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When are Brands or Relationships More Important in B2B? A Moderation Analysis of a Proposed Model

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## 1.0 Summary

Although recent B2B marketing research suggest that branding and relationships are of importance to firm performance, no research examines how these constructs act in the same model. We try to merge these two streams of literature by 1) proposing a model wherein branding and relationships are included as independent variables predicting the dependent variable share of wallet (SOW), 2) testing whether these constructs substitute each other depending on the context of the transaction, and 3) testing the moderating effects of purchase characteristics, relationship characteristics, buyer characteristics, and market characteristics.

Our email survey collects qualitative and quantitative data among 131 Norwegian firms' purchasing managers across different industries. Given the relatively small data set of complete responses, we conduct a PLS-SEM analysis using the SmartPLS 3 (Ringle, Wende and Becker 2015) software.

Our findings cannot substantially support that there exists a substitution effect between brand and relationships as we are unable to confirm the related hypotheses. Despite the lack of evidence regarding substitution, we do find significant main effects of brand knowledge and relationship quality on SOW. The most important contribution of this study is the five moderating effects. First, when customer-perceived value (CPV) is high, relationship quality has a larger effect on SOW. Second, when relationship specific investments (RSI) are high, relationship quality has a larger effect on SOW. Third, when buying center heterogeneity (BCH) is high, relationship quality has a larger effect on SOW. Fourth, when buying center time pressure (BCTP) is high, brand has a smaller effect on SOW. Finally, brand has a larger effect on SOW for services than for products.

We argue that our study has important theoretical and managerial implications as we are among the first to align relationship marketing and brand management research in the B2B field. We also suggest several future research directions.

**Keywords:** B2B marketing, brand awareness, brand image, brand knowledge, brand identification, partial least squares structural equation modeling (PLS-SEM), relationship commitment, relationship trust, relationship satisfaction, relationship quality, service quality, share of wallet (SOW).

## 2.0 Introduction

In the business-to-business (B2B) literature, relationship marketing strategies have been given much, and well deserved attention (Ulaga and Eggert 2006). Business relationships vary in quality, and the quality of relationships can be split into many different antecedents and constructs. Throughout this thesis, relationship quality will be broken down into four major constructs: perceived service quality, relationship satisfaction, relationship commitment, and trust, as suggested by Rauyruen and Miller (2007). During the last few decades, many managers in B2B industries have started developing and investing in their brands (Worm and Srivastava 2014). There is, however, no clear understanding of how brand management and brand knowledge work in tandem with relationship management. The notion of a so-called substitution effect, that is, as relationships become more important for trade, brands might lose some of their importance, has been touched upon by Leek and Christodoulides (2011, 2012) and Ravald and Grönroos (1996). However, no study has put serious effort into investigating such a substitution effect. Perhaps the closest study to date is Worm and Srivastava (2014), who introduces relationship quality as a moderator in a triadic supply chain, and thus takes the first and necessary step to align the two different streams of literature. Thus, our aim is to answer the following research question:

### **Research question:**

*“Do brands and relationships act as substitutes in B2B markets? Under which conditions do brand and relationship importance differ regarding customer outcomes (decisions)?”*

The term substitution in this regard might be confusing, and calls for a better explanation. We suspect that both brands and relationships are important for explaining the patterns of trade between suppliers and customers in B2B markets. However, we further expect that as relationships grow more important for the extent of trade between partners, brands will start to lose some of their explanatory power. That is, as one of the two increases in importance, the other will decrease. Note also that the absolute value of the coefficients of either of these variables is not at the core of this research. Our focus is rather on the changes in coefficients, and how these changes differ as the external and internal nature of the transactions change.

We contribute to this literature in two ways. First, we investigate whether there is some form of a substitution effect between brands and relationships. Second, we perform an extensive moderator analysis. We examine the internal and external characteristics of the relationships and specific transactions. This may help practitioners to improve their marketing efforts (e.g., brand management, relationship management, or a combination of both).

We have divided this thesis into seven main chapters: *Chapter 1.0* and *Chapter 2.0* includes the summary and introduction. In *Chapter 3.0* we provide a literature review of previous research on branding (both B2C and B2B) and relationship marketing. We identify a lack of research combining branding and relationship management theories. *Chapter 4.0* starts with a proposed model that presents the framework for our further efforts. We describe the development of our research hypotheses and elaborate upon our set of moderators. In *Chapter 5.0* we explain our research methodology, sampling procedure, questionnaire, data collection, and PLS-SEM analysis. *Chapter 6.0* present the results of our exploratory factor analysis (EFA) conducted in SPSS, confirmatory factor analysis (CFA) conducted in SmartPLS 3, our multi-group analysis, linear regressions, and assess measures of reliability and discriminant validity. In *Chapter 7.0*, we discuss the theoretical and managerial implications, study limitations and future research directions.

## 3.0 Literature Review

### 3.1 B2B Branding: Brand Awareness, Brand Image and Brand Identification

Prior research on branding has mainly focused on business-to-consumer (B2C) markets while branding in B2B markets has received much less attention. Robinson, Faris and Wind (1967) have claimed that B2B branding is irrelevant to firm performance (cited in Leek and Christodoulides 2011). More recent research points to challenges that make research on B2B marketing difficult. According to Lilien (2016), these challenges are a result of the complex nature of the B2B environment, difficulties with gathering data, and lack of B2B knowledge among researchers.

However, there has been an emergence of research suggesting that B2B branding plays a crucial role for B2B firms (Cretu and Brodie 2007; Homburg, Klarmann and Schmitt 2010; Mudambi 2002; Webster Jr and Keller 2004; Worm and Srivastava 2014).

Hutton (1997) has examined the effects of brand equity on organizational buyers. More specifically, he has found that high brand equity increases both 1) buyers' willingness to pay a price premium and 2) customer loyalty. These effects are moderated by several factors, such as the level of required service (e.g., support), complexity of the product, consequences of product failure, and time and/or resource constraints. In other words, Hutton's research has showed that B2B branding *influenced firm performance* through more loyal customers and higher price premiums.

In their study of similarities and differences between B2C and B2B branding, Webster Jr and Keller (2004) argue that it is wrong to assume that branding is more important in B2C markets than it is in B2B markets. They do so by referring to the many well-known B2B brands present among the world's most valuable brands (e.g., IBM, Intel, and Microsoft).

Furthermore, Mudambi (2002) studies branding in B2B markets and examine the buyers' perceived importance of branding. She identifies three clusters of organizational buyers that are either 1) branding receptive, 2) highly tangible, or 3) low interest. The most interesting finding is that the *branding receptive cluster* (e.g., the firms that are most concerned with the brand) accounts for 37% of respondents among UK firms.



Cretu and Brodie (2007) distinguish between brand image and company reputation, and investigate whether these factors have influence on the perceived product and service quality, customer value, and customer loyalty. They find that brand image particularly *influences perceptions of product and service quality*. On the other hand, perceptions of customer value and customer loyalty are influenced by company reputation.

In their analysis of multiple B2B firms, Homburg, Klarmann and Schmitt (2010) examine whether brand awareness drives firm performance, and if so, under which conditions. First, they find that brand awareness is a *significant driver of firm performance*. Second, they show that this effect is *moderated by several market and product characteristics* such as product homogeneity, technical turbulence, buying center heterogeneity and time pressure in the buying process.

Also, Worm and Srivastava (2014) find that component suppliers (CS) can enable customer pull on intermediary firms, such as original equipment manufacturers (OEMs), using brand management. However, this effect is found to be strongly moderated by certain industry-level factors (e.g., strength of relationships between end-customers and OEMs, and CS' industry differentiation). Thus, recent research shows that brands are important to B2B firms.

The complexities, challenges, and lack of research within many areas of B2B marketing has resulted in differing branding definitions. According to the American Marketing Association (AMA) a brand is *“a name, term, sign, symbol, or a combination of them, that is intended to identify the goods and services of one seller or a group of sellers and to differentiate them from those of competitors.”* (Kotler and Keller 2015, 146). Hence, a company's brand is tangible and helps decision makers to navigate through the ocean (or noise) of other competing brands. Note that a brand is also intangible. As Webster Jr and Keller (2004, 389) explain, *“the power of a brand resides in the minds of customers”*. Thus, we describe a brand as consisting of both tangible assets (e.g., logo, term, etc.) and intangible assets (e.g., feelings, thoughts, etc.).

Keller (1993) has developed the customer-based brand equity model (CBBE) which explains how firms should use brand as a way of improving market performance. In doing so, he has also introduced the broad and complex term **brand knowledge**, which is defined as *“the personal meaning about a brand stored in consumer memory, that is, all descriptive and evaluative brand-related information”* (Keller 2003, 596). Brand knowledge is also the overarching term of

both brand awareness and brand image. According to Keller (1993, 3), **brand awareness** is defined as “*the likelihood that a brand name will come to mind and the ease with which it does so.*”. In other words, the higher the awareness of a brand, the more likely a consumer (or firm) is to think of that brand. Keller (1993) further divides brand awareness into brand recall and recognition, where brand recognition simply is the ease of remembering a brand when exposed to it, while brand recall refers to the ease of remembering a brand when exposed to other types of cues (e.g., product category, needs fulfilled by the category, or other types of cues).

Keller (1993, 3) defines **brand image** as “*perceptions about a brand as reflected by the brand associations held in consumer memory*”. Keller (1993) further classifies brand associations into three categories: attributes, benefits, and attitudes. *Attributes* are descriptive and either product-related (e.g., car engine) or non-product related (e.g., packaging or product appearance information). *Benefits* refer to the consumers’ personal value of a product/service, and are either functional (e.g., horsepower in a motorcycle engine), experiential (e.g., handling or throttle response), or symbolic (e.g., design, or sound of the exhaust). *Attitudes* consider the “*consumers’ overall evaluations of a brand*” (Wilkie 1986, cited in Keller 1993, 4). Thus, brand image and its associations consider product-related (or tangible) and non-product-related (or intangible) attributes. According to Keller (1993), these brand associations also differ based on their favorability, strength, and uniqueness. First, *favorability* means that brand associations should create value to customers to positively affect behavior (Worm, 2011). Second, *strength* is a measure of how fast attributes are retrieved when a brand node is activated (Worm, 2011). Third, *uniqueness* simply refers to the rarity of brand associations. Hence, brand associations are more unique when there are less competing brands with similar brand associations. In turn, unique brand associations translate into more customers willing to buy that brand (Worm, 2011).

Another important aspect of a brand is brand attachment. According to Park et al. (2010, 2), **brand attachment** is defined as “*the strength of the bond connecting the brand with the self*”. Hence, brand attachment is related to the emotions and feelings a brand evokes, and to what extent these emotions and feelings match the identity of an individual (ref. firm). The better the fit, the higher the brand attachment. Furthermore, Park et al. (2010) investigate the difference in predictive power between brand attachment and brand attitude strength. They find that brand attachment is better than brand attitude strength in predicting 1)

consumers' intentions to perform difficult behaviors (those they regard as using consumer resources), 2) actual purchase behaviors, 3) brand purchase share (the share of a brand among directly competing brands), and 4) need share (the extent to which consumers rely on a brand to address relevant needs, including those brands in substitutable product categories). We prefer the terminology **brand identification** instead of brand attachment, as this better reflects the meaning of the construct.

Note however, that these definitions of brand awareness, brand image, and brand identification are all drawn from the B2C marketing literature. They refer to the perceptions of the consumer, not the buying firm. It is important to define these terms in a B2B context. Despite the differences between B2C and B2B, recent literature within B2B marketing show that Keller's (1993) definitions of brand knowledge, brand awareness, and brand image are applicable to B2B marketing (Davis, Golicic and Marquardt 2008; Gupta, Melewar and Michael 2010; Webster Jr and Keller 2004). Thus, given the extensive literature on brand measures, we have chosen to rely on that of Keller (1993), measuring brand knowledge as the combination of brand awareness and brand image.

That being said, some constructs can be modified to better suit a B2B environment. Homburg, Klarmann and Schmitt (2010, 202) have modified the definition of brand awareness into "*the ability of the decision makers in organizational buying centers to recognize or recall a brand*". Their definition brings up an important notion, that the buyer differs between B2C and B2B markets. While the consumer is the buyer in B2C, the firm is the buyer in B2B.

### 3.2 Branding and Relationships

Worm and Srivastava (2014) study a B2B2B triadic context, where they look at the supply chain consisting of component suppliers (CS) at the bottom, original equipment manufacturers (OEM) as intermediary firms, and B2B end customers at the top. They find that end customers perception of CS brand image has a significant effect on CS financial outcomes (measured by return on sales), but that this effect is strongly moderated by CS industry product differentiation, CS industry technology intensity, OEM-end customer relationship strength, and brand importance in OEM industry. By introducing relationship measures as moderators in a brand study, they take the first and necessary step in merging the two streams of literature.

Leek and Christodoulides (2011) argue that the importance of branding could be expected to decline as organizational relationships mature. However, they acknowledge that the brand could be a powerful determinant in the initial phases of an interaction when deciding who to do business with. In a more recent paper, Leek and Christodoulides (2012, 111) explain that “ *managers need to link them (ref. firms) together as the brand value may act as a driver for the formation of relationships (so people trust the brand and then build up the relationship)*”. In B2C markets, having a strong brand should increase customer loyalty (Keller 2012, 35). In McQuiston (2004)’s case study of B2B firms within the commodities market (e.g., steel), there is evidence stating that branding initiatives may play a crucial role in customer retention and in obtaining larger market share. Hence, if we were to trust prior research in that branding importance declines as relationships mature, branding may still be crucial to catch buyers’ attention, get an agreement, and start building a relationship. These beliefs have also been suggested by Ravald and Grönroos (1996).

Table 1, Branding Literature Review

| <b>Author(s)</b>                     | <b>Brand metric (IV)</b>  | <b>Sample</b>                   | <b>Performance metric (DV)</b>            | <b>Moderator(s)</b>   | <b>Relevance</b>  |
|--------------------------------------|---|---------------------------------|---|---|---|
| Cretu and Brodie (2007)              | Brand image   | Single B2B industry             | Attitudinal loyalty                       | None  | Use brand image in B2B marketing research   |
| Davies, Golicic and Marquardt (2008) | Brand awareness<br>Brand image  | Multiple B2B services           | Brand equity                              | None  | Show that the CBBE-framework is applicable to B2B marketing research                          |
| Gupta, Melewar and Michael           | Brand knowledge   | Single B2B industry (IT brands) | Brand selection by resellers              | Brand representatives   | Use brand knowledge in B2B marketing research   |
| Homburg, Klarmann and Schmitt (2010) | Brand awareness   | Multiple B2B industries         | Return on sales                           | Market characteristics <ul style="list-style-type: none"> <li>• Product homogeneity</li> <li>• Technological turbulence</li> </ul> Buyer characteristics <ul style="list-style-type: none"> <li>• Buying center size</li> <li>• Buying center heterogeneity</li> <li>• Time pressure</li> </ul> | Use brand awareness in B2B marketing research   |
| Hutton (1997)                        | Brand awareness<br>Brand preference   | Three B2B products              | Willingness to pay<br>Attitudinal loyalty | Product attributes<br>Buying situation  | Use brand awareness in B2B marketing research.  |
| Keller (1993)                        | Brand awareness <ul style="list-style-type: none"> <li>• Recall</li> <li>• Recognition</li> </ul> Brand image | B2C                             | None                                      | None  | Keller (1993)'s definitions of brand awareness and brand image are at the core of our thesis. |
| Keller (2003)                        | Brand knowledge   | B2C                             | None                                      | None  | Keller (2003)'s definition of brand knowledge is at the core of our thesis.                   |
| Leek and Christodoulides (2011)      | Branding  | B2B                             | None                                      | None  | Discussion of prior B2B literature.   |

|                              |   |                         |  |   |   |
|------------------------------|---|-------------------------|--|---|---|
| Lilien (2016)                | The B2B knowledge gap   | B2B                     | None   | None  | Identify key challenges with B2B marketing research.  |
| McQuiston (2004)             | Branding  | Single B2B supplier     | None   | None  | Explain how a B2B firm (e.g., RAEX LASER) successfully incorporated B2B branding.   |
| Mudambi (2002)               | Branding  | Multiple B2B industries | Brand importance   | Purchase characteristics<br>Buyer characteristics   | Identify three clusters of B2B buyers <ul style="list-style-type: none"> <li>• Branding receptive</li> <li>• Highly tangible</li> <li>• Low interest</li> </ul> |
| Park et al. (2010)           | Brand attachment (ref. Brand identification)<br>Brand attitude strength   | Three B2C brands        | Consumer's willingness to use resources<br>Actual purchase behaviors<br>Brand purchase share<br>Need share | None  | Park et al. (2010)'s definition of brand attachment (or brand identification) is at the core of our thesis.   |
| Webster Jr and Keller (2004) | Branding  | B2B                     | None   | None  | Outlines characteristics and offer guidelines to successful B2B branding.   |
| Worm and Srivastava (2014)   | Brand image   | Multiple B2B industries | Return on sales (ROS)  | Relationship quality<br>Customer perceived value  | Show the importance of brand in certain B2B industries. The first to incorporate relationship quality as a moderator in a B2B brand study.                      |
| Current study                | Brand knowledge <ul style="list-style-type: none"> <li>• Brand image</li> <li>• Brand awareness</li> </ul> Brand identification | Multiple B2B industries | Share of wallet (SOW)  | Buyer characteristics<br>Market characteristics<br>Purchase characteristics<br>Relationship characteristics |   |

### 3.3 Relationship Quality: Trust, Commitment, Satisfaction and Service Quality

Hennig-Thurau, Gwinner and Gremler (2002, 234) describe relationship quality as “*the overall nature of relationships*”. It is generally agreed that trust, satisfaction and commitment are key concepts in explaining relationship quality (Hennig-Thurau, Gwinner and Gremler 2002; De Wulf, Odekerken-Schröder and Iacobucci 2001; Kumar, Scheer and Steenkamp 1995). Rauyruen and Miller (2007) use four components of relationship quality, relying on trust, satisfaction, commitment and overall service quality. This is also how we will conceptualize relationship quality in our study, and these four components will be discussed further in the following section.

First, Moorman, Zaltman and Deshpande (1992, 315) define **trust** as “*a willingness to rely on an exchange partner in whom one has confidence*”. Morgan and Hunt (1994) find that shared values positively influence trust. Doney and Cannon (1997) further discuss trust building processes, considering the *calculative process*, *prediction process*, *capability process*, *intentionality process*, as well as the *transference process*. Based on their findings, it is likely that developing a strong, and clearly communicated brand image will enable trust through the prediction process in that the brand image will inform customers’ expectations of a firm’s performance and values. Further, through clear and concise brand communication, it is more likely that relationship partners are relatively similar, enabling a *process of intentionality*. This potential outcome of branding is also suggested by Homburg, Wieseke and Hoyer (2009).

Aaker and Jacobson (2001) argue that in the presence of rapid technological change, it becomes increasingly difficult for buyers to logically evaluate all offerings, and thus that it is in the brand name that customers place their trust. This statement is further supported by Rauyruen and Miller (2007) who find that trust in the supplier organization has a direct effect on loyalty, where trust in the supplier’s employees play no significant role.

Michell, King and Reast (2001) find that professional marketers believe branded products, when compared to non-branded products, enhance confidence in the purchase decision, and act as a substantiation of corporate credibility. These findings lead us to believe that for relationships in stages where trust has not yet been established, or in environments where relationships are not able to develop, customers need to place their trust in something else, and that this entity is the brand. Stated differently, in situations where relationships do not have a high impact

on the patterns of trade (e.g., environment do not stimulate relationship development, or relationships are at an early stage), brand knowledge could be expected to be more important.

Second, Morgan and Hunt (1994) find **commitment** to be another key mediating factor for successful relationship marketing. Commitment can be defined as “*an enduring desire to maintain a valued relationship*” (Palmatier et al. 2006, 138). Morgan and Hunt (1994) also find that trust positively influences commitment. Rauyruen and Miller (2007) find that commitment to the supplier’s organization, not the employees, drives loyalty. This finding indicates that the appropriate level of analysis for relationship quality is on organizational relationships, not interpersonal relationships.

Third, **relationship satisfaction** is also found to be an important predictor of relationship quality (Morgan and Hunt 1994) and share of purchases (Reynolds and Beatty 1999). Reynolds and Beatty (1999) find that functional benefits positively influence satisfaction. In their analysis, functional benefits include *confidence benefits* (Gwinner, Gremler and Bitner 1998), a construct largely similar to trust, lending further support to trust and relationship satisfaction as two of the key components of relationship quality.

Finally, we have included **overall service quality** as a determinant of relationship quality, in line with the model tested by Rauyruen and Miller (2007). Lewis and Booms (1983) define service quality as “*a measure of how well the service delivered matches customer expectations*” (cited in Parasuraman, Zeithaml and Berry 1985, 42). Intuitively this makes sense; at the core of all B2B-relationships is the trade of products and services, and it is reasonable to assume that the quality of the relationship is positively influenced by higher quality in product/service delivery. Rauyruen and Miller (2007) further find that *overall service quality* is the strongest impact of all determinants on both *purchase intentions* and, perhaps more importantly, *attitudinal loyalty*. This suggests that high service quality creates strong and long-lasting relationships.



Table 2, Relationship Literature Review

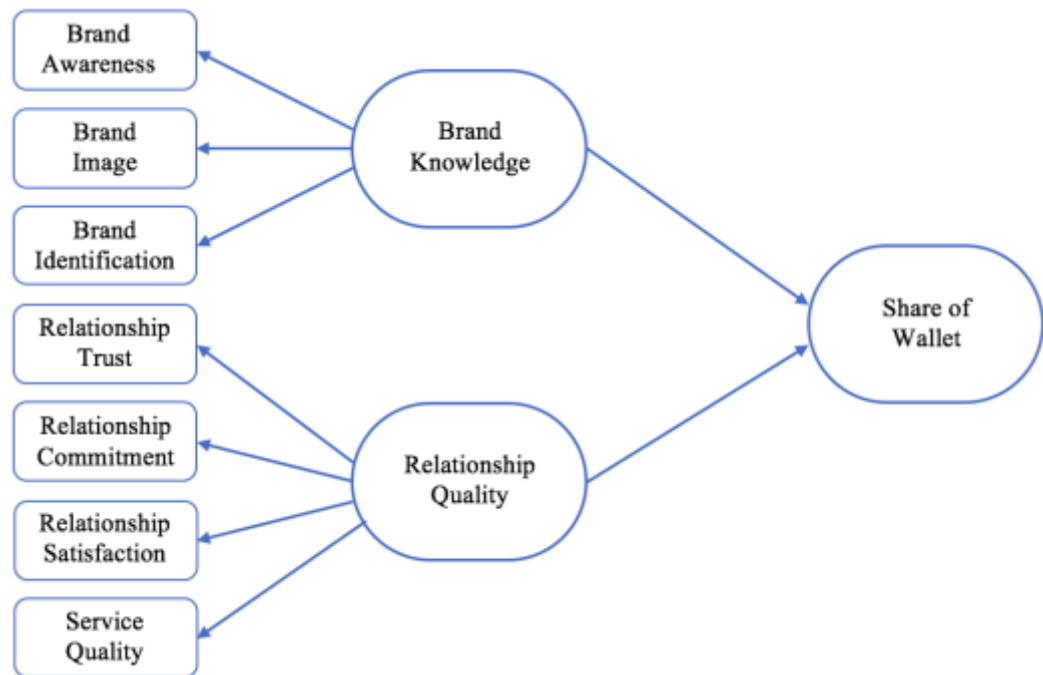
| <b>Construct</b>          | <b>Definition</b>  | <b>Relevant papers</b>   | <b>Common antecedents</b>                        | <b>Common outcomes</b>  |
|---------------------------|--|--|--|---|
| Relationship quality      | “The overall nature of relationships between companies and [customers]” (Hennig-Thurau, Gwinner and Gremler 2002)  | De Wulf, Odekerken-Schröder and Iacobucci (2001); Caceres and Paparoidamis (2007); Palmatier et al. (2006); Rauyruen and Miller (2007) | Trust, commitment, satisfaction, service quality | Seller objective performance (sales, share of wallet, profit performance) |
| Trust                     | “The willingness to rely on an exchange partner in whom one has confidence” (Moorman, Zaltman and Deshpande 1992)  | Moorman, Zaltman and Deshpande (1992); Doney and Cannon (1997); Morgan and Hunt (1994)   | Shared values, credibility, benevolence          | Commitment, loyalty, customer satisfaction                                |
| Relationship commitment   | “An enduring desire to maintain a valued relationship” (Palmatier et al. 2006)   | Rauyruen and Miller (2007); Morgan and Hunt (1994); Palmatier et al. (2006)  | Trust  | Loyalty   |
| Relationship satisfaction | “Customer’s affective or emotional state toward a relationship, typically evaluated cumulatively over the history of the exchange” (Palmatier et al. 2006) | Morgan and Hunt (1994); Reynolds and Beatty (1999); Gwinner, Gremler and Bitner (1998)   | Trust  | Share of purchases  |
| Overall service quality   | “Service quality is a measure of how well the service level delivered matches customer expectations” (Lewis and Booms 1983)                                | Rauyruen and Miller (2007)   | -  | Attitudinal loyalty, purchase intentions                                  |

## 4.0 Development of Hypotheses

In this chapter, we present our proposed model and research hypotheses. These research hypotheses are related to both main effects and moderating effects.

### 4.1 Proposed Model

Based on our literature review, we have developed a proposed model as illustrated in *Figure 1*. This proposed model sets the foundation for our hypothesis development, questionnaire design, data-collection process, and sample selection. We explain each construct that is included in the model, and we test the underlying mechanisms by using both EFA and CFA. This will be thoroughly explained in chapters 5 and 6.



*Figure 1. Proposed Model*

### 4.2 Main Effects

As discussed thoroughly in the literature review, B2B branding has positive effects on customer loyalty (Hutton 1997; Cretu and Brodie 2007), willingness to pay price-premiums (Hutton 1997), firm performance (Homburg, Klarmann and Schmitt 2010), perceived product and service quality (Cretu and Brodie 2007), and end-customer pull (Worm and Srivastava 2014).

Loyal customers increase the amount of repeat purchases, and is important to firm's sustainability and long-term profitability (as loyal customers buy products/services despite economic fluctuations). If customers are willing to pay a price premium, it means that firms can charge a higher price than its competitors, and hence firms increase their profitability. Similarly, if customers perceive the quality of the product/service to be high, they are also willing to pay a higher price to acquire the desired product/service. A higher end customer pull means that customers have a higher demand for a product/service. Higher demand means more sales, which in turn translates to increased profitability. Thus, B2B branding increase demand for products/services, willingness to pay a price premium, improve perceptions of product/service quality, which in turn increase profits and firm performance. That is, all B2B branding effects suggest a positive effect on share of wallet. Therefore, we expect that brand knowledge (ref. B2B branding) has a positive effect on share of wallet (SOW).

*H1: Brand knowledge has a positive effect on share of wallet.*

Further, relationship quality is found to have a positive effect on behavioral loyalty (De Wulf, Odekerken-Schröder and Iacobucci 2001; Caceres and Paparoidamis 2007), seller objective performance, which includes SOW (Palmatier et al. 2006), and attitudinal loyalty (Rauyruen and Miller 2007). If customers exhibit behavioral loyalty, they are likely to award more of their purchases in the category to the preferred supplier. Therefore, we expect that there exists a positive relationship between relationship quality and SOW.

*H2: Relationship quality has a positive effect on share of wallet.*

#### 4.3 Moderating Effects

The assumption that there exists some sort of substitution effect between brands and relationships in B2B transactions is at the core of our thesis. The nature of this potential substitution effect is likely to rely on several moderators such as type of purchase characteristics, market characteristics, relationship characteristics, buying center characteristics, and buying organization characteristics. We wish to estimate the coefficients for brand knowledge and relationship quality simultaneously. In addition, we repeat these estimations while introducing

moderating effects. Ultimately, we want to test the difference in the coefficients, for different levels on the moderating variables. Although the list of moderators is extensive and grounded in literature, as we will show, this is hardly an exhaustive list, and we run the risk of excluding important moderators, as well as likely excluding important control variables in our relatively simple model. Thus, the coefficients may be overestimated or underestimated. As this is a moderator analysis, however, we accept this risk, as the relative changes in the coefficients are more important to answer our research questions than the absolute and precise coefficients.

#### 4.3.1 Purchase Characteristics

Among our moderators, some are related to the specific purchase: the customer's perceived value of the purchased product or service, whether the purchase is product based or service based, and the customer's perceived risk of the purchase. We will now present these in more detail, and outline hypotheses accordingly.

##### 4.3.1.1 Customer Perceived Value

Hansen, Samuelsen and Silseth (2008) define customer perceived value (CPV) as “*the benefits received by the customer divided by the resources sacrificed to acquire them*”, or in other words, the relative value of “*what you get for what you give*”. They show that CPV has a significantly negative effect on the customer's search for alternatives. Their argumentation is that this reflects how CPV is a necessity for development of relationships.

If customers perceive a high value of a product/service, it is reasonable to assume that they are less willing to search for other alternatives. Here, value is measured by the extent to which a product/service satisfies customer's needs. When a customer firm has found a satisfying product/service, it is waste of time and resources to search for other alternatives. The customer firm becomes loyal to the product/service provider, and a relationship is created. Thus, when CPV is high, we expect the customer to rely heavily on the relationship, and less so on the brand, given that the quality of the relationship is satisfactory:

*H3.1: When CPV is high, brand knowledge has a smaller effect on share of wallet.*

*H3.2: When CPV is high, relationship quality has a larger effect on share of wallet.*

#### *4.3.1.2 Product Purchases vs. Service Purchases*

We rely on the simplest definition of services, building on the goods-dominant logic, as explained by Vargo and Lusch (2008). In their definition, goods form the basis of transactions, and services are seen as “intangible” goods (e.g., a lawyer performing legal services) or add-ons to goods (e.g., delivery or maintenance of goods). Historically, most B2B firms have sold physical products such as steel, aluminum, oil, coal, etc. However, today’s B2B firms have a much more service-oriented approach. Elaborating on the unique service characteristics proposed by Zeithaml, Parasuraman and Berry (1985), Palmatier et al. (2006) argue that service purchases will entail a closer interaction between the buyer and seller. A relationship is optimal for close interactions between buyer and seller firms as it firms establish trust and commitment. Thus, we argue that relationship marketing is more important for service purchases than product purchases. If brands do indeed lose importance when relationships come into play, as suggested in the literature, we should expect to see brands being less important when services are purchased, in our combined model. This gives us the following hypotheses:

*H4.1: If the purchase is, in part or exclusively, service-based, brand knowledge has a smaller effect on share of wallet.*

*H4.2: If the purchase is, in part or exclusively, service-based, relationship quality has a larger effect on share of wallet.*

However, one could argue that products and services differ in terms of *search* and *experience qualities* (Nelson 1974). Where different product offerings are relatively easy to distinguish in terms of technical attributes, material choices, and design (depending of course on the complexity of the product), the quality of a service must be experienced. The higher degree of experience qualities increases the risk in the purchase. Having a strong and well-known brand can minimize this risk for the buying center by providing information about the service and expected quality. We will come back to risk in the next section, but for now, this gives ground for an alternative hypothesis; brands should be expected to be more important for

services. Again, if there is substitution, this should lead to relationship quality having a relatively smaller effect. Therefore, we hypothesize that:

*H4.1<sub>alt.</sub>: If the purchase is, in part or exclusively, service-based, brand knowledge has a larger effect on share of wallet.*

*H4.2<sub>alt.</sub>: If the purchase is, in part or exclusively, service-based, relationship quality has a smaller effect on share of wallet.*

#### 4.3.1.3 Perceived Purchase Risk

Dowling and Staelin (1994) define perceived purchase risk (PPR) as “...*the perception of the uncertainty and adverse consequences associated with buying a product*” (cited in Brown et al. 2011). Furthermore, Brown et al. (2011) explain that there exists a U-shaped relationship between perceived risk and brand sensitivity. That is, for both high and low levels of PPR, buying centers are more sensitive to branding initiatives, while for moderate PPR, branding is relatively less important. The basic argument behind this U-shaped relationship is that, when PPR is very low, buying centers tend to rely on heuristics (such as well-known brands) rather than on information processing. This is due to the buying centers having no incentive to initiate in an extensive consideration of alternatives. As the risk increases, this incentive increases, and thus brand sensitivity decreases. However, since buying centers have a limited ability to process information, brand sensitivity will increase as a risk-reducing measure for very high levels of PPR.

Following the argumentation in Brown et al. (2011), we expect brands to be relatively more important for decision makers when the PPR is either relatively low or high, and relatively less important when perceived purchase risk is moderate. As we want to test whether brands substitute relationships, and vice versa, we test the following hypotheses:

*H5.1: In low PPR situations, brand knowledge has a larger effect on share of wallet.*

*H5.2: In low PPR situations, relationship quality has a smaller effect on share of wallet.*

*H6.1: In moderate PPR situations, brand knowledge has a smaller effect, and relationship quality has a larger effect on share of wallet.*

*H6.2: In moderate PPR situations, relationship quality has a larger effect on share of wallet.*

*H7.1: In high PPR situations, brand knowledge has a larger effect on share of wallet.*

*H7.2: In high PPR situations, relationship quality has a smaller effect on share of wallet.*

When considering relationships, there is an alternative line of argumentation that deserves consideration. In low PPR purchases, there is a lack of incentives to stay in relationships (Brown et al. 2011). However, as the risk increases, the incentive also increases. If the relationship's risk-reducing effect overshadows the risk-reducing effect of brand knowledge, we should see relationships having the larger effect in high PPR purchases when included in the model. This gives ground to an alternative hypothesis for *H6*:

*H7.1<sub>alt.</sub>: In high PPR situations, brand knowledge has a smaller effect on share of wallet.*

*H7.2<sub>alt.</sub>: In high PPR situations, relationship quality has a larger effect on share of wallet.*

#### 4.3.2 Relationship Characteristics

In the following, we will present characteristics of the specific relationship that we suspect may moderate the effects of brands and relationship quality: the duration and maturity of the relationship, and the seller's relationship specific investments.

##### 4.3.2.1 Relationship Duration

We define relationship duration as *the time that has passed since two parties engaged in the first transaction between them*. Relationship duration may play a critical moderating role on the substitution effect of brands and relationship. Less mature relationships may be more dependent on brand knowledge, as there exists little history to base the quality of the relationship on. Further, in order to be part of the consideration set for new tasks or as a new supplier, one must be known and available to customers. Brand knowledge could be one way to influence the likelihood of being included in the consideration set. Assuming that some brand

sensitivity exists, brand knowledge should further increase the chances of being chosen among the alternatives.

For more mature relationships, however, it is likely that the relationship itself, and the quality thereof, is more important for current and future behavior, and thus that importance of brands decrease over the duration of relationships as the relationship quality's importance increases. This notion is briefly touched upon by Leek and Christodoulides (2011) who argue that brands may be more important for transactional (short-term) relationships, than it is for long-term relationships, where factors such as trust and reliability are likely to become more important. Similarly, Ravald and Grönroos (1996) argue that brand/image could be important for the likelihood of being chosen, but is likely less important in established, long-term relationships. Therefore, we have the following hypotheses:

*H8.1: In mature relationships, brand knowledge has a smaller effect on share of wallet.*

*H8.2: In mature relationships, relationship quality has a larger effect on share of wallet.*

#### *4.3.2.2 Relationship Specific Investments*

According to Wang et al. (2015), relationship specific investments (RSI) can be either property-based or knowledge-based. Property-based RSI are those where tools, equipment or people are dedicated to the transactions of one specific relationship with one specific trade partner. Knowledge-based RSI refer to investments in knowledge assimilation, training, and dynamic specification of the supply. Wang et al. (2015) further find that RSI have a positive impact on loyalty to the seller firm, and loyalty to the salesperson. A similar construct, "support provided", is identified and tested by Anderson and Weitz (1989) as an antecedent of trust in relationships. They find that support positively influences trust in the relationship. Palmatier et al. (2013) investigate the effect of "bilateral investment capabilities" on relationship commitment velocity, and finds a positive effect.

These findings lead us to believe that RSI play an important moderating role for the substitution of brands and relationships. As RSI increase, we expect the relationship to increasingly overshadow brands in predicting SOW:



*H9.1: When RSI are high, brand knowledge has a smaller effect on share of wallet.*

*H9.2: When RSI are high, relationship quality has a larger effect on share of wallet.*

#### 4.3.3 Buyer Characteristics

We have also chosen to include two moderators relating to the buying organization's buying center, that we expect to moderate the estimated effects: the heterogeneity amongst the buying center's members, the time-pressure felt by the buying center members, and the size of the buying organization.

##### 4.3.3.1 Buying Center Heterogeneity

According to Homburg, Klarmann and Schmitt (2010, 203-204) buying center heterogeneity (BCH) is "... *the variety of individuals in the buying center with respect to their prior knowledge, functional background, and objectives*". If BCH is high, the buying center members "*have diverse functional backgrounds, work in different departments and on different hierarchical levels, and may have different roles within the purchasing process*", which should allow for a more objective evaluation of alternatives, and consequently, lower brand sensitivity in the purchase decision.

Following this rationale, we can expect to see lower coefficients for brand knowledge when heterogeneity is high. Given the inclusion of service quality in the relationship quality construct, we could further expect to see higher coefficients for relationship quality at higher levels of buying center heterogeneity, because service quality is a relatively objective measure of the performance of the supplier.

This leads to the following hypotheses:

*H10.1: When BCH is high, brand knowledge has a smaller effect on share of wallet.*

*H10.2: When BCH is high, relationship quality has a larger effect on share of wallet.*

##### 4.3.3.2 Buying Center Time Pressure

According to Kohli (1989), buying center time pressure (BCTP) is "... *the extent to which buying center members feel pressured to make decisions quickly*"

(cited in Homburg, Klarmann and Schmitt 2010). If the buying center is under pressure to reach a decision quickly, perceived purchase risk is assumed to be high (Johnston and Lewin 1996), and as Homburg, Klarmann and Schmitt (2010) point out, there may not be enough time to adequately gather and process available information. This may lead to a dependence on heuristics, such as brands (see 4.2.1.3).

In situations of low time pressure, buying centers will be able to more thoroughly discuss available options (Homburg, Klarmann and Schmitt 2010), and thus the behavior will be closer aligned to the notion of rational decision making units.

Along the same argumentation that we followed for buying center heterogeneity, we therefore suspect that the relatively more objective and rational construct of relationship quality, which includes a service quality measure, will be more important when time pressure is low, which should manifest as a higher coefficient. In high time pressure situations, we therefore expect the opposite to be true, namely that the coefficient of relationship quality goes down, and brand knowledge, which could act as a quality signal and risk reducer in hectic situations, will have a higher coefficient:

*H11.1: When BCTP is high, brand knowledge has a larger effect on share of wallet.*

*H11.2: When BCTP is high, relationship quality has a smaller effect on share of wallet.*

#### 4.3.4.3 Buying Organization Size

According to Kohli (1989), buying center size is defined as “...the number of individuals involved in a typical customer’s buying decision” (cited in Homburg, Klarmann and Schmitt 2010, 203). The size of the buying organization could be expected to further moderate the brand-relationship substitution. That is, if the organization is relatively large, processes are likely more formalized, roles may better defined, and thus buying center members experience with purchasing, as well as the category of purchase, could be expected to be higher. This could lead to more efficient information gathering and evaluation. Further, larger organizations should be expected to be better able to afford extensive purchasing, which could further

increase the objectivity, and reduce the perceived time pressure, of the decision-making process.

Following the argumentation that a higher level of objectivity, and lower level of time pressure, should increase the importance of the relatively more objective relationship quality, we get the following hypotheses:

*H12.1: When the buying organization is large, brand knowledge has a smaller effect on share of wallet.*

*H12.2: When the buying organization is large, relationship quality has a larger effect on share of wallet.*

#### 4.3.4 Market Characteristics

Some of our moderators also pertain to the specific market (e.g., category of product or service); the technological turbulence in the market, and the product or service homogeneity in the market.

##### 4.3.4.1 Market Technological Turbulence

When technological turbulence is high (e.g. technological innovation is frequent), perceived purchase risk is expected to be higher, the reason being a fear of missing out on new innovations and lack of competence related to the new technology (Homburg, Klarmann and Schmitt 2010). Jaworski and Kohli (1993) define technological turbulence as “... *the rate of technological change in an industry*” (cited in Homburg, Klarmann and Schmitt 2010, 203), which might lead to higher time pressure, because information gathered is more time-sensitive.

Relationships could also be less important in turbulent environments because there is a lower possibility that known and used suppliers are able to deliver on the newest innovations. Thus, turbulence might force customers into switching suppliers.

If technological turbulence is low, however, the stable environment should allow relationships to grow both in strength and importance, while brands lose importance when the time pressure and risk decrease.

Worm and Srivastava (2014) also find R&D intensity to moderate the effect of brands on return on sales growth, finding that high brand image leads to higher return on sales growth in high R&D intensity environments.

*H13.1: When technological turbulence is high, brand knowledge has a larger effect on share of wallet.*

*H13.2: When technological turbulence is high, relationship quality has a smaller effect on share of wallet.*

#### *4.3.4.2 Market Product Homogeneity*

Homburg, Klarmann and Schmitt (2010, 203) define product homogeneity as “...the degree of technological or benefit-related similarity between the products in a particular market”, building on the work of Weiss and Heide (1993). A high degree of product homogeneity has been found to increase the importance of brands in consumer research (Warlop, Ratneshwar and van Osselaer 2005; Hoyer and Brown 1990), and a similar effect is found by Weiss and Heide (1993) who show that the overall search duration is lower when homogeneity is high. Homburg, Klarmann and Schmitt (2010) suggest that the lower search duration should make decision makers rely less on objective and diverse information, and increase the importance of brands in these situations. As they argue, relying on simple heuristics would make decision makers more likely to stick with their preferred brand, leading to the hypothesis:

*H14.1: When product homogeneity is high, brand knowledge has a larger effect on share of wallet.*

*H14.2: When product homogeneity is high, relationship quality has a smaller effect on share of wallet.*

However, once we introduce relationships into the model, we could expect this effect to manifest differently. Previous authors’ arguments have been that the preferred heuristic in simple choice situations have been to “buy the best known brand” (Hoyer and Brown 1990). We would argue that this expectation rests on a status quo-principle, that is; “if the risk is low, stick to what you know”. If established relationships enter the equation, the status quo-principle, and following heuristic might instead be; “stick to established relationships”. In such a situation, relationship quality should be of the utmost importance, as the only real incentive to leave the relationship would be if the relationship itself, or the quality of the delivery, has been unsatisfactory.

This expectation is also in line with Worm and Srivastava (2014), who find that when product differentiation in the component supplier industry is high, the return on brand image is higher. Thus, we develop this alternative hypothesis to H13:

*H14.1<sub>alt.</sub>: When product homogeneity is high, brand knowledge has a smaller effect on share of wallet.*

*H14.2<sub>alt.</sub>: When product homogeneity is high, relationship quality has a larger effect on share of wallet.*

## 5.0 Methodology

### 5.1 Research Design

In this chapter, we focus on our chosen research design. Hence, we explain all variables (e.g., IVs, DVs, and moderators) and their respective measurement items. Note that we apply a 7-point Likert scale on most of our measurement items. Our email survey was created in Qualtrics. Qualtrics is a survey tool suited for surveys that collect quantitative and qualitative data. We have collected cross-industry data from Norwegian firms' purchasing managers listed on Proff Forvalt (2017). In addition, we provide a thorough explanation how we have performed the PLS-SEM analysis in SmartPLS 3 (Ringle, Wende and Becker 2015).

### 5.2 Construct Operationalization

We have relied on pretested scales and items wherever possible. Most of our measurement items have been modified to better suit the purpose of this study. In the following section, we present all measurement items and respective measurement scales for our dependent variable, independent variables, and moderators. For a complete list of items, see the survey questions in *Appendix 1*.

#### 5.2.1 Brand Measures

For *brand awareness*, we rely on the scale used by Homburg, Klarmann and Schmitt (2010). In the original scale, the four items reflect the seller's perceptions of his/her customers' brand awareness, and thus we had to adjust the scale to measure the customers' brand awareness directly. As our informants identify the

focal supplier, we also had to adjust the scale to more accurately measure the informants' perceptions of the buying center members' overall brand awareness.

*Brand image* is measured on a scale consisting of two items covering the credibility of the brand (Erdem, Swait and Valenzuela 2006; Worm and Srivastava 2014), three items covering tangible brand aspects, as suggested by Worm (2010), one item covering the perceived reliability of the brand (Biedenbach and Marell 2010), one item covering the perceived safety of the brand (Mazodier and Merunka 2012), and finally one item covering to which extent the brand is perceived as secure.

We also included in the survey a three-item scale for *brand identification* which is loosely based on a subset of the items Park et al. (2010) use to measure *brand attachment*. This scale captures the customers' perceived similarity with the sellers' in terms of shared values.

#### 5.2.2 Relationship Measures

*Relationship trust* and *relationship commitment* are both measured using the scales found in Morgan and Hunt (1994). These scales did not require any adaptation, and are used as originally presented. *Relationship satisfaction* is measured using a single item, in line with the argumentation found in Caceres and Paparoidamis (2007). *Service quality* is measured using the two items found in Brady and Cronin (2001), which are adapted to fit our research environment.

#### 5.2.3 Share of Wallet Measures

We also gather information on the role of the informant within the firm, as well as self-reported influence over the kind of purchase that is discussed. Finally, *SOW* is measured as the percentage share of purchases from the focal supplier, within the category (Worm 2011, 27), as approximated and reported by the informant. The informant approximates a five-year historical percentage, a current (this year) percentage, as well as a five-year expected (intended) percentage.

| <b>Variable</b>             | <b>Measurement item(s)</b>  | <b>Source</b>   | <b>Scale</b>  |
|-----------------------------|---|---|---|
| <i>Dependent variable</i>   |   |   |   |
| Share of wallet             | ...spendings last 5 years<br>...spendings this year<br>...spendings next 5 years  | Author's contribution (building on Worm (2011))   | 0-100% sliding scale                                      |
| <i>Independent variable</i> |   |   |   |
| Brand awareness             | ...is known to most members of our firm's buying center<br>...is top of mind when our firm's buying center thinks of the product/service category<br>...comes to mind immediately when referring to the product/service category<br>...can be clearly related to a certain product/service category | Homburg, Klarmann and Schmitt (2010)  | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Brand image                 | ...to make believable claims<br>...to be of high quality<br>...products/services simple to integrate in systems<br>...to be quick to respond to failure(s)<br>...to be concerned with maintenance<br>...to be reliable<br>...to be safe<br>...to be secure  | Erdem, Swait and Valenzuela (2006); Worm and Srivastava (2010)<br>Worm (2010)<br>Biedenbach and Marell (2010)<br>Mazodier and Merunka (2012)<br>Author's contribution | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Brand identification        | ...says something to our customers about who our firm is<br>...matches our firm's identity<br>...has values aligned with the values of our firm   | Park et al. (2010)  | 7-point Likert scale (Strongly disagree - Strongly agree) |

|                           |   |                                  |   |
|---------------------------|---|----------------------------------|---|
| Relationship trust        | ...can be trusted at all times<br>...has high integrity<br>...can be trusted to do what's right   | Morgan and Hunt (1994)           | 7-point Likert scale<br>(Strongly disagree -<br>Strongly agree) |
| Relationship commitment   | ...is something our firm is very committed to<br>...is something our firm intends to maintain indefinitely<br>...deserves our firm's maximum effort to maintain | Morgan and Hunt (1994)           | 7-point Likert scale<br>(Strongly disagree -<br>Strongly agree) |
| Relationship satisfaction | ...how satisfied is your firm with the relationship   | Caceres and Papparoidamis (2007) | 7-point Likert scale<br>(Very dissatisfied -<br>Very satisfied) |
| Service quality           | ...provides superior service to us<br>...offers excellent service to us   | Brady and Cronin (2001)          | 7-point Likert scale<br>(Strongly disagree -<br>Strongly agree) |



#### 5.2.4 Moderators

*Buyclass* is operationalized simply as the amount of purchases the customer has performed in the category, and from the focal supplier, over the last five years. These are unlikely to be accurate numbers, but still enable us to classify the answers according to the buyclass-framework. *Perceived purchase risk* is measured using three items from Mudambi (2002), as listed and used in Brown et al. (2011). *Sellers' relationship specific investments* are measured adapting three items from Zaheer and Venkatraman (1995), and adding one item measuring the extent to which the seller has invested significantly in co-development of customized products and/or services with and/or for the customer. *Buying center heterogeneity*, *buying center time pressure*, *market/category technological turbulence*, and *market/category product homogeneity* are measured adapting scales from Homburg, Klarmann and Schmitt (2010). *Customer perceived value* is measured using the scale presented in Worm and Srivastava (2014), which is adapted to fit our research environment. *Company size* is measured on number of employees, and size of revenue in 2015. These numbers are extracted from Proff Forvalt (Proff Forvalt 2017) upon sample identification.

| Variable                          | Measurement item(s)   | Source   | Scale   |
|-----------------------------------|---|--|---|
| <i>Moderators</i>                 |   |  |   |
| Perceived purchase risk           | <p>...risk from the possibility that the product/service not meet the approval of management or members of your peer group</p> <p>...risk from the performance/functionality of the product/service</p> <p>...risk from the potential financial losses or high costs</p>  | Mudambi (2002);<br>Brown et al. (2011)                     | 7-point Likert scale (Very low - Very high)               |
| Relationship specific investments | <p>...Brand A has invested significant resources in improving personal relations</p> <p>...Brand A has invested significant resources in providing our firm customized support</p> <p>...Brand A has invested significant resources in iproviding our firm ongoing training</p> <p>...Brand A has invested significant resources in co-developing customized new products and services with or for us</p> | Zaheer and Venkatraman (1995)<br><br>Author's contribution | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Buying center heterogeneity       | <p>...our firm's buying center members pursue different interests and priorities in the purchases of this service/service</p> <p>...our firm's buying center members have diverse professional backgrounds</p> <p>...our firm's buying center members have differing knowledge with respect to purchases in this category</p>   | Homburg, Klarmann and Schmitt (2010)                       | 7-point Likert scale (Strongly disagree - Strongly agree) |

|                                 |  |                                      |   |
|---------------------------------|--|--------------------------------------|---|
| Buying center time pressure     | <p>...the buying center feels pressured to reach a decision quickly</p> <p>...our decision makers feel a high time pressure</p> <p>...the buying center does not have much time to consider purchase-related information carefully</p>   | Homburg, Klarmann and Schmitt (2010) | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Market technological turbulence | <p>...in this category technology changes rapidly</p> <p>...in this category technological changes provide significant opportunities</p> <p>...in this category a large number of new product ideas have been made possible through technological breakthroughs</p>  | Homburg, Klarmann and Schmitt (2010) | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Market product homogeneity      | <p>...in this category the technological attributes of competing offerings are relatively similar</p> <p>...in this category our firm would have received the same benefits from most of the available product/service offerings</p> <p>...in this category competing product/service offerings are not very different with regards to functionality</p> | Homburg, Klarmann and Schmitt (2010) | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Customer perceived value        | <p>...benefits received from Brand A's products/services far outweigh the costs</p> <p>...receives higher value for money by choosing Brand A over their competitors</p> <p>...Brand A products/services are of high value to our firm</p>   | Worm and Srivastava (2014)           | 7-point Likert scale (Strongly disagree - Strongly agree) |
| Relationship duration           | ...for how many years has your firm been doing business with Brand A   | Author's contribution                | Choice (0 - 40 years)                                     |

### 5.3 Sampling and Data Collection

Our sample was collected through Proff Forvalt (Proff Forvalt 2017), an online database containing firm and accounting specific information regarding Norwegian firms. Proff Forvalt allows us to choose between multiple search criteria such as firm name, industry, geographic area, turnover, and number of employees.

First, we chose two main industries: industrial manufacturing businesses and construction. Both types of industries are typically dependent on frequently buying small and large scaled quantities of products and services. All firms in these two industries typically rely on a value chain, in which the input is sourced from external suppliers. *Industrial manufacturing business* refers to firms that primarily focus on production of products on an industrial scale, while a small number of firms also focus on repair and maintenance of such products (e.g., clothes, paper, charcoal, chemicals, pharmaceuticals, metal, and computers). These products cover a diverse set of categories ranging from low involvement (e.g., clothes) to high involvement (e.g., computers). *Construction* refers to firms that are involved in the development and maintenance of property, landscape and infrastructure (e.g., plumbers, carpenters, large-scale entrepreneurs).

Second, we selected stock-based (limited liability) firms only, that were registered as active the past 10 years (2000 to 2017). In addition, we set the number of employees to range from 10 to 20 000 employees, revenues from -800 000 to +650 million NOK, and turnover between -800 000 to +50 million NOK. The result was an initial sample containing 9 437 firms.

However, not all firms in the initial sample were listed with information needed. Since our method for data collection is email/phone survey, we had to exclude firms that did not have an email address listed in Proff Forvalt.

Finally, we ended up with a target sample of 5 157 firms. The firms were then divided into 10 smaller and randomized target samples.

We published the survey in waves with sizes ranging from 500 to 1000. Over a period of three weeks, we invited a total of 5008 businesses to partake in the survey, sending one initial invitation and two reminders. A small subset ( $\approx 100$ ) was also approached by phone, as we faced challenges with respondent firms' firewalls and spam-filters. However, these efforts had no increase in response rate. In total, this resulted in 711 surveys started, for a response rate of 14.1%. Out of these, 131 were completed, with answers to every question, for a completion rate of 18.4%.

While the response rate is low, this is not unexpected for this data collection approach, and the completion rate was deemed satisfactory.

#### 5.4 Data Preparation

We imported our data to Stata, where it was stripped for all unnecessary meta-data (such as location, time spent, etc.), and checked for missing values. As only complete responses were exported, there were no apparent issues with the dataset.

#### 5.5 Analysis Approach

We tested our hypotheses in several ways, all building on PLS-SEM. We knew that we had to base our analysis on structural equation modelling, as our model is a relatively complex, hierarchical model, containing both higher-order and lower-order latent variables, where several paths would have to be estimated simultaneously. PLS-SEM was chosen over covariance-based structural equation modelling (CB-SEM), in accordance with the guidelines found in Hair, Ringle and Sarstedt (2011). Where CB-SEM requires relatively large datasets, and strictly relies on multivariate normality of the data, PLS-SEM is proven more robust with smaller samples, and does not assume a normal distribution.

First, we assessed the distribution of our data. As we suspect that our data is non-normal, we ran an EFA in SPSS on our dataset. Second, we ran an additional CFA in SmartPLS 3 (Ringle, Wende and Becker 2015) on the resulting measurement model. Then we estimate the structural model, using the repeated indicators approach, as suggested by Hair et al. (2012). After running the structural model, we test for moderation using multi-group analysis in SmartPLS 3, and different linear regression specifications in Stata. All approaches and model specifications, will be more thoroughly explained in the next chapter, along with the corresponding results.

## 6.0 Results

In the following section, we present the results and significant findings of our analysis. First, we test our measurement model. Second, we present the results of our structural model, including the tests for moderation effects.

### 6.1 Assessment of Normality

We generated histograms of all our items to assess the distribution. As expected, the data tended to be non-normally distributed.

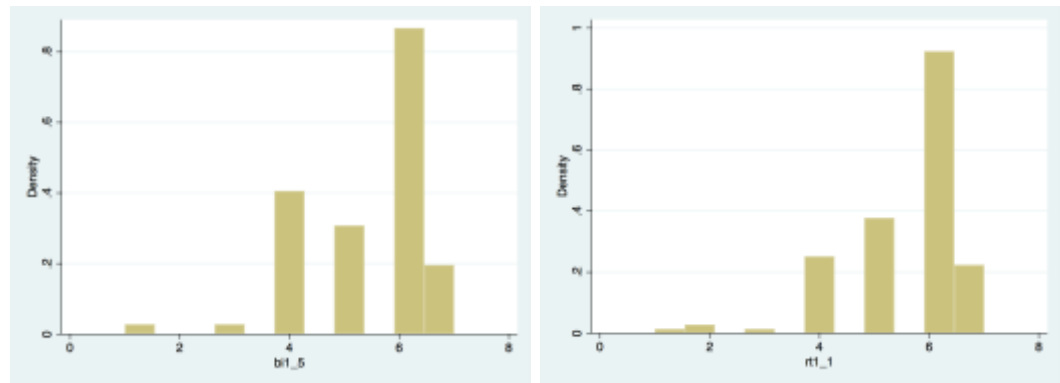


Figure 1, Example Distributions, BI1\_5, RT1\_1

In particular, relationship and brand measures show a right-skewed tendency. *Figure 2* shows the distribution of one brand item (BI1\_5, left) and one relationship item (RT1\_1, right). This was to be expected, as informants are asked to identify the focal supplier for the survey themselves. Further, they are asked questions regarding either a supplier they actively use, or at least have some form of relationship with. If we asked respondents for random suppliers, and managed a larger sample, we would have been more likely to see tendencies of normality in the sample. These distributions further support the choice of PLS-SEM as the appropriate method of analysis.

### 6.1 Exploratory Factor Analysis (EFA)

For our measurement model, we conducted an EFA using SPSS. We applied principal axis factoring (extraction method), Varimax with Kaiser Normalization (rotation method), and set lower loading limit to 0.4. Hence, factor loadings less than 0.4 would be “hidden” in the data output. We observed five emerging factors. However, some items loaded on multiple factors. We adjusted the lower limit to 0.5. As a final step, we removed the items with loadings less than 0.5, and repeated the procedure with the same extraction and rotation method. Output is shown in

Table 3. As can be seen in Table 3, each item is assigned to their respective factor, with no large cross-loadings.

Overall, all items of brand awareness and the remaining brand image items load on first factor, which explains approximately 38% of variance. All relationship trust items load on the second factor, explaining approximately 16% of variance. Both the two overall service quality items and the single-item measure of relationship satisfaction load on the third factor. Together, these three items explain approximately 8% of the variance. Brand identification items load highest on the fourth factor, which explain approximately 7% of the variance. All items of relationship commitment explain approximately 5% of the variance, and constitutes the fifth factor. Thus, the overall total variance explained by our five major factors is approximately 74%.

We assigned new names to the five factors with respect to their corresponding items. Factor 1 is *brand knowledge*, factor 2 is *relationship trust*, factor 3 is *relationship satisfaction*, factor 4 is *brand identification*, and factor 5 is *relationship commitment*.

Table 3, Factor Analysis Output

| Construct                 | Indicator | Factor (Exploratory) |      |      |      |   |
|---------------------------|-----------|----------------------|------|------|------|---|
|                           |           | 1                    | 2    | 3    | 4    | 5 |
| Brand Knowledge           | BI1_3     | .765                 |      |      |      |   |
|                           | BA1_4     | .734                 |      |      |      |   |
|                           | BA1_2     | .714                 |      |      |      |   |
|                           | BI1_1     | .688                 |      |      |      |   |
|                           | BA1_1     | .684                 |      |      |      |   |
|                           | BA1_3     | .679                 |      |      |      |   |
|                           | BI1_2     | .648                 |      |      |      |   |
|                           | BI1_5     | .583                 |      |      |      |   |
| Relationship Trust        | RT1_1     |                      | .803 |      |      |   |
|                           | RT1_2     |                      | .775 |      |      |   |
|                           | RT1_3     |                      | .752 |      |      |   |
| Relationship Satisfaction | OSQ1_2    |                      |      | .839 |      |   |
|                           | OSQ1_1    |                      |      | .830 |      |   |
|                           | RS1_1     |                      |      | .637 |      |   |
| Brand Identification      | BID1_3    |                      |      |      | .810 |   |
|                           | BID1_1    |                      |      |      | .781 |   |
|                           | BID1_2    |                      |      |      | .665 |   |

|              |       |      |
|--------------|-------|------|
| Relationship | RC1_3 | .811 |
| Commitment   | RC1_1 | .755 |
|              | RC1_2 | .662 |

Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.

Values < 0.5 hidden.

## 6.2 Confirmatory Factor Analysis (CFA)

Building on what we find in the EFA in SPSS, we import our dataset to SmartPLS 3 (Ringle, Wende and Becker 2015). Following existing guidelines of PLS-SEM, we start by performing a CFA of our measurement model.

### 6.2.1 Reflective Indicator Loadings

We continued the rest of our analysis in SmartPLS 3 (Ringle, Wende and Becker 2015). In other words, the factors obtained in SPSS set the framework for further analysis. Most items had higher loadings than the threshold of 0.7, suggesting that there is a good fit between the items and their respective factor. Note that single-items will have a loading equal to one, such as SOW. However, the model had some issues. Two out of three brand awareness items (e.g., BA1\_1, BA1\_3, and BA1\_4), and two of the brand image items (e.g., BI1\_5, and BI1\_8), had values less than 0.7. Among these items, BI1\_8 had the lowest value. As a result, we removed this item from our data set.

After removing item BI1\_8, we repeated the procedure. With the exception of brand-items, all other items had values higher than 0.7. Three out of four brand awareness items had a slight increase in item loading, but still not good enough, with BA1\_1 having the weakest loading. We also observed that among the four remaining brand image-items, there still was a poor loading on item BI1\_5. Again, we removed the item with the lowest value and repeat the procedure.

After removing item BA1\_1, only one of the brand awareness items had a value lower than 0.7 (e.g., BA1\_3). Similarly, only one of the remaining brand image-items did not have a high enough value. Thus, we removed the item with the lowest value (e.g., BI1\_5) from our data set, and continued with the same approach.

When removing BI1\_5, we observe that there still is one item with a value less than 0.7 (e.g., BA1\_3). All other values are well above the required level. We accept the loading of item BA1\_3, as removing it did not further strengthen any of the remaining items. Rather it resulted in other loadings falling below the threshold. The resulting reflective indicator loadings can be seen in *Table 4*.



Table 4, Reflective Indicator Loadings

| <b>Construct</b>          | <b>Indicator</b> | <b>Loading</b> | <b>Standard Deviation</b> | <b>Lower Confidence Interval Limit</b> | <b>Upper Confidence Interval Limit</b> | <b>T-Value</b> | <b>Sig.</b> |
|---------------------------|------------------|----------------|---------------------------|--|--|----------------|-------------|
| Brand                     | BA1_2            | .790           | .245                      | .122                                   | .898                                   | 3.223          | .001        |
|                           | BA1_3            | .659           | .246                      | .018                                   | .815                                   | 2.681          | .004        |
|                           | BA1_4            | .701           | .244                      | .067                                   | .847                                   | 2.872          | .002        |
|                           | BI1_1            | .822           | .288                      | .169                                   | .899                                   | 3.601          | .000        |
|                           | BI1_2            | .839           | .273                      | .074                                   | .931                                   | 3.072          | .001        |
|                           | BI1_3            | .787           | .252                      | .106                                   | .897                                   | 3.122          | .001        |
| Brand Identification      | BID1_1           | .912           | .081                      | .816                                   | .943                                   | 11.298         | .000        |
|                           | BID1_2           | .872           | .106                      | .709                                   | .931                                   | 8.198          | .000        |
|                           | BID1_3           | .929           | .078                      | .876                                   | .975                                   | 11.960         | .000        |
| Relationship Satisfaction | OSQ1_1           | .961           | .215                      | .424                                   | .984                                   | 4.477          | .000        |
|                           | OSQ1_2           | .921           | .183                      | .429                                   | .962                                   | 5.027          | .000        |
|                           | RS1_1            | .750           | .221                      | .236                                   | .944                                   | 3.395          | .000        |
| Relationship Commitment   | RC1_1            | .949           | .096                      | .875                                   | .976                                   | 9.851          | .000        |
|                           | RC1_2            | .887           | .100                      | .761                                   | .938                                   | 8.863          | .000        |
|                           | RC1_3            | .865           | .133                      | .644                                   | .930                                   | 6.531          | .000        |
| Relationship Trust        | RT1_1            | .898           | .177                      | .480                                   | .968                                   | 5.084          | .000        |
|                           | RT1_2            | .894           | .180                      | .467                                   | .962                                   | 4.956          | .000        |
|                           | RT1_3            | .940           | .181                      | .543                                   | .985                                   | 5.197          | .000        |
| Share of Wallet           | SOW_agg          | 1.000          | .000                      | 1.000                                  | 1.000                                  | 0.0            | n/a         |

### 6.2.2 Reliability

We assess several measures of item and construct reliability. First, we observe that almost every item has an **individual item reliability** well above 0.5. The only exceptions are item BA1\_3 and BA1\_4, which is in accordance with the poor loading described in step 2. However, we accept this reliability score as it is close to the acceptable level. Second, the **AVE** values are shown in *Table 5*. We observe that all AVE values are higher than, and well above, the threshold value of 0.5. Third, **composite reliability** scores of each item are higher than 0,85. Notice that the construct with the lowest composite reliability is brand. This may be due to the poor loading of one of the items included in brand (e.g., BA1\_4). Finally, all **Cronbach's Alpha's** are well above the lower limit of 0.7. Note that there is no value for single-item measures such as share of wallet. Hence, all measures of construct reliability and validity appear with a value of 1.0. Overall, we conclude that all measures for our reflective constructs are reliable.

*Table 5, Item and Construct Reliability*

| <b>Construct</b>          | <b>Indicator</b> | <b>Item Reliability</b> | <b>AVE</b> | <b>Composite Reliability</b> | <b>Cronbach's Alpha</b> |
|---------------------------|------------------|-------------------------|------------|------------------------------|-------------------------|
| Brand                     | BA1_2            | .625                    | .591       | .896                         | .878                    |
|                           | BA1_3            | .434                    |            |                              |                         |
|                           | BA1_4            | .491                    |            |                              |                         |
|                           | BI1_1            | .675                    |            |                              |                         |
|                           | BI1_2            | .704                    |            |                              |                         |
|                           | BI1_3            | .619                    |            |                              |                         |
| Brand Identification      | BID1_1           | .832                    | .819       | .913                         | .892                    |
|                           | BID1_2           | .760                    |            |                              |                         |
|                           | BID1_3           | .863                    |            |                              |                         |
| Relationship Satisfaction | OSQ1_1           | .924                    | .778       | .912                         | .873                    |
|                           | OSQ1_2           | .848                    |            |                              |                         |
|                           | RS1_1            | .563                    |            |                              |                         |
| Relationship Commitment   | RC1_1            | .901                    | .812       | .928                         | .887                    |
|                           | RC1_2            | .786                    |            |                              |                         |
|                           | RC1_3            | .749                    |            |                              |                         |
| Relationship Trust        | RT1_1            | .806                    | .829       | .936                         | .905                    |
|                           | RT1_2            | .799                    |            |                              |                         |
|                           | RT1_3            | .883                    |            |                              |                         |
| Share of Wallet           | SOW_agg          | 1.000                   | 1.000      | 1.000                        | 1.000                   |

## 6.2.3 Discriminant Validity

We applied the criterion offered by Fornell and Larcker (1981) to assess discriminant validity of our constructs and items. The Fornell-Larcker criterion describes “... *the extent to which each of the measured constructs is different from other constructs in the study*” (Worm 2011, 166). *Table 6* shows the Fornell-Larcker matrix. We see that all the squared AVE values on the diagonal are higher than the respective squared correlation values, and with a significant margin. Thus, we conclude that we have obtained a satisfactory level of discriminant validity. This concluded the assessment and re-specification of the measurement model.

*Table 6, Fornell-Larcker Criterion*

|                           | <b>Brand</b> | <b>Brand Identification</b> | <b>Relationship Commitment</b> | <b>Relationship Satisfaction</b> | <b>Relationship Trust</b> | <b>Share of Wallet</b> |
|---------------------------|--------------|-----------------------------|--------------------------------|----------------------------------|---------------------------|------------------------|
| Brand                     | <b>.769</b>  |                             |                                |                                  |                           |                        |
| Brand Identification      | .525         | <b>.905</b>                 |                                |                                  |                           |                        |
| Relationship Commitment   | .323         | .490                        | <b>.901</b>                    |                                  |                           |                        |
| Relationship Satisfaction | .267         | .303                        | .432                           | <b>.882</b>                      |                           |                        |
| Relationship Trust        | .246         | .276                        | .468                           | .539                             | <b>.911</b>               |                        |
| Share of Wallet           | .166         | .190                        | .191                           | .116                             | .097                      | <b>1.000</b>           |

### 6.3 Structural Model

The review of previous literature dictated our initial model development. After allowing the EFA to influence the composition of our measurement model, we are left with the revised structural model seen in *Figure 3*. We further tested allowing SOW-items to be reflective indicators of a latent SOW-variable in the PLS-SEM estimation, rather than SOW being a simple average of their values. This worked very well, and is the specification which was brought forwards.

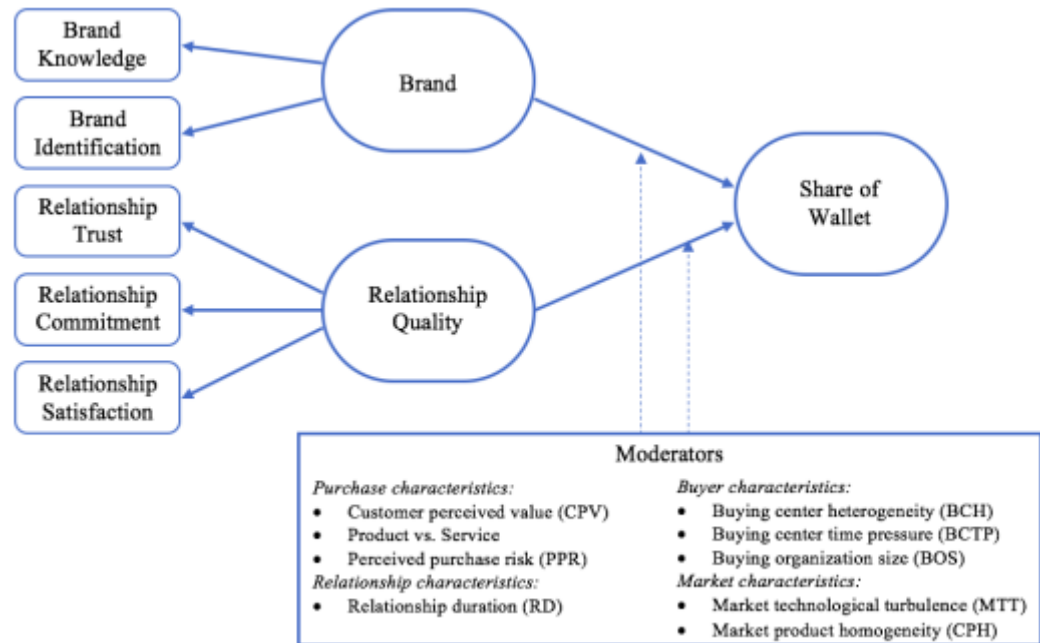


Figure 2, Revised Structural Model

In this model, we perform the repeated indicator approach to obtain the latent variable scores for our lower-level latent variables (Hair et al. 2012). We keep the unstandardized scores, to keep all scores on their original scale in the next steps. Next, we compute the latent variable scores for the higher-order latent variables using the lower-order constructs as items, and for SOW, using the three SOW-measures as items. We also compute the latent variable scores for all moderators except “Product vs. Service”. We export the latent variable scores (higher-order constructs and moderators) to Stata, where we calculate simple interactions ([higher-order LV-score]\*[moderator-score]), and subsequently standardize all scores and interactions (mean=0, SD=1). The median is calculated for the standardized score on all moderators, and below median is defined as low, while above median is defined as high. Grouping dummies are also created based on this value for later for later use (e.g., RSI\_std\_high = 1 or 0).

### 6.3.1 Main Effects

We estimate two main effects. First, there is a main effect between brand and SOW. This effect has a coefficient of 0.226 which is significant at the 1% level. Second, there is a main effect between relationship quality and SOW. This effect has a coefficient of 0.153 which is significant at the 5% level.

### 6.3.2 Moderating Effects

Moderators are introduced in the PLS-SEM as latent variables, with direct arrows to SOW, and items as indicators. The unstandardized latent variable scores for all moderators are exported to Stata, where they are standardized. Observations are grouped as “high” if the standardized latent variable score for the moderator is above the median for all observations on the corresponding moderator. We perform a multi-group analysis and linear regressions (with a variable score product approach and coefficient difference test) to assess the effects of our moderators.

In our **multi-group analysis**, we reintroduce the standardized higher-order latent variable scores as singular items for the higher order latent variables in our model in SmartPLS 3 (Ringle, Wende and Becker 2015) (see *Figure 2*), and perform MGA-analyses for all moderators. Significant results from this analysis can be seen in *Table 10*. For complete results, please refer to *Table 7*.

*Table 7, MGA Results*

|                      | Brand --> SOW        |         | Relationship Quality --> SOW |         |
|----------------------|----------------------|---------|------------------------------|---------|
|                      | Difference in coeff. | P-Value | Difference in coeff.         | P-Value |
| BCH_high - BCH_low   | 0.000                | 0.523   | 0.433                        | 0.009** |
| BCTP_high - BCTP_low | (0.334)              | 0.976*  | (0.033)                      | 0.573   |
| CPH_high - CPH_low   | (0.160)              | 0.820   | 0.061                        | 0.364   |
| CPV_high - CPV_low   | 0.222                | 0.102   | 0.227                        | 0.103   |
| MTT_high - MTT_low   | 0.022                | 0.478   | 0.004                        | 0.488   |
| BOS_large - BOS_high | (0.129)              | 0.778   | 0.115                        | 0.257   |
| PPR_high - PPR_low   | 0.171                | 0.154   | (0.237)                      | 0.905   |
| RD_long - RD_short   | 0.180                | 0.140   | (0.175)                      | 0.833   |
| RSI_high - RSI_low   | (0.007)              | 0.530   | 0.232                        | 0.098   |

\* 10% significance, \*\* 5% significance, \*\*\* 1% significance

We have done several different **linear regression analyses** on our data, with slightly different outcomes. In this section, we will explain these analyses more in detail. First, we performed a moderation analysis in the form of the **variable score product (VSP) approach**, as explained by Worm (2011). We perform a series of linear regressions in Stata, using the standardized variable score for SOW as dependent variable (DV). The regressions fall into one of three categories, based on their independent variables (IVs): 1) Brand, moderator, and interaction as IVs, 2) Relationship quality, moderator, and interaction as IVs, or 3) Brand, Relationship quality, moderator and interactions as IVs.

$$\begin{aligned}
 1) \quad SOW &= \beta_1 Brand + \beta_2 Moderator + \beta_3 Brand * Moderator + \varepsilon \\
 2) \quad SOW &= \beta_1 RelationshipQuality + \beta_2 Moderator + \\
 &\quad \beta_3 RelationshipQuality * Moderator + \varepsilon \\
 3) \quad SOW &= \beta_1 Brand + \beta_2 RelationshipQuality + \beta_3 Moderator + \\
 &\quad \beta_4 Brand * Moderator + \beta_5 RelationshipQuality * \\
 &\quad Moderator + \varepsilon
 \end{aligned}$$

The regressions were run using continuous standardized moderators. After we had concluded this analysis, we continued with a similar analysis, using the dummy variables created (see 6.3) as interactions, with higher than average levels coded as 1, and lower than average levels coded as 0. In this approach, the moderating effect of a variable is significant if the interaction term's coefficient is significant. In other words, in equations 1 and 2 we are looking for a significant  $\beta_3$ , while in equation 3, we are assessing the significance of  $\beta_4$  and  $\beta_5$ .

Introducing several interactions simultaneously has been tested, but the more complex models failed to achieve significance on any of the coefficients. Significant results from these analyses can be seen in *Table 9*, marked as *VSP*. For complete results with continuous moderators, please refer to *Table 7*. For complete results with categorical moderators, please refer to *Table 8*.

Table 8, Linear Regression Results, Continuous Moderators

**Linear Regression Results (Continuous Moderators)**

|                                 | <b>Variable</b> | <b>Coefficient</b> | <b>P-Value</b> | <b>R-Squared</b> |
|---------------------------------|-----------------|--------------------|----------------|------------------|
| <i>M1: Brand (B) components</i> | B               | 0.278              | 0.001***       | 0.0773           |
|                                 | B               | (0.145)            | 0.691          |                  |
|                                 | BCH             | (0.559)            | 0.406          | 0.119            |
|                                 | B*BCH           | 0.898              | 0.266          |                  |
|                                 | B               | 0.647              | 0.020          |                  |
|                                 | BCTP            | 0.931              | 0.198          | 0.1045           |
|                                 | B*BCTP          | (1.107)            | 0.147          |                  |
|                                 | B               | 0.328              | 0.004          |                  |
|                                 | BOS             | 0.764              | 0.396          | 0.1063           |
|                                 | B*BOS           | (0.619)            | 0.494          |                  |
|                                 | B               | (0.615)            | 0.078          |                  |
|                                 | CPH             | 0.384              | 0.446          | 0.0998           |
|                                 | B*CPH           | (0.603)            | 0.308          |                  |
|                                 | B               | (0.306)            | 0.463          |                  |
|                                 | CPV             | (0.099)            | 0.845          | 0.3035           |
|                                 | B*CPV           | 0.833              | 0.248          |                  |
|                                 | B               | 0.020              | 0.941          |                  |
|                                 | MTT             | (0.397)            | 0.482          | 0.095            |
|                                 | B*MTT           | 0.605              | 0.364          |                  |
|                                 | B               | 0.401              | 0.106          |                  |
|                                 | PPR             | 0.347              | 0.478          | 0.0902           |
|                                 | B*PPR           | (0.265)            | 0.616          |                  |
|                                 | B               | 0.211              | 0.110          |                  |
|                                 | RD              | (0.384)            | 0.497          | 0.0807           |
| B*RD                            | 0.403           | 0.495              |                |                  |
| B                               | 0.396           | 0.292              |                |                  |
| RSI                             | 0.328           | 0.563              | 0.0978         |                  |
| B*RSI                           | (0.233)         | 0.740              |                |                  |

|   |         |         |          |        |
|---|---------|---------|----------|--------|
| <i>M2:</i><br><i>Relationship</i><br><i>quality (RQ)</i><br><i>components</i> | RQ      | 0.230   | 0.008*** | 0.0528 |
|   | RQ      | (0.419) | 0.157    |        |
|   | BCH     | (0.937) | 0.075    | 0.1208 |
|   | RQ*BCH  | 1.383   | 0.031**  |        |
|   | RQ      | 0.206   | 0.395    |        |
|   | BCTP    | (0.114) | 0.844    | 0.1210 |
|   | RQ*BCTP | 0.010   | 0.987    |        |
|   | RQ      | 0.241   | 0.031    |        |
|   | BOS     | 0.421   | 0.510    | 0.0677 |
|   | RQ*BOS  | (0.278) | 0.665    |        |
|   | RQ      | 0.112   | 0.752    |        |
|   | CPH     | (0.294) | 0.566    | 0.0703 |
|   | RQ*CPH  | 0.198   | 0.744    |        |
|   | RQ      | (0.608) | 0.061    |        |
|   | CPV     | (0.133) | 0.755    | 0.2907 |
|   | RQ*CPV  | 1.088   | 0.093*   |        |
|   | RQ      | 0.321   | 0.302    |        |
|   | MTT     | 0.344   | 0.561    | 0.0721 |
|   | RQ*MTT  | (0.246) | 0.722    |        |
|   | RQ      | 0.639   | 0.015    |        |
| PPR   | 1.026   | 0.074   | 0.0818   |        |
| RQ*PPR  | (1.008) | 0.102   |          |        |
| RQ  | 0.274   | 0.048   |          |        |
| RD  | 0.252   | 0.661   | 0.0543   |        |
| RQ*RD   | (0.257) | 0.669   |          |        |
| RQ  | (0.205) | 0.544   |          |        |
| RSI   | (0.618) | 0.270   | 0.0665   |        |
| RQ*RSI  | 0.983   | 0.216   |          |        |



|   |         |         |         |        |
|---|---------|---------|---------|--------|
| <i>M3: Brand (B) and relationship quality (RQ) components</i> | B       | 0.226   | 0.013** | 0.0980 |
|   | RQ      | 0.153   | 0.089*  |        |
|   | B       | 0.036   | 0.923   | 0.1532 |
|   | RQ      | (0.385) | 0.206   |        |
|   | BCH     | (1.069) | 0.150   |        |
|   | B*BCH   | 0.355   | 0.672   |        |
|   | RQ*BCH  | 1.162   | 0.081*  |        |
|   | B       | 0.684   | 0.018   |        |
|   | RQ      | 0.046   | 0.851   |        |
|   | BCTP    | 0.912   | 0.262   |        |
|   | B*BCTP  | (1.316) | 0.089*  |        |
|   | RQ*BCTP | 0.285   | 0.630   |        |
|   | B       | 0.274   | 0.027   | 0.1177 |
|   | RQ      | 0.122   | 0.306   |        |
|   | BOS     | 0.629   | 0.558   |        |
|   | B*BOS   | (0.458) | 0.618   |        |
|   | RQ*BOS  | (0.028) | 0.965   |        |
|   | B       | 0.600   | 0.096   |        |
|   | RQ      | (0.080) | 0.824   |        |
|   | CPH     | 0.105   | 0.869   |        |
| B*CPH   | (0.659) | 0.277   |         |        |
| RQ*CPH  | 0.397   | 0.517   |         |        |
| B   | (0.032) | 0.944   | 0.3229  |        |
| RQ  | (0.509) | 0.152   |         |        |
| CPV   | (0.210) | 0.702   |         |        |
| B*CPV   | 0.391   | 0.626   |         |        |
| RQ*CPV  | 0.766   | 0.286   |         |        |
| B   | (0.070) | 0.810   |         | 0.1166 |
| RQ  | 0.381   | 0.245   |         |        |
| MTT   | (0.025) | 0.971   |         |        |
| B*MTT   | 0.723   | 0.318   |         |        |
| RQ*MTT  | (0.565) | 0.445   |         |        |
| B   | 0.151   | 0.581   | 0.1195  |        |
| RQ  | 0.470   | 0.099   |         |        |
| PPR   | 0.682   | 0.319   |         |        |
| B*PPR   | 0.128   | 0.819   |         |        |
| RQ*PPR  | (0.750) | 0.240   |         |        |
| B   | 0.130   | 0.355   |         | 0.1047 |
| RQ  | 0.223   | 0.126   |         |        |
| RD  | (0.205) | 0.766   |         |        |
| B*RD  | 0.560   | 0.369   |         |        |
| RQ*RD   | (0.362) | 0.563   |         |        |

|        |         |       |        |
|--------|---------|-------|--------|
| B      | 0.449   | 0.216 |        |
| RQ     | (0.261) | 0.449 |        |
| RSI    | (0.165) | 0.813 | 0.1119 |
| B*RSI  | (0.476) | 0.516 |        |
| RQ*RSI | 0.906   | 0.270 |        |

\* 10% significance, \*\* 5% significance, \*\*\* 1% significance

Table 9, Linear Regression Results, Categorical Moderators

### Linear Regression Results (Categorical Moderators)

|                                 | Variable | Coefficient | P-Value  | R-Squared |
|---------------------------------|----------|-------------|----------|-----------|
| <i>M1: Brand (B) components</i> | B        | 0.278       | 0.001*** | 0.0773    |
|                                 | B        | 0.187       | 0.162    |           |
|                                 | BCH      | 0.182       | 0.034    | 0.1130    |
|                                 | B*BCH    | 0.106       | 0.538    |           |
|                                 | B        | 0.575       | 0.000    |           |
|                                 | BCTP     | (0.088)     | 0.293    | 0.1416    |
|                                 | B*BCTP   | (0.483)     | 0.006*** |           |
|                                 | B        | 0.414       | 0.002    |           |
|                                 | BOS      | 0.155       | 0.072    | 0.1161    |
|                                 | B*BOS    | (0.231)     | 0.924    |           |
|                                 | B        | 0.300       | 0.004    |           |
|                                 | CPH      | (0.122)     | 0.153    | 0.0943    |
|                                 | B*CPH    | (0.093)     | 0.981    |           |
|                                 | B        | 0.011       | 0.928    |           |
|                                 | CPV      | 0.486       | 0.000    | 0.3107    |
|                                 | B*CPV    | 0.254       | 0.104    |           |
|                                 | B        | 0.252       | 0.049    |           |
|                                 | MTT      | 0.111       | 0.203    | 0.0891    |
|                                 | B*MTT    | 0.010       | 0.955    |           |
|                                 | B        | 0.265       | 0.054    |           |
| PPR                             | 0.105    | 0.856       | 0.0886   |           |
| B*PPR                           | 0.032    | 0.856       |          |           |
| B                               | 0.211    | 0.066       |          |           |
| RD                              | (0.009)  | 0.920       | 0.0834   |           |
| B*RD                            | 0.160    | 0.361       |          |           |
| B                               | 0.210    | 0.080       |          |           |
| RSI                             | 0.142    | 0.098       | 0.0993   |           |
| B*RSI                           | 0.097    | 0.571       |          |           |

|   |         |         |          |        |
|---|---------|---------|----------|--------|
| <i>M2:</i><br><i>Relationship</i><br><i>quality (RQ)</i><br><i>components</i> | RQ      | 0.230   | 0.008*** | 0.0528 |
|   | RQ      | (0.102) | 0.461    |        |
|   | BCH     | 0.203   | 0.017    | 0.1385 |
|   | RQ*BCH  | 0.471   | 0.007*** |        |
|   | RQ      | 0.358   | 0.011    |        |
|   | BCTP    | (0.097) | 0.265    | 0.0771 |
|   | RQ*BCTP | (0.243) | 0.789    |        |
|   | RQ      | 0.264   | 0.041    |        |
|   | BOS     | 0.149   | 0.092    | 0.0687 |
|   | RQ*BOS  | (0.102) | 0.573    |        |
|   | RQ      | 0.223   | 0.042    |        |
|   | CPH     | (0.129) | 0.134    | 0.0695 |
|   | RQ*CPH  | 0.006   | 0.974    |        |
|   | RQ      | (0.282) | 0.014    |        |
|   | CPV     | 0.562   | 0.000    | 0.3160 |
|   | RQ*CPV  | 0.458   | 0.007*** |        |
|   | RQ      | 0.211   | 0.114    |        |
|   | MTT     | 0.136   | 0.116    | 0.0712 |
|   | RQ*MTT  | 0.007   | 0.969    |        |
|   | RQ      | 0.369   | 0.007    |        |
| PPR   | 0.099   | 0.251   | 0.0744   |        |
| RQ*PPR  | (0.226) | 0.198   |          |        |
| RQ  | 0.295   | 0.019   |          |        |
| RD  | 0.012   | 0.895   | 0.0570   |        |
| RQ*RD   | (0.131) | 0.456   |          |        |
| RQ  | 0.055   | 0.682   |          |        |
| RSI   | 0.045   | 0.679   | 0.0765   |        |
| RQ*RSI  | 0.353   | 0.089*  |          |        |

|   |         |         |         |        |
|---|---------|---------|---------|--------|
| <i>M3: Brand (B) and relationship quality (RQ) components</i> | B       | 0.226   | 0.013** | 0.0980 |
|   | RQ      | 0.153   | 0.089*  |        |
|   | B       | 0.214   | 0.108   | 0.1687 |
|   | RQ      | (0.145) | 0.301   |        |
|   | BCH     | 0.184   | 0.029   |        |
|   | B*BCH   | (0.052) | 0.770   |        |
|   | RQ*BCH  | 0.450   | 0.013** |        |
|   | B       | 0.507   | 0.001   |        |
|   | RQ      | 0.184   | 0.199   |        |
|   | BCTP    | (0.068) | 0.422   |        |
|   | B*BCTP  | (0.444) | 0.018** |        |
|   | RQ*BCTP | (0.089) | 0.624   |        |
|   | B       | 0.366   | 0.018   | 0.1254 |
|   | RQ      | 0.091   | 0.530   |        |
|   | BOS     | 0.152   | 0.080   |        |
|   | B*BOS   | (0.209) | 0.276   |        |
|   | RQ*BOS  | 0.028   | 0.885   |        |
|   | B       | 0.258   | 0.020   | 0.1150 |
|   | RQ      | 0.125   | 0.274   |        |
| CPH   | (0.117) | 0.167   |         |        |
| B*CPH   | (0.114) | 0.555   |         |        |
| RQ*CPH  | 0.064   | 0.729   |         |        |
| B   | 0.067   | 0.584   | 0.3474  |        |
| RQ  | (0.293) | 0.011   |         |        |
| CPV   | 0.559   | 0.000   |         |        |
| B*CPV   | 0.176   | 0.267   |         |        |
| RQ*CPV  | 0.347   | 0.045** |         |        |
| B   | 0.209   | 0.116   | 0.1083  |        |
| RQ  | 0.151   | 0.273   |         |        |
| MTT   | 0.103   | 0.233   |         |        |
| B*MTT   | (0.002) | 0.991   |         |        |
| RQ*MTT  | (0.006) | 0.975   |         |        |
| B   | 0.121   | 0.424   | 0.1232  |        |
| RQ  | 0.316   | 0.034   |         |        |
| PPR   | 0.110   | 0.193   |         |        |
| B*PPR   | 0.159   | 0.399   |         |        |
| RQ*PPR  | (0.250) | 0.181   |         |        |
| B   | 0.130   | 0.285   | 0.1111  |        |
| RQ  | 0.245   | 0.061   |         |        |
| RD  | (0.022) | 0.794   |         |        |
| B*RD  | 0.218   | 0.234   |         |        |
| RQ*RD   | (0.174) | 0.339   |         |        |

|        |         |       |        |
|--------|---------|-------|--------|
| B      | 0.216   | 0.083 |        |
| RQ     | (0.022) | 0.876 |        |
| RSI    | 0.069   | 0.523 | 0.1204 |
| B*RSI  | 0.016   | 0.929 |        |
| RQ*RSI | 0.319   | 0.137 |        |

\* 10% significance, \*\* 5% significance, \*\*\* 1% significance

In addition, we also tried to assess the actual **difference in the coefficients** for brand and relationship quality within the different groups. The answers from these tests are not necessary to answer our research questions and hypotheses, but would be interesting nonetheless. This test was done by performing linear regressions of SOW, using brand and relationship quality as independent variable, splitting the sample based on the value of the moderator dummies. Unfortunately, this proved difficult, due to small samples, and high standard deviations. The differences in the coefficients in the base model, as well as most of the groups, are insignificant.

However, in one group we see significantly different coefficients. When buying either services, or products and services in a mixed purchase, brand has a significantly larger effect (coefficient) on SOW, compared to the effect of relationship quality ( $0.735 > 0.068$ ,  $p=0.0046$ ). When buying only products, the coefficients are not significantly different.

### 6.2.3 Model Fit and Summary

Our model has an  $R^2$  of 0,099, indicating that our data only explains a little less than 10% of the variance in SOW. This is not surprising, as we operate with a very simple model, which is likely to have many omitted variables.

### 6.3 Significant Findings

Table 10, Significant Moderating Effects

| Effect found   | Approach <sup>1)</sup> | Model <sup>2)</sup> | Moderator  | Sign.                  | Hypothesis                           |
|--|------------------------|---------------------|------------|------------------------|--------------------------------------|
| <b>Customer perceived value:</b>   | VSP                    | M2                  | Continuous | 0.093 *                | <i>H3.2 supported</i>                |
| When customer perceived value is high, relationship quality has a larger effect on share of wallet.                        | VSP                    | M2                  | Dummy      | 0.018 **               |                                      |
|  | VSP                    | M3                  | Dummy      | 0.091 *                |                                      |
| <b>Products vs services:</b>   | MGA                    | -                   | -          | 0.000 ***              | <i>H4.1<sub>alt.</sub> supported</i> |
| When the purchase includes services, brand has a larger effect on share of wallet (compared to when buying products only). | VSP                    | M1                  | Dummy      | 0.000 ***              |                                      |
|  | VSP                    | M3                  | Dummy      | 0.000 ***              |                                      |
| <b>Relationship specific investments:</b>  | VSP                    | M2                  | Dummy      | 0.088 *                | <i>H9.2 supported</i>                |
| When relationship specific investments are high, relationship quality has larger effect on share of wallet.                |                        |                     |            |                        |                                      |
| <b>Buying center heterogeneity:</b>  | MGA                    | -                   | -          | 0.009 **               | <i>H10.2 supported</i>               |
| When buying center heterogeneity is high, relationship quality has a larger effect on share of wallet.                     | VSP                    | M2                  | Continuous | 0.031 **               |                                      |
|  | VSP                    | M2                  | Dummy      | 0.010 **               |                                      |
|  | VSP                    | M3                  | Continuous | 0.081 *                |                                      |
|  | VSP                    | M3                  | Dummy      | 0.019 **               |                                      |
| <b>Buying center time pressure:</b>  | MGA                    | -                   | -          | 0.976 <sup>3)</sup> ** | <i>H11.1 not supported</i>           |
| When buying center time pressure is high, brand has smaller effect on share of wallet.                                     | VSP                    | M3                  | Continuous | 0.089 *                |                                      |
|  | VSP                    | M1                  | Dummy      | 0.005 ***              |                                      |
|  | VSP                    | M3                  | Dummy      | 0.015 **               |                                      |

\* 10% significance level, \*\* 5% significance level, \*\*\* 1% significance level

<sup>1)</sup> MGA = Multi-group analysis, VSP = Variable score product approach.

<sup>2)</sup> M1 = Regression using only brand and interaction term, M2 = Regression using only relationship quality and interaction term, M3 = Regression using both brand and relationship quality, and interaction terms.

<sup>3)</sup> In SmartPLS 3 (Ringle, Wende and Becker 2015), significantly negative values for coefficient differences in MGA are reported as >0,95 (two-sided t-test, p>0,95 = 10% significance, p>0,975 = 5% significance, p>0,995 = 1% significance)

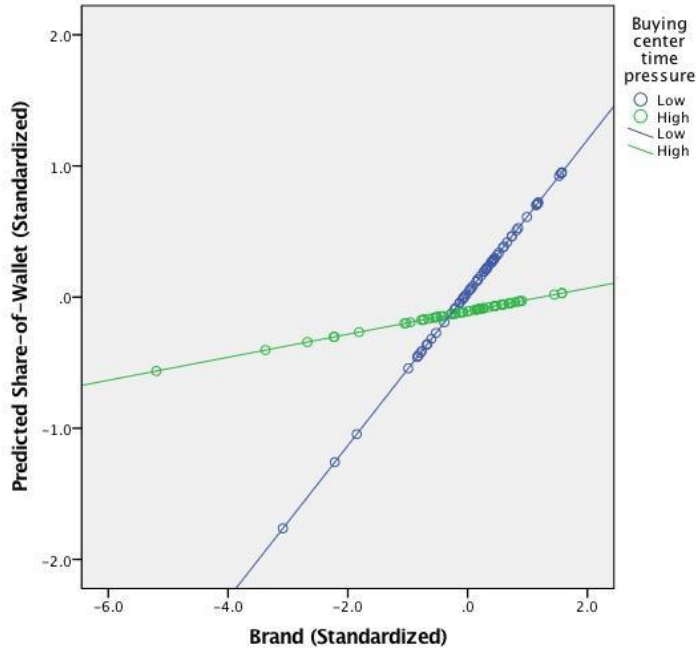


Figure 3, BCTP's Moderating Effect on Brand's Coefficient

As can be seen in Figure 4, buying center time pressure has a significantly moderating effect on the brand's effect on SOW. The lines are the predicted values of SOW for different levels of brand. As can be clearly seen, SOW is predicted to be significantly higher for high levels of brand, when buying center time pressure is low (green line).

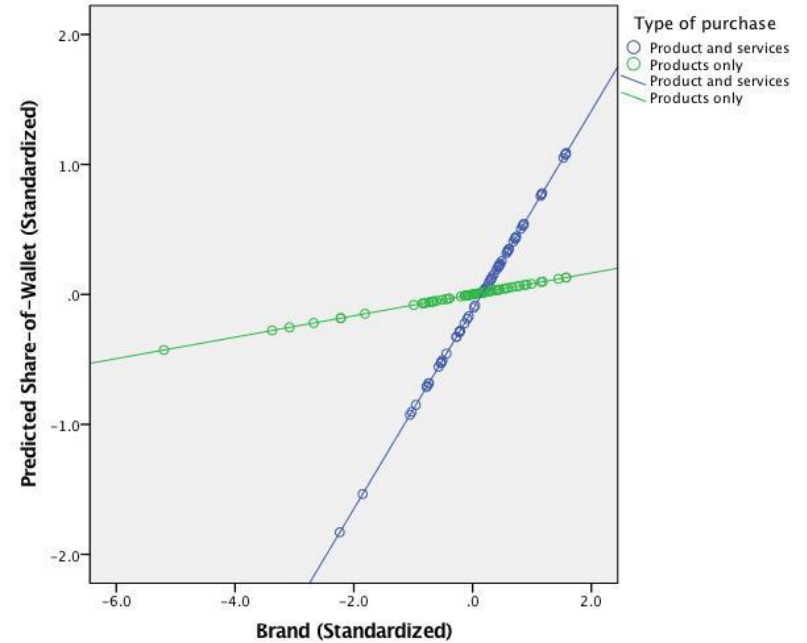


Figure 4, Product vs Service's Moderating Effect on Brand's Coefficient

Figure 5 shows the moderating effect of the type of purchase, where the blue line is for the group buying either services or a mixture of products and services, and the green line is the group buying products only. We can clearly see high levels of brand is associated with significantly higher share of wallet in the service-purchasing group, than in the product-purchasing group.

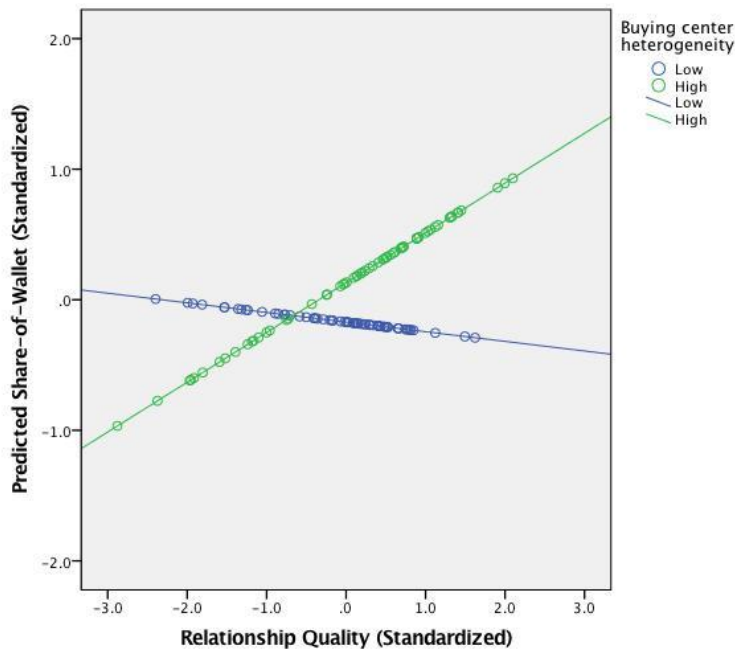


Figure 5, BCH's Moderating Effect on Relationship Quality's Coefficient

Figure 6 shows the moderating effect the level of the buying center's heterogeneity has on the effect that relationship quality has on SOW. We see that in the group where the heterogeneity is high (green line), higher relationship quality is associated with substantially higher SOW.

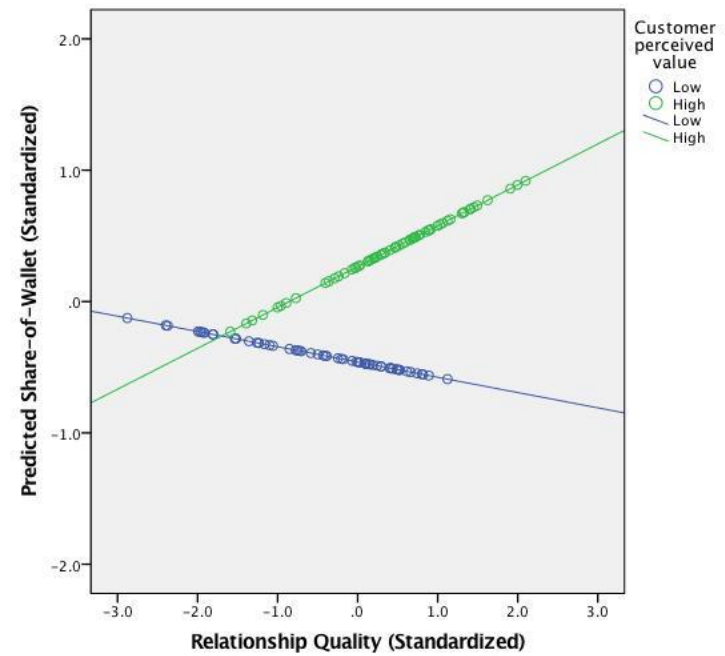


Figure 6, CPV's Moderating Effect on Relationship Quality's Coefficient

In Figure 7 we see how the level of customer perceived value of the product or service, is associated with the effect that relationship quality has on SOW. When the value is perceived as high (green line), higher relationship quality is associated with higher SOW.



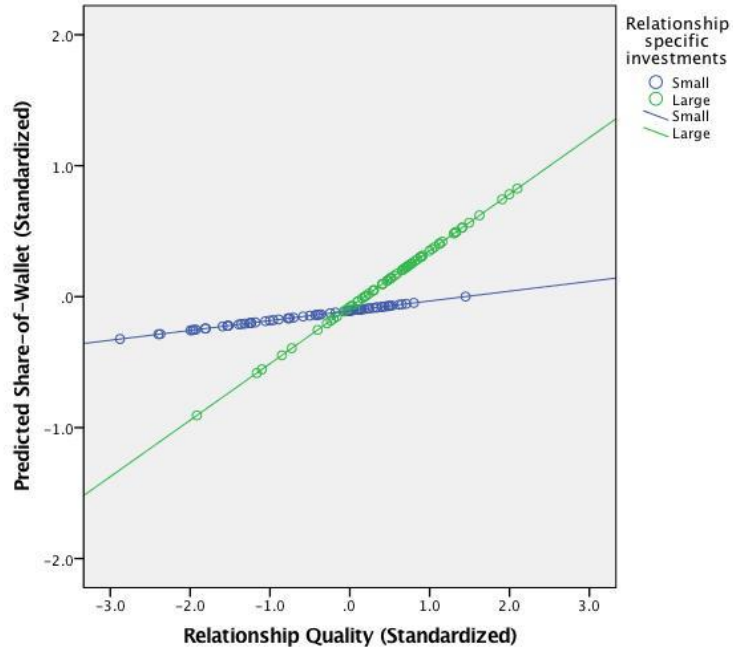


Figure 7, RSI's Moderating Effect on Relationship Quality's Coefficient

Figure 8 show how the level of relationship specific investments moderate the effect that quality of the relationship has on SOW. When the investments are large (green line), stronger relationships tend have higher SOW. In cases where the investments are small (blue line), this does not seem to be the case, and the relationship does not significantly affect the SOW.

### 6.3.1 Findings Compared to Hypotheses

To be able to fully answer the question of brand knowledge substituting relationship quality, and vice versa, we would have to confirm a “complete set” of hypotheses (e.g., both *H4.1* and *H4.2*). We do not find support for two corresponding hypotheses in any of our models or approaches. We do, however, find support for several hypotheses. In this section, we will discuss our findings, relate them to the hypotheses, and provide intuition into these results. For discussion and implications, see *7.0 Discussion*.

Both main effects, (e.g., brand knowledge to SOW, and relationship quality to SOW), are positive and significant, supporting both *H1* and *H2*.

Second, we find that when customer perceived value is high, relationship quality has a larger effect on SOW, lending support to *H3.2*. This finding is in line with the suggestions from Hansen, Samuelsen and Silseth (2008): when the value is high, the customer is less likely to search for alternative suppliers, thus increasing the importance of the relationship. If the value is high, this is an incentive to stay in a stable, functional relationship. If the quality of the relationship is poor, this might trigger a search for alternatives, customers might search for a supplier of the high-value product or service that manages to maintain a high-quality relationship.

In purchases where services are included, as opposed to buying products exclusively, we find that brand has a larger effect on SOW. This finding is consistent at 1% and 5% levels through all the models where it was tested. We also find that the coefficients are significantly different in the group purchasing services (or products and services in a mixed purchase), a difference which turns insignificant for the group purchasing products exclusively. We hypothesized, based on the work of Palmatier et al. (2006), that when services were purchased, the relationship quality would be the relatively more important predictor of SOW. Their argument is that services entail a closer interaction, boosting the importance of the relationship, giving us hypotheses *H4.1* and *H4.2*. We also argued that services are riskier, which gave grounds to the alternative hypotheses *H4.1<sub>alt.</sub>* and *H4.2<sub>alt.</sub>*, because the brand could be acting as a risk-reducing measure in these more complex, and potentially more long-term, purchases, an effect that seems to be drowning out the possibility of the relationship gaining importance in our data. What we find supports the alternative hypotheses *H4.1<sub>alt.</sub>*, lending support to this suspicion.

When relationship specific investments are high, we find that relationship quality has a larger effect on SOW, which supports *H9.2*. When the supplier invests heavily in the relationship, and provides customized solutions and training, this might create a “lock-in” effect, and remove the incentive, or indeed the ability, to search for alternatives. As the customer becomes dependent on the solutions delivered, there must be strong motivation to exit the relationship; if the relationship is of high quality, this incentive should be absent.

For buying center heterogeneity, we find that when heterogeneity is high, relationship quality has a larger effect on SOW. This lends support to *H10.2*, which hypothesized that when the heterogeneity increased, the rationality of the buying center would increase, and that the quality of the relationship is the relatively rational variable in our model. This is further understated by the inclusion of service quality in the relationship quality construct. It is also noteworthy that within the heterogeneity measure, informants are asked about the members’ knowledge about the category, which would imply that when heterogeneity is high, members are more likely to not fully comprehend the functional aspects of the purchase. We would argue that this would increase the importance of the trust in the supplier, and thus further increase the importance of the relationship’s quality.

When buying center time pressure is high, we find that brand has a smaller effect on SOW. We expected the brand to be more important in situations where the time pressure was high (*H11.1*), following the reasoning and findings in Homburg, Klarmann and Schmitt (2010): when the time pressure is high, buying centers have less time to consider all information and make rational decisions, increasing the importance of brands as a heuristic. However, what we find is the exact opposite. Our branding measures contain, among other things, some functional attributes. Thus, one could argue that considering this information would take time, and lead to rational decisions. Further, while we do not find any significant changes in relationship quality, our findings for the brand’s coefficient could indicate that the relationship quality and trust in the relationship is in fact the dominating heuristic when the time pressure is high.

## 7.0 Discussion

In the final part of our master's thesis we discuss the implications and limitations of our findings. First, in section 7.1, we discuss how our findings have implications for theoretical development within marketing. Second, in section 7.2, we elaborate upon the managerial implications of our findings. Finally, in section 7.3, we discuss general limitations of our study, and suggest future research directions.

### 7.1 Implications for Theoretical Development

We argue that our study, with our proposed model and respective findings, have implications for theoretical development within the marketing field. Our implications for theoretical development are discussed in more detail, and separated into four categories: 1) aligning B2B marketing research efforts, 2) separation of brand image and brand awareness, 3) separation of service quality and relationship satisfaction, and 4) a need for improved measurement items.

#### 7.1.1 Aligning B2B Marketing Research Efforts: Branding and Relationships

Based on our literature review, we argue that both branding and relationships should be considered as “two sides of the same coin”. Our research question describes a potential substitution effect between these constructs as the context changes, a question which is built on untested assumptions in the literature. While only partially supported, we do see this tendency in our analysis: when one coefficient increases, the other tends to decrease. This could potentially be a result of an over-simplified model, and issues with the data, and we would argue the question still merits closer examination.

In addition, many researchers and practitioners have argued that B2B branding has little or no relevance. Only in recent years, has there been an increase in research into B2B branding. Therefore, it was difficult to get our hands on relevant articles from well-known and top-tier marketing journals. As a result, most of the measurement items for brand awareness, brand image, and brand identification are derived from extensive research on B2C branding.

More recent research claims that branding has value for B2B firms. Indeed, in both our model specifications, the brand has the higher coefficient, and the best (lowest) p-value, a finding which substantiates the claim of branding's importance

in B2B. Despite several limitations to our study, we argue that our findings both contribute and motivate further research on B2B marketing.

#### 7.1.2 Separation of Brand Image and Brand Awareness

Our second theoretical implication could simplify model specifications in the future. We applied most branding items from the B2C marketing discipline, due to the lack of canonized measures and terminology in the B2B field. The B2C research considers brand image and brand awareness as clearly distinguishable building blocks of brand knowledge and brand equity. These theories are well-established and accepted among marketing scholars and practitioners. We did find some research suggesting that the differences between B2B and B2C branding are insignificant (Davis, Golicic and Marquardt 2008). However, in our EFA we find that brand image and awareness items load on the same latent construct. Furthermore, our initial eight brand image items were reduced to a final of three items after also running a CFA on our results. A closer look at these items suggest that it is primarily the items capturing the tangible aspects of brand image that are removed. Hence, tangible aspects of brand image do not significantly explain brand image in our data. One explanation might be that our brand image items are too poor and do not capture their true meaning. It could also indicate that the brand acts differently in B2B, and that the separation of image and awareness is unnecessary. If this is truly the case, researchers could rely on simpler models for brand knowledge in B2B. In any case, there is still a need to better understand how B2B brands should be measured in the future.

#### 7.1.3 Separation of Service Quality and Relationship Satisfaction

As in chapter 7.1.2, our third theoretical implication could further simplify model specifications in the future. Service quality and relationship satisfaction are established, tested and tried constructs. However, as our EFA findings suggests, these two constructs are closely related, resulting in a combined satisfaction measure in the current thesis. Future research could greatly benefit from a better understanding of how these constructs are related. If, upon closer inspection, it turns out that combining these in the same construct is appropriate, this could greatly enhance the simplicity of model specifications.

#### 7.1.4 Need for Improved Measurement Items for Future Research

Our final theoretical contribution considers the challenge with having proper scale development. This problem was primarily present in the branding field. First, we had to remove several measurement items from our data set due to poor factor loadings in both the EFA and CFA. Second, for some constructs we needed to combine scales from different sources, as none of the scales we found were deemed sufficient to truly capture the construct in question. What we experienced was a lack of agreed-upon measures, building on tested theories. The B2B branding field would benefit from further attempts at scale development

#### 7.2 Managerial Implications

Prior research has investigated the effects of B2B branding and B2B relationships. However, to our knowledge, no prior research investigates both constructs in the same model. Hence, our study is the first attempt to merge these two fields within B2B marketing. After establishing the theoretical implications of our study, our findings also have managerial implications that deserves special attention. As will be remembered by now, we do not find a substitution effect. This was the main reason for this study. However, we do see different moderating effects that may have important implications for marketers and practitioners. These implications will be discussed in further detail.

First, we find that *relationship quality has a larger effect when customer perceived value is high*, which corresponds with our expectations. We would argue that this reflects that the customer (ref. buying firm) is less likely to search for alternatives (ref. suppliers) when product/service value is high. In contrast, if relationship quality is low, there is a desire to exit the relationship. Thus, low quality relationships are punished harder, if the perceived value of the purchase to the customer is high, and suppliers of high-value products and services should invest more in developing and strengthening their relationships with customers.

Second, we find that *branding is more important to service-offering firms, and firms offering a combination of products and services*. More specifically, we find that when the purchase includes services, or consists exclusively of services, brand knowledge has a significantly larger effect on SOW. This has important implications for marketing managers. Managers of such firms should benefit by using branding actively to acquire and retain customers. On the flipside, managers of pure product-selling firms do not need to pay as close attention to branding.

Third, our findings suggest that *relationship quality has a larger effect on SOW when RSI is high*. Thus, if the business-model involves large investments (e.g., in training customers, co-development of products and service), there is even more to be gained from being on good terms with your customers, as they are more likely to reward a strong relationship with continued business. The advantage of this is that higher investments, if successful, are also likely to increase the quality of the relationship

Fourth, we find that *relationship quality has a larger effect on SOW when BCH is high*. Hence, higher heterogeneity in the buying center tends to translate into giving the business to the most trusted supplier. Thus, as a seller, there may be more to be gained from building strong relationships with the entire buying center, if the heterogeneity is high.

Finally, we find that *brand has a smaller effect on SOW when buying center time pressure is high*. This contradicts our expectations, which were built on findings from Homburg, Klarmann and Schmitt (2010). As discussed in section 6.6.1, it could be that once we account for the relationship in the same model, this becomes the dominant heuristic as the time-pressure increases, and this question merits further exploration. In any case, our findings indicate that there is less to be gained from extensive branding when the customers operate under tight schedules and in hectic environments.

## 7.4 Limitations and Future Research Directions

Despite the numerous theoretical and managerial implications, there are several limitations to this study. Some of these limitations could and should be addressed by future research.

### 7.4.1 External Validity Limitations

Our study faces challenges regarding external validity. First, the final data set of complete responses (e.g., 131) is relatively small. A larger data set could potentially increase reliability and validity of our findings.

Second, this study is conducted among Norwegian firms collected through a Norwegian website. Thus, our findings may not be applicable to other countries and cultures.

#### 7.4.2 Internal Reliability Limitations

There are also limitations regarding issues in the underlying models, threatening the internal reliability of our findings.

First, we do not have any control variables to improve the  $R^2$  of the dependent variable (e.g., SOW). As a result, some of the coefficients might be over or under estimated instead of reflecting reality. Future research should pay attention to such control variables. By controlling for other factors that affect SOW, researchers may detect even stronger (or weaker) effects, or perhaps other effects that we have not accounted for.

Second, we perform PLS-SEM, which is an emerging field in itself. As a result, we had few papers to base our analysis on, and had to rely on a few key articles. We did, however, follow recommended guidelines where possible. We used this approach because it was better suited to our needs than more traditional CB-SEM.

Third, as we discovered during our data collection process, some respondents faced problems with understanding our English questionnaire. However, as this was a problem we discussed prior to our data collection process, we feared that translating the questionnaire to Norwegian would have more drawbacks than benefits. Translating well-established theories from English to Norwegian is both time consuming and complex. From fear of losing the nuances in the original scales, we judged it better to stay with the original wording. Instead, we argue that similar and future studies would benefit by gathering data from English-speaking respondents only, or from performing surveys in multiple languages, and verify the bilingual robustness of developed scales.

Fourth, some constructs could perhaps be measured differently (e.g., duration and BCTP). More specifically, we investigate the moderating role of relationship duration and buying center time pressure. Optimally, duration could be measured as a time-series. Similarly, buying center time pressure could be investigated as a sort of experiment or simulation process. As we did neither have the time or resources for these methods, we argue that future research could apply one or both methods to better explain the effects of relationship duration and buying center time pressure.

Finally, to get a satisfactory number of respondents, we gathered data from firms across a variety of industries (e.g., construction, logistics, manufacturing, etc.) and different product/service categories (e.g., FMCG, services, commodities,



etc.). While this does improve external validity and generalizability of our findings, it could reduce the reliability of our estimations, and introduce unaccounted for noise.

## 8.0 List of Abbreviations

|                |  |
|----------------|--|
| <b>B2B</b>     | <b>Business-to-Business</b>                                |
| <b>PLS-SEM</b> | <b>Partial Least Squares Structural Equation Modelling</b> |
| <b>CB-SEM</b>  | <b>Covariance-Based Structural Equation Modelling</b>      |
| <b>B2C</b>     | <b>Business-to-Consumer</b>                                |
| <b>EFA</b>     | <b>Exploratory Factor Analysis</b>                         |
| <b>CFA</b>     | <b>Confirmatory Factor Analysis</b>                        |
| <b>SOW</b>     | <b>Share of Wallet</b>                                     |

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## 12.0 Appendices

### 12.1 Appendix 1 - Survey Questions

| <b>Title</b>                    | <b>Text/Question/Choice</b>   |
|---------------------------------|---|
| <i>Instructions</i><br>(Part 1) | In the following survey, you will be asked to answer questions regarding <b>the buying process</b> (e.g., supplier characteristics, and product/service category). <b>Please read the information and questions carefully.</b>  |
| <i>Instructions</i><br>(Part 2) | <b>What is a buying center?</b><br>A buying center member is defined as anyone in your organization who <b>actively influences any given purchase decision</b> . The buying center therefore consists of all these individuals. You should, to the best of your ability, try to <b>answer the following survey on behalf of your firm's buying center</b> , and their collective sentiment. |
| <i>Info details</i><br>(Part 1) | What is your role/position within your firm?<br>Choose option:<br><ul style="list-style-type: none"> <li>• Accounting</li> <li>• Engineering</li> <li>• Human resource management</li> <li>• Legal</li> <li>• Management</li> <li>• Purchasing</li> <li>• Sales</li> <li>• Other</li> </ul>   |
| <i>Info details</i><br>(Part 2) | Approximately how much of your time is spent performing supplier selection and/or purchasing?<br>Sliding scale from 0 – 100%.   |
| <i>Supplier Info</i>            | Please consider a purchase decision that you have taken part in. In the following you will be asked to identify the supplier that your firm chose to go with, as well as one (1) alternative that was considered.   |
| <i>SCI</i>                      | What category of product/service was this purchase in?<br>Text entry (hereafter known as: [Category]).<br>(e.g., screws, timber, CRM-software, production facilities, office supplies)  |

|                |   |   |
|----------------|---|---|
| <i>SC2</i>     | Which supplier did your company choose as the primary supplier for this purchase?                 | Text entry (hereafter known as: “Supplier A”).  |
|                | NB! Name only one (1) supplier  | If chosen in Random1/Random2, “Supplier A” = [Supplier]   |
| <i>SC3</i>     | Which supplier did you also consider for this purchase?   | Text entry (hereafter known as: “Supplier B”)   |
|                | (Either as backup-supplier, or as supplier not used for this purchase)                            | If chosen in Random1/Random2,   |
|                | NB! Name only one (1) supplier  | “Supplier B” = [Supplier]   |
| <i>RTest1</i>  | Would you say your company currently has a relationship with <b>Supplier B</b> ?                  | Choose option: <ul style="list-style-type: none"> <li>• No</li> <li>• Yes, but to a small extent</li> <li>• Yes</li> </ul>  |
| <i>Random1</i> | In the following survey, you will be asked to consider ( <i>choose the supplier to continue</i> ) | Choose option: <ul style="list-style-type: none"> <li>• Supplier A</li> <li>• Supplier B</li> </ul> <p>Note that:<br/>Question appear if “No” <b>was not</b> selected in RTest1. Only one response option shown, randomly selected.</p> |
| <i>Random2</i> | In the following survey, you will be asked to consider ( <i>choose the supplier to continue</i> ) | <ul style="list-style-type: none"> <li>• Supplier A</li> </ul> <p>Note that:<br/>Question appear if “No” <b>was</b> selected in RTest1.</p>   |

|                   |  |  |
|-------------------|--|--|
| <i>PvsS</i>       | What was included in this purchase?  | Choose option: <ul style="list-style-type: none"> <li>• Physical product (No additional services, such as maintenance, support, etc.)</li> <li>• Product and services</li> <li>• Service (No physical product included)</li> </ul> |
| <i>SOWI</i>       | Out of your firm's purchases in this product/service category, approximately how much (in percent) has been/will be sourced from [Supplier]...   |  |
| <i>SOWI_1</i>     | ... over the <b>last five</b> years  | Sliding scale from 0 – 100%.   |
| <i>SOWI_2</i>     | ... <b>this</b> year   | Sliding scale from 0 – 100%.   |
| <i>SOWI_3</i>     | ... over the <b>next five</b> years  | Sliding scale from 0 – 100%.   |
| <i>CPVI_1</i>     | [Supplier]'s products/services are of high value to our firm   | 7-point Likert scale (Strongly disagree – Strongly agree).   |
| <i>CPVI_2</i>     | The benefits our firm receives from [Supplier]'s products/services far outweigh the costs  | 7-point Likert scale (Strongly disagree – Strongly agree).   |
| <i>CPVI_3</i>     | Our firm receives higher value for money by choosing [Supplier] over their competitors   | 7-point Likert scale (Strongly disagree – Strongly agree).   |
| <i>Brand Info</i> | In the following questions, we would like you to consider [Supplier]'s <b>brand</b> .  |  |
|                   | <b>What is a brand?</b><br>A brand is defined as "a <b>name, term, sign, symbol, or design, or combination of them</b> which is intended to <b>identify the goods and services of one seller or group of sellers</b> and to differentiate them from those of competitors" (Kotler 1991). |  |
| <i>BAI</i>        | The brand [Supplier]...  |  |

|              |  |   |
|--------------|--|---|
| <i>BA1_1</i> | ... is known to most of the members of our firm's buying center.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BA1_2</i> | ... comes to mind <b>immediately</b> when referring to the product/service category [ <b>Category</b> ]            | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BA1_3</i> | ... is <b>top of mind</b> when our firm's buying center thinks of the product/service category [ <b>Category</b> ] | 7-point Likert scale<br>(Strongly disagree – Strongly agree)  |
| <i>BA1_4</i> | ... can be clearly related to a certain product/service category.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII</i>   | Your firm's buying center for products/services in the category [ <b>Category</b> ] views brand [Supplier]...      |   |
| <i>BII_1</i> | ... to be of very high quality.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_2</i> | ... to be secure.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_3</i> | ... to be safe.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_4</i> | ... to be reliable.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_5</i> | ... to make believable claims.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_6</i> | ... to be quick to respond to product/service failures.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |

|                                 |   |   |
|---------------------------------|---|---|
| <i>BII_7</i>                    | ... to be concerned with the maintenance of their products/services.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>BII_8</i>                    | ... to deliver products/services that are simple to integrate in your systems.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>Relation-<br/>ship Intro</i> | In the following questions, you will be asked to consider the <b>relationship</b> that your firm has with [Supplier]'s representatives. |   |
| <i>RTI</i>                      | In our relationship, supplier [Supplier]...   |   |
| <i>RTI_1</i>                    | ... can be trusted to do what's right.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree)  |
| <i>RTI_2</i>                    | ... can be trusted at all times.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>RTI_3</i>                    | ... has high integrity.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>RCI</i>                      | The relationship that our firm has with [Supplier]...   |   |
| <i>RCI_1</i>                    | ... deserves our firm's maximum effort to maintain.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>RCI_2</i>                    | ... is something our firm intends to maintain indefinitely.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>RCI_3</i>                    | ... is something our firm is very committed to.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree). |
| <i>RSI_1</i>                    | Overall, how satisfied is your firm with <b>the relationship</b> with [Supplier]?   | 7-point Likert scale<br>(Very dissatisfied – Very satisfied). |
| <i>RSII</i>                     | In the following questions, you are asked to estimate [Supplier]'s <b>investments in your relationship</b> .                            |   |

|                      |  |  |
|----------------------|--|--|
| <i>RSI2</i>          | In their relationship with us, [Supplier] has invested significant resources in...   |  |
| <i>RSI2_1</i>        | ... providing our firm ongoing training.   | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>RSI2_2</i>        | ... providing our firm customized support.   | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>RSI2_3</i>        | ... improving personal relations.  | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>RSI2_4</i>        | ... co-developing customized new products and services with or for us.   | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>RD1</i>           | For how many years has your firm been doing business with [Supplier]?  | Roll down list from: 0, 1, 2, ..., 40, more than 40.       |
| <i>General Intro</i> | The following questions are more general in nature, and should be answered with the <b>overall delivery from</b> [Supplier] in mind. |  |
| <i>OSQ1</i>          | Our firm's buying center...  |  |
| <i>OSQ1_1</i>        | ... would say that [Supplier] provides superior service to us.   | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>OSQ1_2</i>        | ... believes that [Supplier] offers excellent service to us.   | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>BC1</i>           | Approximately how many purchases has your firm made (for any supplier) in the category [Category], <b>over the last five years?</b>  | Roll down list from: 0, 1, 2, ..., 40, more than 40.       |
| <i>BC2</i>           | Approximately how many purchases (independently of category) has your firm made from [Supplier], <b>over the last five years?</b>    | Roll down list from: 0, 1, 2, ..., 40, more than 40.       |

|                |   |  |
|----------------|---|--|
| <i>Note</i>    | For the last couple of questions, we are no longer considering [Supplier], but rather the category [ <b>Category</b> ] overall. |  |
| <i>PPR1</i>    | Think of buying in the category [Category], independently of supplier (e.g., from any supplier).                                |  |
|                | How would you rate the risk from...   |  |
| <i>PPR1_1</i>  | ... the performance/functionality of the product/service.   | 7-point Likert scale (Very low – Very high).               |
| <i>PPR1_2</i>  | ... the potential financial losses or high costs.   | 7-point Likert scale (Very low – Very high).               |
| <i>PPR1_3</i>  | ... the possibility that the product/service would not meet the approval of management or members of your peer group.           | 7-point Likert scale (Very low – Very high).               |
| <i>BCH2</i>    | Our firm's buying center members in the purchase category [Category]...   |  |
| <i>BCH2_1</i>  | ... have diverse professional backgrounds.  | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>BCH2_2</i>  | ... have differing knowledge with respect to purchases in this category.  | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>BCH2_3</i>  | ... pursue different interests and priorities in the purchase of this product/service.  | 7-point Likert scale (Strongly disagree – Strongly agree). |
| <i>BCTP1</i>   | When considering purchases in the category [Category]...  |  |
| <i>BCTP1_1</i> | ... the buying center feels pressured to reach a decision quickly.  | 7-point Likert scale (Strongly disagree – Strongly agree). |

|                             |  |  |
|-----------------------------|--|--|
| <i>BCTPI_2</i>              | ... our decision makers feel a high time pressure.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <i>BCTPI_3</i>              | ... the buying center does not have much time to consider purchase-related information carefully.        | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <hr/>                       |  |  |
| <i>MTT1</i>                 | In the category [Category]...  |  |
| <i>MTT1_1</i>               | ... technology changes rapidly.  | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <i>MTT1_2</i>               | ... technological changes provide significant opportunities.   | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <i>MTT1_3</i>               | ... a large number of new product ideas have been made possible through technological breakthroughs.     | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <hr/>                       |  |  |
| <i>CPH1</i>                 | In the category [Category]   |  |
| <i>CPH1_1</i>               | ... the technical attributes of competing offerings are relatively similar.                              | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <i>CPH1_2</i>               | ... competing product/service offerings are not very different with regards to functionality.            | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <i>CPH1_3</i>               | ... our firm would have received the same benefits from most of the available product/service offerings. | 7-point Likert scale<br>(Strongly disagree – Strongly agree).          |
| <hr/>                       |  |  |
| <i>InfoDetails (Part 3)</i> | How influential would you say you are when purchases in the category [Category] are discussed?           | 7-point Likert scale<br>(Very weak influence – Very strong influence). |