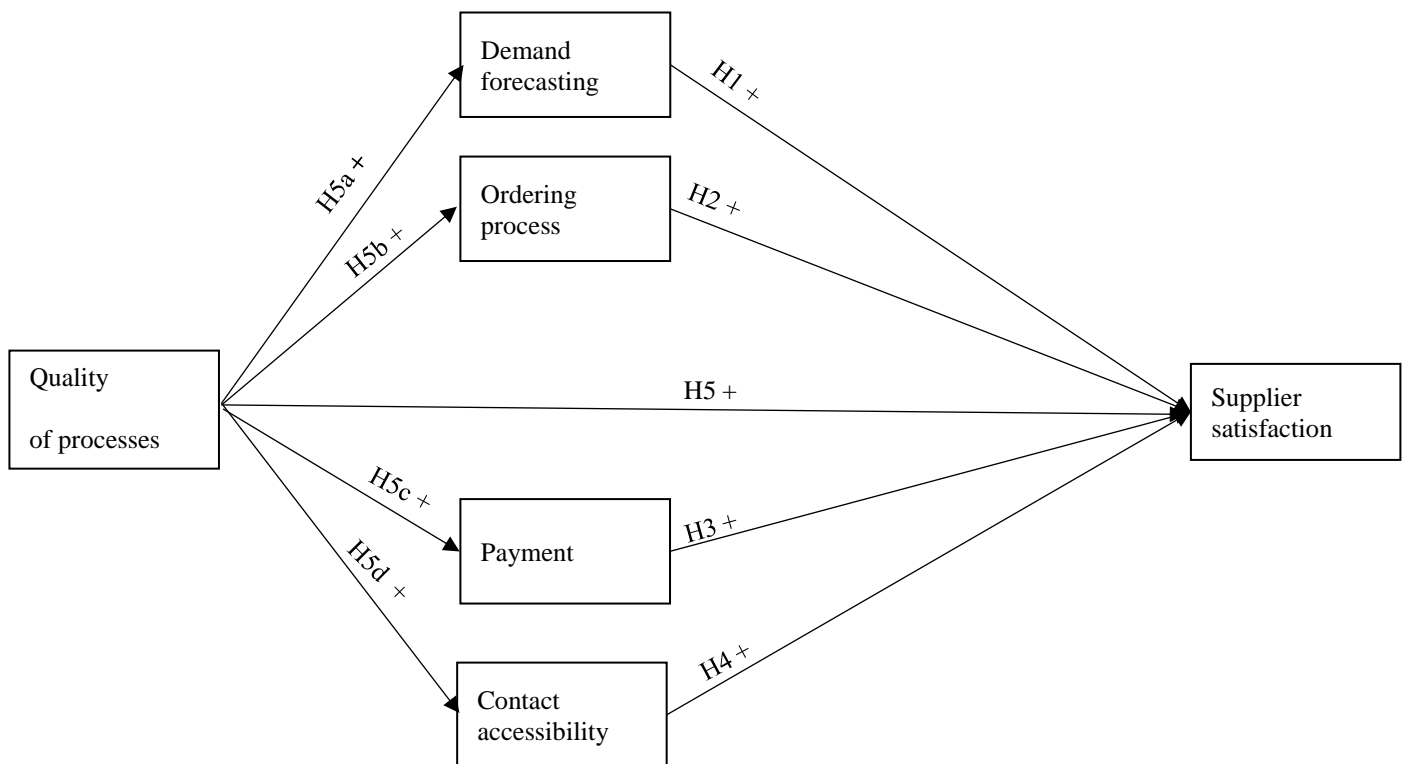
Figure 6 Conceptual effect: operational purchasing antecedents of supplier satisfaction

Demand forecasting

For operational excellence, the matter of forecasting seems to have an essential effect on supplier satisfaction. From a transactional cost perspective, sharing demand forecasting with supplier enables volume and delivery flexibility, which in turn saves inventory costs and enhances profitability (Dwaikat et al., 2018, p. 293; D. Yang et al., 2018, p. 1974). This means for the supplier, that the costs to sustain the relationship with the customer reduces. Amornpetchkul et al. (2015, p. 1740) argue that supplier can always benefit from a better accurate demand forecasting from the customer. One reason for this is, good forecasting allows suppliers to respond better on fluctuation in demand. Thus this lessens the negative effect of uncertainty (Simangunsong, Hendry, & Stevenson, 2012, p. 4495). Accordingly, uncertainty can relate negative on satisfaction, and suppliers may prefer for customers that minimize uncertainty (Schiele et al., 2015, p. 135). Thus, switching from a good demand forecasting customer to another customer will be less attractive for the supplier. Although the forecasting quality should be taken into consideration. Thus, we expect that useful forecasting demand is enhancing supplier satisfaction.

H1: Demand forecasting for suppliers has a positive impact on supplier satisfaction

The ordering process

Customers that manage their ordering process poorly can cease increasing demand variability and inventory volatility (Welker & de Vries, 2005, p. 397). Poor ordering process can cause operational inefficiency for the supplier, which makes the relationship harder to sustain. Also, a customer with lacking operational outcome can suffer from conflicts and poor relationship with the supplier. However, organizations that place orders to the suppliers early can reduce total cost and improve the supply chain performance (Zhao et al., 2002, p. 39). This can be achieved through slow information sharing, early order placement, flexible ordering policy, and coordination of the ordering process between the supplier and the customer (Hu et al., 2013, p. 39; Zhao et al., 2002, p. 692). Also, the supplier can benefit from the customer's ability of the ordering process to increase its own proficiency, thereby making the relationship more attractive (Patrucco, Luzzini, Moretto, & Ronchi, 2019, p. 352). If the ordering process is managed correctly, it is expected that the ordering process can improve supplier satisfaction.

H2. The ordering process has a positive impact on supplier satisfaction.

Payment

Longer payment terms affect the endurance of the buyer-supplier relationship and demotivate supplier to continue doing business with the buyer (Zhan et al., 2018, p. 416). In contrast, paying the supplier early can reduce the costs for the supplier, for example, trough paying their debt or use it for an investment (Randall & Theodore Farris, 2009, p. 676). In the worst case, a late payment may even lead to bankruptcy. In addition, customers with prompt and lucrative payment terms appear to be more attractive for suppliers (Ramsay & Wagner, 2009, p. 132). Therefore, it is expected that customers paying promptly enhances the supplier's satisfaction.

H3. Payment has a positive impact on supplier satisfaction.

Contact accessibility

Another crucial factor of buyer-supplier relationship is contact accessibility. Román and Martín (2008, p. 561) found in their study that a growth of the frequency of contact with the supplier can enhance the buyer-supplier relationship. In addition, the more personal contact can increase the relationship strength and closeness between the supplier and customer (Glas, 2018, p. 107). The explanation for this may be that frequent and personal contacts give the supplier the opportunity to ask their questions and address their problems.

H4. Contact accessibility has a positive impact on supplier satisfaction.

Quality of processes

Customers that ensure process integration between the suppliers can prevent operational inefficiencies, such as reduced waiting time and redundancy (Rodrigues et al., 2004, p. 71). In addition, the supplier is able to offer better service for the customer, which improves customer satisfaction, costs, and operational benefits (Payne et al., 2008, p. 93). Quality of processes increases the operational outcome between the buyer and supplier, which enhances the value of the relationship. Moreover, maintaining continuity of the relationship becomes less effortless; in fact, suppliers find continuity in their relationship with customers important (Eringa & Groenveld, 2016, p. 187). Whipple et al. (2002, p. 75) found that providing operational information to a supplier had a direct impact on the satisfaction experienced by

the supplier. If the quality of processes are high, it is expected that it can improve supplier satisfaction.

H5   *Quality of processes has a positive impact on supplier satisfaction.*

Trapero, Kourentzes, and Fildes (2012, p. 175) demonstrated that information sharing reduce the forecast error and improves the terms of forecasting accuracy. An information system can increase the customers' ability to share better information with suppliers, because of the greater transparency and visibility (Kim, Ryoo, & Jung, 2011, p. 672; Steinfield, Markus, & Wigand, 2011, p. 92). In addition, sophisticated IT systems reduce the complex supply network and improve the collaboration on demand forecasting (Fritz & Hausen, 2009, p. 451). Based on these findings, it can be assumed that the quality of processes is an enabler of better forecasting,

H5a. Quality of processes has a positive impact on demand forecasting.

Electronic data interchange (EDI) can increase the ordering process performance because it decreases the errors, increases the data quality, and increases the coordination activities between supplier and buyer in the order process (Clark & Lee, 2000, p. 89; Min & Galle, 2003, p. 232). According to Vaidyanathan and Devaraj (2008, p. 420) the order fulfilment process of the supplier develops mainly through the quality of information exchange processes among customer and supplier. Following these arguments, it can be assumed that the quality of processes improves the ordering process.

H5b. Quality of processes has a positive impact on the ordering process.

Payment systems that are built upon good IT and communication infrastructure can enhance the buyer-supplier relationship dynamic, ease payment, decrease costs and the risk of fraud (Cotteleer, Cotteleer, & Prochnow, 2007, p. 61). E-payment systems can increase the accuracy of the payment because the payment will be placed automatically on time through the system (Cotteleer et al., 2007, p. 57). According to Barngetuny and Kimutai (2015, p. 115) the development of IT systems improved the convenience of the electronic payment systems. Hence, recent developments made it possible to improve the quality of the payment

process, and therefore, it can be assumed that the quality of processes improves the payment process.

H5c. Quality of processes has a positive impact on payment.

Spekman and Carraway (2006, p. 14) argue that developing proper collaboration processes can enhance communication. In addition, good processes reduce opportunistic behavior and foster more focus on the supplier. Implementing EDI can improve the capability of better communication and collaboration between buyer and supplier (Son, Narasimhan, & Riggins, 2005, p. 330). It is reasonable that good processes and information exchange systems can make contact with the contact person easier for suppliers. Therefore, it can be expected that the quality of processes influence contact accessibility positively

H5d. Quality of processes has a positive impact on contact accessibility

5.Research Methodology: 179 surveys were collected from two high-tech companies

5.1 Case company 1: Confidential

5.2 Case Company 2: Confidential

5.3 Questionnaire developed: based prior research

In order to measure the independent and dependent latent variables, this research uses multi-item scales in the form of a questionnaire to examine the hypotheses. The questionnaire that is developed for this study consist of two parts, which takes about 20 minutes to finalize. The first part of the questionnaire is examining supplier satisfaction, attractiveness, and preferred customer status. The questionnaire of Hüttinger et al. (2014, p. 721) and Vos et al. (2016, p. 4620) are the basis of this replication part, and the items measuring access to contact accessibility, growth opportunity, innovation potential, reliability, involvement, operative excellence, profitability, supplier satisfaction, preferred customer status and preferential treatment. In addition, the questionnaire of this study consists of a benchmark-comparison where the supplier can compare the case company on suppliers satisfaction with a best-practice from their own supply base.

The new antecedents of operational excellence that are introduced in the literature review are examined in the second part of the questionnaire. The measure of the new antecedents of operational excellence originates with the 'operational level' from Essig & Amann (2009), which are payment, quality of processes and ordering processes and forecasting from Maunu (2003). These factors derived from Essig and Amann (2009) and Maunu (2003) will be used in this research in order to further our knowledge of contextual factors influencing operative excellence. The dependent and independent variables that are used in the questionnaire of this study are rate 5-point Likert scale ranging from "strongly disagree" to "strongly agree."

It is clearly stated in the survey that the buyer is not able to trace-back the answers of the respondents. For this reason, suppliers cannot use this questionnaire to make a positive impression on the buyer. So this may decrease the potential for response bias. Therefore, the data will be kept anonymous for the case companies due to confidentially reason. Furthermore, the questionnaire consists in the ending control question about general information, such as length of the relationship, the influence of the customer, annual turnover with the customer, type firm, the position of the respondent.

5.4 Sample definition and data collection

In collaboration with the purchasing department of both companies, it became clear that there are 1650 suppliers of which last three years at least something has been purchased,

although not all suppliers are suitable for this research. In order to contact relevant suppliers for this study which are able to provide relevant data, a threshold of € 10,000 have been nominated. As a result, the questionnaire has been sent to 900 suppliers, of which mainly are based in the Netherlands, followed by Germany and France. Therefore, the questionnaire has been translated into Dutch and German. Afterward, a template e-mail is developed with the purpose of the questionnaire and the link to the survey tool Qualtrics.

In order to increase the response rate, every email correspondence is personalized with a personal greeting (Muñoz-Leiva, Sánchez-Fernández, Montoro-Ríos, & Ibáñez-Zapata, 2010, p. 1049). Although, personalization requires the contact details of the sample population and a list with contact details of suppliers were not available at the case companies. Therefore, the purchasers of the case companies were inquired for collecting personal data of the sample population, which are in general sales employees. Secondly, it appears that the respondents prefer to submit the questionnaire early in the morning according to Flynn (2018, p. 49), so the e-mails are mainly distributed in the early mornings to increase the response rate.

During the questionnaire that was open for four weeks, 200 responses were received at both case companies. The response rate for the first two weeks was already 10% (N=60), which is high for the two weeks. There are two reminders sent to the correspondents, the first reminder (N=82) after two weeks, and the second reminder (N=54) after four weeks. As a result, the first reminder almost doubled the amount of response, and the second reminder boosted the total response to 200 responses. This proves that issuing reminders is one of the most effective manners to increase the response rate for a web-based survey (Muñoz-Leiva et al., 2010, p. 1049). Afterward, 21 questionnaire have been taken out due to missing values and self-reported insufficient knowledge about the customer, 179 responses remained in the final data set. This constitutes a response rate of 28,5%

Table 5. Characteristics of the sample

Length of firm relationship	Company A (n=130)	Company B (n=49)	Both (n=179)
< 5 years	23,1%	26,5%	24%
6 -10 years	16,9%	30,6%	20,7%
11-20 years	31.5%	30.6%	31.3%
>20years	28,5%	12,2%	24%

Tenure of respondent's relationship with	Company A	Company B	Both
< 5 years	52,3%	51,0%	52%
6 -10 years	15,4%	18,4%	16,2%
11-20 years	26,9%	26,5%	26,8%
>20years	5,4%	4,1%	5%
Percentage of turnover made with	**Company A**	**Company B**	**Both**
< 5 %	49,2%	63,3%	53,1%
6%-10%	12,3%	12,2%	12,3%
11%-40%	26,9%	12,2%	22,9%
40%	3,1%	4,1%	3,4%
unspecified	8,5%	8,2%	8,4%
Number of employees	**Company A**	**Company B**	**Both**
0-50	32,2%	42,9%	35,2%
51-150	25,4%	28,4%	23,5%
151-500	9,2%	12,2%	10,1%
>500	26,9%	22,4%	25,7%
unspecified	6,2%	4,1%	5,6%
Position of the respondent	**Company A**	**Company B**	**Both**
Sales department employee	26,2%	42,9%	30,7%
Sales manager	19,2%	8,2%	16,2%
Head of sales department	22,3%	20,4%	21,8%
Director/Owner	16,2%	12,2%	15,1%
Other	16,2%	16,3%	16,2%
Sector	**Company A**	**Company B**	**Both**
Primary sector	9,2%	17,8%	11,5%
Secondary sector	51,5%	56,5%	52,7%
Tertiary sector	39,2%	25,7%	35,8%

The use of survey data means that there is a chance of non-response bias; this is plausible due to fact that some suppliers want to make a positive impression on the buyer. To test whether this bias affects the statistical results of this research, an independent t-test is conducted in SPSS. For this, the first 45 responses of the first case company data is compared with the last 45 responses of the second case company. Afterward, the differences between these two distributions are observed in SPSS. As seen in the table in appendix B there are no signs of a non-response bias and there,

5.5 SmartPLS

The partial least squares (PLS) recently gained popularity in empirical purchasing studies. Vos et al. (2016, p. 4616), Pulles, Schiele, et al. (2016, p. 136) and Hüttinger et al. (2014, p. 706) used the PLS method for their empirical research on supplier satisfaction (Carrión, Henseler, Ringle, & Roldán, 2016, p. 4549). The PLS method is often compared with

covariance-based SEM (CBSEM), which is also a structural equation method (SEM) used to estimate parameters. According to Barroso, Carrión, and Roldán (2010, p. 430), the main objective of PLS is to increase the maximal explained variance (R^2) of the dependent latent variable constructs. To illustrate, this method applies ordinary least squares to minimize the residual variances of the dependent variable, whereby the explained variance is maximized (Hair, Sarstedt, Ringle, & Mena, 2012, p. 421). This aspect enables the prediction element of PLS, so this method is preferred when the focus is on prediction and theory development (Hair, Ringle, & Sarstedt, 2011, p. 148). Besides, the PLS method works efficiently with small sample sizes and achieves high levels of statistical power compared to other covariance methods (Hair et al., 2012, p. 420). The PLS method is regularly preferred in social and behavioral sciences to reproduce the theoretical and empirical conditions because of the milder rules than CBSEM (Barroso et al., 2010, p. 431). In addition, CB-SEM is more stringent on non-normal data than PLS, which is the character of the most empirical business and social studies (F. Hair Jr, Sarstedt, Hopkins, & G. Kuppelwieser, 2014a, p. 108).

Correspondingly, the purpose of this research is to increase the overall explanatory variance of operative excellence explained by the antecedent, and the sample of this study is not large. Therefore, to test the hypothesis, this study uses PLS and for the application SmartPLS 3.0 software. An analysis in SmartPLS 3.0 was further utilized to estimate the hypothesized paths and to identify a structural model with relationships between the constructs. In order to analyze valid results, it is suggested to use 4999 bootstrap samples, regardless of the confidence interval is developed (Henseler, Hubona, & Ray, 2016, p. 11).

5.6 Quality assessment of data

As a starting point to test dimensionality exploratory factor analysis has applied in IBM SPSS statistics with varimax and oblique rotation. Explanatory factor analyses are used to select relevant items and eliminate items with substantial cross-loadings. Regarding the dimensionality, the factor selection prevents irrelevant variance sources are not part of the items (Ziegler & Hagemann, 2015, p. 234). After applying the Eigenvalue larger than 1 rule, six values have emerged as expected, because this study contains six variables. "O_Forecast_4" (0,451) is the only factor that loaded under the threshold of 0.5 and therefore omitted for further analysis. The question for item "O_Forecast_4" is as follows "BuyingfirmXY adheres to agreements without later changes," which is vague because the

matter could be about all types of agreement changes. As it seems, "O_Forecast_4" correlates equally high in the construct "Ordering process" (0,437), probably due to the lack of clarity. This question appears to be unclear compared to the other demand forecasting question that indicates forecasting clearly in the sentence. After leaving "O_Forecast_4" , all indicators load on different constructs paired, because of this it is easy to group the indicators into in themes.

Table 6. Results of PCA with Varimax Rotation

	Component					
	1	2	3	4	5	6
S_Satisfaction_100_1	,782	,298	,061	,047	,207	,212
S_Satisfaction_100_2	,719	,288	-,001	,127	,202	,232
S_Satisfaction_100_3	,834	,132	,162	,047	,057	,165
S_Satisfaction_100_4	,830	,078	,132	,149	,104	,145
S_Satisfaction_100_5	,869	,036	,141	,078	,115	,075
S_Satisfaction_100_6	,587	,343	,107	,227	,144	,152
O_Forecast_1	,159	,171	,037	,072	,866	,156
O_Forecast_2	,201	,275	-,018	,063	,833	,169
O_Forecast_3	,169	,240	,334	,062	,695	,036
O_Forecast_4	,267	,314	,437	,034	,451	,136
O_Ordering_1	,025	,048	,751	-,068	,155	-,070
O_Ordering_2	,146	,188	,704	,172	-,061	,210
O_Ordering_3	,150	,276	,714	,140	,150	,153
O_Ordering_4	,135	,240	,743	,175	,029	,203
O_Payment_1	,138	,150	,040	,903	,008	,073
O_Payment_2	,096	,230	,077	,890	,092	,092
O_Payment_3	,162	,146	,185	,802	,081	,068
O_QualityPro_1	,218	,728	,124	,249	,237	,128
O_QualityPro_2	,190	,661	,155	,127	,109	-,053
O_QualityPro_3	,204	,793	,211	,080	,235	,193
O_QualityPro_4	,155	,794	,270	,128	,142	,102
O_QualityPro_5	,102	,761	,137	,156	,176	,181
S_Available_10_1	,232	,179	,171	,040	,095	,811
S_Available_10_2	,254	,097	,088	,131	,099	,843
S_Available_10_3	,192	,100	,140	,078	,186	,838

After the factor analysis in SPSS, the assessment of data validity and reliability, indicators and latent variables were analyzed to be clear from systematic measurement errors. Henseler et al. (2016, p. 11) recommend examining convergent validity by using the average variance extracted (AVE). An AVE of 0.5 or higher is regarded as adequate, because than the indictors clarifies more than the half of their variance to one factor. Therefore, it is not possible to have any second equally import factor. The results of the AVE assessment shows that all the factors met the threshold. Notable, "Ordering process" has the lowest score 0,52, which is still adequate.

To determine the internal consistency SmartPLS 3.0 provided at the same time a measure of composite reliability (CR) and Chronbach's alpha. Although, Cronbach's alpha is the most extensively used method for assessing the internal consistency, is CR recommended for PLS

path method (Hair et al., 2011, p. 145). In contrast to CR, Cronbach's alpha assumes that all factor loadings are equally related to the construct. However, this study uses both methods to estimate internal validity. For both methods, a threshold of 0.70 is acceptable (Hair et al., 2011, p. 145). As seen from the table, all factors are above the usually accepted threshold value of 0.7

Table 7. Chronbach's Alpha, Composite Reliability and AVE

	Cronbach's Alpha	Composite Reliability	AVE
Contact Accessibility	0,883	0,883	0,716
Demand forecasting	0,850	0,852	0,659
Ordering Process	0,803	0,797	0,520
Payment	0,892	0,891	0,731
Quality of Processes	0,890	0,892	0,627
Supplier Satisfaction	0,916	0,913	0,639
Criteria	>0.7	>0.7	>0.5

Finally, Henseler, Ringle, and Sarstedt (2015, p. 120) proposed a new approach for assessing discriminant validity. Because the widely used methods such as the Fornell-Larcker criterion and assessment of cross-loading are not sensitive enough in common research situation, Henseler et al. (2015) recommended that the value should be lower than 0.85, because a value is more than 0.85 it indicates that there is lack of discriminant validity. As seen in the table here below, all the values are lower than the threshold. To conclude this chapter, all the quality assessment are met in this study

Table 8. HTMT Values Discriminant validity test

	Contact Accessibility	Demand forecasting	Ordering Process	Payment	Quality of Processes	Supplier Satisfaction
Contact Accessibility						
Demand forecasting	0,422					
Ordering Process	0,429	0,404				
Payment	0,294	0,267	0,363			
Quality of Processes	0,434	0,615	0,591	0,478		
Supplier Satisfaction	0,548	0,508	0,427	0,383	0,562	

6. Results: demand forecasting, contact accessibility and quality of processes significantly influence supplier satisfaction

In chapter three, five operational excellence factors were proposed. After collecting the data, the model was assessed in SmartPLS 3.0. The parameter settings consist of a PLS algorithm procedure (4999 iterations). To conduct this, consistent PLS bootstrapping are used in the software. As shown in the previous chapter, the data does not contain any reliability and validity constraints. In this study, the main focus of the evaluation in SmartPLS 3.0 is mainly based on the model's predictive accuracy and the significance of the path coefficients. The predictive power (R^2) has an essential role in evaluating the quality of the model. However, the R^2 increases even when non-significant construct are added without a relationship. Therefore, the significance of the path coefficients should be considered in assessing the quality of the PLS model. The operational excellence variables have an explanatory power of $R^2=0.475$ for supplier satisfaction. According to the rule of thumb regarding an adequate R^2, this can be confirmed as a reasonable explanation (F. Hair Jr, Sarstedt, Hopkins, & G. Kuppelwieser, 2014b, p. 114). In addition, the effect size (f^2) is measured as well, the rule of thumb for this is evaluated as small (0.02), medium (0.15) and large (0.35) (F. Hair Jr et al., 2014a, p. 184).

Table 9. Results Model

Hypothesis	Path	β	t	f²
H1	Demand forecasting → Supplier satisfaction*	0.188	1.959	0.042
H2	Ordering process → Supplier satisfaction	0.038	0.439	0.001
H3	Payment → Supplier satisfaction	0.113	1.514	0.017
H4	Contact accessibility→ Supplier satisfaction**	0.316	3.376	0.129
H5	Quality of processes → Supplier satisfaction*	0.241	1.948	0.049
H5a	Quality of processes → Demand forecasting**	0.616	10.106	0.612
H5b	Quality of processes → Ordering process**	0.595	9.228	0.547
H5c	Quality of processes → Payment**	0.475	7.060	0.292
H5d	Quality of processes → Contact accessibility**	0.438	5.332	0.238

Notes: t = t-statistic; β = standardised coefficient beta; f2 =effect size of variance explained by predictor; *= p <0.05 (one-sided) **=p <0.01 (one-sided)

As follows, the path coefficients that are assessed, which are called, demand forecasting, ordering process, quality of processes, payment, and contact accessibility on supplier satisfaction, are shown hereabove. Strong evidence shows that contact accessibility (H4: β=0.316; t=3.376; f²=0.129) has the most significant effect on supplier satisfaction in this sample. Furthermore, a significant effect can be seen at the quality of processes (H5:

β=0.241; t=1.948; f²=0.049) and demand forecasting (H1: β=0.188; t=1.959; f²=0.042) on supplier satisfaction, even though the effect is weaker. On the other hand, there was no significant effect of payment (H3: β=0.113; t=1.514; f²=0.017) and ordering process (H2: β=0.038; t=0.439; f²=0.001) on supplier satisfaction.

Hypothesis H5a, H5b, H5c ,and H5d tested the influence of the quality of processes on the other antecedents of supplier satisfaction. Surprisingly, these hypotheses are actively supported, and the path coefficient is stable. Notably, the predictive powers of quality of processes on demand forecasting (r²=0.38), ordering process (r²=0.354), payment (r²=0.226), and contact accessibility (r²=0.192) are respectively for a single factor. The effect size, according to the rule of thumb, of H5a (f²=0.612) and H5b (f²=0.612), is significant. Also, H5c (f²=0.292) and H5d (f²=0.238) are considered on the high side of medium. These positive results will be further elaborated in the discussion .

In addition, this study includes three dummy variables. The first dummy variable case company is used to control the impact of leverage difference between the two case companies. The control variable case company do not have significant effect on supplier satisfaction (ΔC:β=0.059; t=0.887; f²=0.006).The second dummy variable is the length of the relationship between the case companies and supplier. Neither, did this variable show significant effect on supplier satisfaction (ΔR:β=0.027; t=0.405; f²=0.001). The final dummy variable size of company did also have any effect on supplier satisfaction (ΔS: β=-0.043; t=0.666; f²=0.003).

Table 10. Results Model control variables

Control variable	Path		β	t	f²
ΔC	Case Company	→ Supplier satisfaction	0.059	0.887	0.006
ΔR	Length of relationship	→ Supplier satisfaction	0.027	0.405	0.001
ΔS	Size of Company	→ Supplier satisfaction	-0.043	0.666	0.003

Notes: t = t-statistic; β = standardised coefficient beta; f2 =effect size of variance explained by predictor; *= p <0.05 (one-sided) **=p <0.01 (one-sided)

Figure 7 Results: operational purchasing antecedents of supplier satisfaction

Demand forecasting (r²=0.38)

Ordering process (r²=0.354)

Size of company

Length of Relationship

Quality of processes

H5a:β=0.616; t=10.106; f²=0.612

H5b:β=0.595; t=9.228; f²=0.547

H5c:β=0.475; t=7.060; f²=0.292

H5d:β=0.438;t=5.332; f²=0.238

H1: β=0.188; t=1.959, f²=0.042

H2:β=0.038;t=0.439; f²=0.001

H5: β=0.188; t=1.959; f²=0.049

ΔC β=0.059; t=0.887; f²=0.006

ΔR β=0.027; t=0.405; f²=0.001

Supplier satisfaction (r²=0.475)

Payment (r²=0.226)

Contact accessibility (r²=0.192)

H3: β=0.113; t=1.514; f²=0.017

H4:β=0.316;t=3.376; f²=0.129

ΔS β=-0.043; t=0.666; f²=0.003

Case Company

——→ Significant path: T-value >1.69, with α = 0.05

- - - → Insignificant path: T-value <1.69, with α = 0.05

7. Discussion: Significant influences of the new operational factors on supplier satisfaction

Based on the literature review, five operational factors have been identified, and a model has been generated for this research. Afterward, this model was tested and revised using data collected from the focal firms' suppliers. From the analyses conducted before, it can be concluded that several operational factors significantly affect supplier satisfaction. Notably, 179 suppliers participated from two companies for this research. In this chapter, the results will be discussed and compared with existing literature.

The positive effect of demand forecasting on supplier satisfaction supports the conclusion of Essig and Amann (2009) and Maunu (2003). An explanation for this can be that demand forecasting enhances the profitability through inventory cost saving and it also enables suppliers to optimize buying volume (Dwaikat et al., 2018, p. 298; D. Yang et al., 2018, p. 1974). Furthermore, better demand planning ensures less unexpected rush orders that can lead to efficiency of operations and fewer mistakes in the planning. Furthermore, Amornpetchkul et al. (2015, p. 1740.) showed that a higher accuracy of the customer's demand forecasting enables benefits for the supplier. To emphasize, offering demand forecasting is not enough. Therefore, organizations should consider the usefulness of the forecast. Based on the benefits of forecasting information, the cost to sustain the relationship with the buyer decreases. As a result, the customer appears more attractive (Ramsay & Wagner, 2009, p. 129; Schiele, 2012, p. 49). From a social exchange perspective, cost reduction increases the value of the relationship with the exchange partner.

In contrast to earlier findings of Hüttinger et al. (2014), this study demonstrated the positive relationship between contact accessibility and supplier satisfaction. A possible explanation for these results may be derived from the fact that the data is collected in a different context. It seems that the availability of the customer's contact person is more important in the defense industry than the automotive industry. The defense industry is more project-based on a complex custom product. For creative solutions, suppliers need a suitable contact person for partner-specific questions. Whereas, the study of Hüttinger et al. (2014, p. 712) was conducted in the automotive industry. The commodities of this industry are assigned to a buyer, where it is more about sales volumes.

According to Essig and Amann (2009), the present results also failed to prove that payment has any significant effect on the supplier. However, the findings of Meena et al. (2012) support that better payment influence supplier satisfaction. A possible explanation may be that in this case, the buying volume of the case company is low, because of the custom products that they offer. The suppliers may not be bothered with the late payments since they are not dependent on low amounts. Therefore, it is critical to remark that factors may differ from the type of industry or country.

Neither did this study find a significant influence of ordering processes on supplier satisfaction. A possible clarification here fore might be the slow processes by regulation, such as export licensing. The dynamics in the defense industry are generally known to be slow. Because of this reputation, the suppliers may be aware of the dynamics and accept this situation. The results in the automotive industry and other high dynamic industries may be different.

Another interesting finding in this study is the influence of quality of processes on supplier satisfaction. The findings of the current study consist of those of Essig and Amann (2009), where they elaborated the indicator slightly different. As mentioned in the literature review, the high quality of the buyer's processes generates more efficient processes and lower costs for the supplier (Spekman & Carraway, 2006, p. 15). The literature elaborates mainly that information systems enhance the quality of processes with suppliers (Fritz & Hausen, 2009, p. 443; Makkonen & Vuori, 2014, p. 1057). As mentioned earlier, processes that lower the cost to sustain the relationship with the buyer, seem to the buyer's perspective more attractive to the supplier (Ramsay & Wagner, 2009, p. 129; Schiele, 2012, p. 49). Also, from the social exchange perspective, cost reduction makes the relationship more valuable.

Concerning the second-tier antecedent, this study identified that the quality of processes has a positive effect on demand forecasting, ordering process, payment, and contact accessibility. It is interesting to note that several researchers argue that IT systems are the primary enablers of the quality of processes on the in factors, in particular, procurement. Furthermore, IT systems appear to increase the transparency, and they decrease the errors for demand forecasting and ordering process, while it eases the process for payment and contact accessibility (Clark & Lee, 2000, p. 89; Cotteleer et al., 2007, p. 61; Kim et al., 2011, p. 672; Min & Galle, 2003, p. 232; Son et al., 2005, p. 330; Steinfield et al., 2011, p. 96).

These processes appear to decrease cost and increase the efficiency of the above-mentioned operative factors. A reason for this may be that the quality of processes improve better alignment and optimize co-operative processes.

Over the past ten years, several researchers have expressed the importance of operational excellence in the supplier satisfaction field. (Essig & Amann, 2009; Hüttinger et al., 2014; Rozemeijer, 2008; Vos et al., 2016). Essig and Amann (2009) created a comprehensive questionnaire included with operational factors that influence supplier satisfaction. However, they do not provide a theoretical foundation of the operational factors on the influences of supplier satisfaction. In contrast, the present study provides a theory of operational factors through an extensive literature review.

As mentioned in the literature review, it became clear that the critical elements of operational excellence are cost-saving and efficiency. Hüttinger et al. (2014, p. 703) defined operational excellence as *"The supplier's perception that the buying firm's operations are handled in sorrow and efficient way, which facilitates the way of doing business for the supplier."* This study supports the notion of the previous definition that creating a productive working environment for the supplier will positively influence supplier satisfaction. However, the previous study did not mention the importance of cost-saving for the supplier. In this study, the importance of creating cost-saving emerged from becoming operational excellent with the supplier. From a social exchange perspective, cost reduction makes the relationship more valuable. As a consequence, a high-quality relationship may arise with a reward preferred customer status (Cropanzano & Mitchell, 2005, p. 874; Schiele et al., 2012, p. 1179). This study supports the idea of Schiele (2012, p. 49), who suggested that aligning operation with the supplier makes the relationship more attractive because it may reduce the supplier's cost to maintain the relationship.

8. Conclusion: new operational excellence variables of supplier satisfaction

Nowadays, collaboration with suppliers for competitive positioning of the organization increased. Partly because of this trend, the purchasing function became more strategic, and a cooperative buyer-supplier relationship perspective arose. Therefore, organizations are trying to obtain a preferred customer status by satisfying their suppliers. This study investigated operational indicators that may increase supplier satisfaction. Therefore, this study aimed to deepen further knowledge of factors with operational attributes influencing supplier satisfaction. The results of this research support the view that customers can satisfy their suppliers through being operational excellent by offering reliable demand forecasting, providing access to contacts, and having a high quality of processes. Unfortunately, it seems that payment and the order process do not have a significant effect on supplier satisfaction in this sample. Furthermore, this study was able to provide evidence for the quality of processes to have a positive effect on demand forecasting, payment, contact accessibility, and order process. Altogether, this study managed to explore new contextual factors influencing suppliers.

This study might be interesting for buying firms who are not able to offer large buying volumes to their strategic suppliers. Vos et al. (2016) found in their study that a customer's operational excellence has a strong influence on supplier satisfaction. Therefore, buyers can satisfy their suppliers by offering suppliers reliable forecasting and access to contacts. It is important to note that suppliers do not only benefit from the availability of the demand forecasting information, but also from the usefulness of the information. The buying firms should take the quality of the information into consideration, which consists of four factors: time, accuracy, accessibility, and reliability (Forslund & Jonsson, 2007, p. 104). Therefore, the quality of these operational processes must be taken into account. On the same note, it appears to form the results that quality of processes has a substantial effect on supplier satisfaction, demand forecasting, contact accessibility, payment, and ordering processes. Buying firms would benefit from investing in IT-systems to enable a higher quality of processes, for example, e-procurement. In addition, a professional IT-system can increase efficiency and reduce costs also for the buying organization (Teo, Lin, & Lai, 2009, p. 985).

9. Future research and limitations

The first and most notable limitation is the measurement of the variable operational excellence that is acquired from the previous study, which is not explicitly developed for this research. It is necessary to develop a new construct for operational excellence since the questions of the new operative antecedents have much overlap. Because of this, it was not possible to replicate and extend the existing model of supplier satisfaction developed by Vos et al. (2016). Thus, the present study failed to test the influence of the new operational factors as second-tier antecedent on operational excellence. Instead, the direct effect of influential factors on supplier satisfaction was measured. To extend the model of Vos et al. (2016), a new questionnaire should be developed for the measurement the construct of operational excellence, then the operational antecedents of this study can be tested as a second-tier antecedent of operational excellence. This provides the first recommendation for possible future research.

The first round of the data collection was close to the summer vacation, which is a period with much people out of office. This was apparent from the many out of office notification from the suppliers. If the data collection had been conducted outside of this period, it might yield more results. Furthermore, in Qualtrics, it turned out that many respondents did not finish the survey, and several responders marked the length of the questionnaire. Moreover, it was noticeable that the survey's distributed in the early mornings had a higher response rate.

The sample of this study is collected in the defense industry, where suppliers are involved in complex manufacturing, system integration, and high-tech engineering. The product specification and requirement may also change during the purchasing process, for example, requirements that are effected through political decisions. The dynamic of this industry may be different from most of the industries, because of its challenges. Therefore, the results can hardly be generalized to all industry settings. For further research, the newly introduced antecedents could be examined within the different industry and compared with this study, for example, an industry with high volumes and few requirements. For instance, electronic industries, such as telecommunication industry.

From the literature, it became clear that information systems increase the quality of the processes with the supplier. It might be interesting to examine the effect of information systems on supplier satisfaction and preferred customer status. They are looking deeper to see what kind of information systems, the supplier and buyer use, and whether it matters if the buyer and supplier use the same system or not. The results can be impressive because of ongoing trends towards digitalization and industry 4.0.

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Appendix

Appendix A-Survey Items

Vos et al. (2016)	**Contact accessibility**
	There is a contact person within BuyingFirmXY who…
S_Available_10_1	…coordinates the relevant relationship activities within and outside of BuyingFirmXY.
S_Available_10_2	…is, for the employees of our company, the one to contact in regard to partner-specific questions.
S_Available_10_3	…informs employees within BuyingFirmXY firm about the needs of our company.

Vos et al. (2016)	**Growthpotential**
	The relationship with BuyingFirmXY …
S_Growth_20_1	… provides us with a dominant market position in our sales area.
S_Growth_20_2	… is very important for us with respect to growth rates.
S_Growth_20_3	… enables us to attract other customers.
S_Growth_20_4	… enables us to exploit new market opportunities.

Vos et al. (2016)	**Innovation potential**
S_InnovationPot_30_1	In collaborating with BuyingFirmXY, our firm developed a very high number of new products/services.
S_InnovationPot_30_2	In collaborating with BuyingFirmXY, our firm was able to bring to market a very high number of new products/services.
S_InnovationPot_30_3	The speed with which new products/services are developed and brought to market with BuyingFirmXY is very high.

Vos et al. (2016)	**Customer's operative excellence**
	BuyingFirmXY…
S_OperativeExc_40_1	… has always exact and in time forecasts about future demand.
S_OperativeExc_40_2	… provides us with forecasts our firm can rely and plan on.
S_OperativeExc_40_3	… has for our firm simple and transparent internal processes.
S_OperativeExc_40_4	… supports short decision-making processes.
S_OperativeExc_40_5	… stands open for process optimizations.
S_OperativeExc_40_6	… has an optimal payment habit.

Vos et al. (2016)	**Customer's reliability**
	In working with our company, BuyingFirmXY…
S_Collaboration_50_1	… provided a completely truthful picture when negotiating.
S_Collaboration_50_2	… always negotiated from a good faith bargaining perspective.
S_Collaboration_50_3	… never breached formal or informal agreements to benefit themselves.
S_Collaboration_50_4	… never altered facts in order to meet its own goals and objectives.

Vos et al. (2016)	**Support**
	BuyingFirmXY …
S_Support_60_1	… collaborates with us to improve our manufacturing processes or services.
S_Support_60_2	… gives us (technological) advice (e.g. on materials, software, way of working).
S_Support_60_3	… gives us quality related advice (e.g. on the use of inspection equipment, quality assurance procedures, service evaluation).

Vos et al. (2016)	**Involvement**
S_Involvement_70_2	We are early involved in the new product/service development process of BuyingFirmXY.
S_Involvement_70_3	We are very active in the new product development process of BuyingFirmXY.
S_Involvement_70_4	Communication with our firm about quality considerations and design changes is very close.

Vos et al. (2016)	**Customer's relational behavior**
S_RelBehavior_80_1	Problems that arise in the course of the relationship are treated by BuyingFirmXY as joint rather than individual responsibilities.
S_RelBehavior_80_2	BuyingFirmXY is committed to improvements that may benefit our relationship as a whole and not only themselves.
S_RelBehavior_80_3	We each benefit and earn in proportion to the efforts we put in.

S_RelBehavior_80_4	Our firm usually gets at least a fair share of the rewards and cost savings from our relationship with BuyingFirmXY.
S_RelBehavior_80_5	BuyingFirmXY would willingly make adjustments to help us out if special problems/needs arise.
S_RelBehavior_80_6	BuyingFirmXY is flexible when dealing with our firm.
S_CollSpecialist_80_7	The collaboration with this supplier's operational/specialist department is very good.

Vos et al. (2016)	**Economic performance / Profitability**
	The relationship with BuyingFirmXY …
S_Profitability_90_2	... provides us with large sales volumes.
S_Profitability_90_3	... helps us to achieve good profits.
S_Profitability_90_4	... allows us to gain high margins.
S_Profitability_90_5	... has a positive influence on the profitability of our firm.
S_Profitability_90_6	... enables us to raise our profitability together.

Vos et al. (2016)	**Customer Satisfaction**
S_Satisfaction_100_1	Our firm is very satisfied with the overall relationship to BuyingFirmXY.
S_Satisfaction_100_2	On the whole, our firm is completely happy with BuyingFirmXY.
S_Satisfaction_100_3	Generally, our firm is very pleased to have BuyingFirmXY as our business partner.
S_Satisfaction_100_4	If we had to do it all over again, we would still choose to use BuyingFirmXY.
S_Satisfaction_100_5	Our firm does not regret the decision to do business with BuyingFirmXY.
S_Satisfaction_100_6	Our firm is satisfied with the value we obtain from the relationship with BuyingFirmXY.

Essig et al.(2009	**Forecast and planning**
	BuyingFirmXY has…
O_Forecast_1	…exact and timely forecasts about future demand
O_Forecast_2	… provides us with forecasts our firm can rely and plan on
O_Forecast_3	…good time schedule for its orders (no unexpected rush orders)
O_Forecast_4	…adheres to agreements without later changes

Essig et al.(2009)	**Ordering process**
	BuyingFirmXY has…
O_Ordering_1	…no special packaging and delivery requirements
O_Ordering_2	…good support for first-time deliveries
O_Ordering_3	…acceptable and well communicated delivery deadlines
O_Ordering_4	…well-functioning and uncomplicated receiving procedures (inspections)

Essig et al.(2009	**Payment**
	BuyingFirmXY has…
O_Payment_1	…reliable payment habits
O_Payment_2	…quick and unproblematic payment
O_Payment_3	…little interaction need to settle payment

Essig et al.(2009	**Quality of processes:**
	BuyingFirmXY has…
O_QualityPro_1	… has for our firm simple and transparent internal processes
O_QualityPro_2	…sophisticated IT systems
O_QualityPro_3	…uncomplicated and transparent processes
O_QualityPro_4	…state-of-the-art support systems and modern processes
O_QualityPro_5	…supports short decision making processes

Vos et al. (2016)	**Preferred Customer Status**
	Compared to other customers in our firm´s customer base…
PC_PC_110_1	… BuyingFirmXY is our preferred customer.
PC_PC_110_2	… we care more for BuyingFirmXY.

PC_PC_110_3	... BuyingFirmXY receives preferential treatment.
PC_PC_110_4	… we go out on a limb for BuyingFirmXY.
PC_PC_110_5	… our firm's employees prefer collaborating with BuyingFirmXY to collaborating with other customers.
Vos et al. (2016)	**Preferential treatment**
	Our firm…
PC_PrefTreat_120_1	... allocates our best employees (e.g. most experienced, trained, intelligent) to the relationship with BuyingFirmXY.
PC_PrefTreat_120_2	… allocates more financial resources (e.g. capital, cash) to the relationship with BuyingFirmXY.
PC_PrefTreat_120_3	… grants BuyingFirmXY the best utilization of our physical resources (e.g. equipment capacity, scarce materials).
PC_PrefTreat_120_4	… shares more of our capabilities (e.g. skills, know-how, expertise) with BuyingFirmXY.
Vos et al. (2016)	**Customer attractiveness**
	These questions are about the expectations you have of the relationship with BuyingFirmXY.
PC_Attractiveness_126_1	We consider BuyingFirmXY to be an attractive partner for future collaborations.
PC_Attractiveness_126_2	We expect positive outcomes from the relationship with BuyingFirmXY.
PC_Attractiveness_126_3	Our firm has positive expectations about the value of the relationship with BuyingFirmXY.
Vos et al. (2016)	**Control variables**
LNGTH_Relationship_230_1	How long has your company been a supplier of BuyingFirmXY?
LNGTH_Sales[_230_4	How long have you, as a representative of your firm, already been cooperating with BuyingFirmXY?
ORG_DepTurnover_240_2	Please indicate the annual turnover with BuyingFirmXY as % of your total annual turnover
ORG_InfluenceSpecs_242	How much influence does BuyingFirmXY have on your product/service design specifications? (in %, 0=lowest, 100=highest)
ORG_Size_240_3	Number of employees

Appendix B- Comparison of late and early respondents

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Contact	Equal variances assumed	2,279	,135	-,048	88	,962	-,00741	,15503	-,31550	,30069
	Equal variances not assumed			-,048	83,478	,962	-,00741	,15503	-,31574	,30092
Satisfaction	Equal variances assumed	,116	,734	1,387	88	,169	,19630	,14150	-,08490	,47749
	Equal variances not assumed			1,387	87,729	,169	,19630	,14150	-,08491	,47750
forecast	Equal variances assumed	,256	,614	1,318	88	,191	,24444	,18552	-,12423	,61312
	Equal variances not assumed			1,318	87,970	,191	,24444	,18552	-,12423	,61312
Ordering	Equal variances assumed	,400	,529	1,087	88	,280	,16667	,15327	-,13793	,47126
	Equal variances not assumed			1,087	87,988	,280	,16667	,15327	-,13793	,47126
Payment	Equal variances assumed	1,396	,241	,443	88	,659	,08148	,18391	-,28401	,44697
	Equal variances not assumed			,443	82,243	,659	,08148	,18391	-,28437	,44733
Process	Equal variances assumed	,029	,865	,933	88	,353	,13333	,14289	-,15062	,41729
	Equal variances not assumed			,933	87,611	,353	,13333	,14289	-,15064	,41731

Appendix C- Principal Component Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8,485	38,567	38,567	8,485	38,567	38,567
2	2,282	10,372	48,939	2,282	10,372	48,939
3	2,040	9,272	58,211	2,040	9,272	58,211
4	1,700	7,728	65,939	1,700	7,728	65,939
5	1,234	5,611	71,550	1,234	5,611	71,550
6	,904	4,109	75,659			
7	,751	3,414	79,073			
8	,616	2,802	81,874			
9	,572	2,599	84,473			
10	,474	2,155	86,628			
11	,436	1,983	88,611			
12	,387	1,757	90,368			
13	,378	1,718	92,086			
14	,314	1,428	93,514			
15	,282	1,283	94,797			
16	,228	1,035	95,832			
17	,192	,872	96,704			
18	,184	,835	97,539			
19	,152	,690	98,229			
20	,140	,636	98,864			
21	,136	,620	99,484			
22	,114	,516	100,000			

Extraction Method: Principal Component Analysis.