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**THE IMPACT OF BRAND IMAGES ON THE PURCHASING
BEHAVIOR OF BUSINESS-TO-BUSINESS MARKET
PARTICIPANTS**

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ANNOTATION

Powerful brands create meaningful images in the minds of consumers with brand images serving as a means of differentiation from the competition and thus positively influencing customer's purchasing behavior. However, until recently most marketing discussions in Business-to-Business settings focused exclusively on the performance characteristics of the product or on the needs of buyers addressed by rational and tangible features of the product and price. The extensive literature review shows that an increasing amount of studies indicate cases where price and tangible factors do not fully explain B2B purchasing behavior. However, little knowledge exists about how individual brand image dimensions influence B2B purchasing behavior and which dimensions have the highest impact. Particularly little is known about the relative impact of intervening variables explaining the relationship between brand images and purchasing behavior.

The purpose of this dissertation is to analyze how different dimensions of brand image influence the purchasing behavior of B2B market participants and which intervening variables are the most influential in explaining this relationship. A new model was developed to empirically address the cause and effect relations from brand performance to purchasing behavior, intervened by brand attachment, while integrating the contextual variables of purchase complexity and purchase risk. Through conceptualizing brand image into five sub-dimensions being brand performance, brand credibility, brand trust, company reputation and brand feelings, the interrelation between image dimensions and their impact are revealed in a uniquely fine grading. The empirical survey was conducted in the railway industry, a B2B branch which had thus far never been analyzed in a similar way before.

The research results show that brand image dimensions do not directly impact B2B purchasing behavior, but only through the intervening effect of brand attachment, customer satisfaction and switching costs. Feelings and trust evoked by B2B brands appear to lead to an emotional attachment which, as the major intervening variable in the causal model, impacts purchasing behavior. The emotional concept of brand attachment is more strongly positively related to purchasing behavior than mere customer satisfaction and switching costs. The research provides a uniquely holistic understanding of the role of brand images in regard to B2B purchasing behavior. Other researchers are advised to revalidate and, if necessary, refine the measurement instrument to suit it to other industries.

Key words: B2B, brand images, rationality, emotionality, purchasing behavior

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List of Abbreviations

AMA	American Marketing Association
AVE	Average Variance Extracted
BAV	Brand Asset Valuator
B2B	Business-to-Business
B2C	Business-to-Consumer
CBBE	Customer-based Brand Equity
Cf.	Conferre
EDI	Electronic Data Interface
e.g.	exemplī grātiā
etc.	Et cetera
H2H	Human-to-Human
Ibid.	Ibidem
i.e.	ibid est
JIT	Just in Time
n.a.	Not applicable
MDS	Multidimensional Scaling
Max.	Maximum
Min.	Minimum
OEM	Original Equipment Manufacturer
PLS	Partial Least Squares
RSQ	R squared
SD	Standard Deviation
S-O-R	Stimulus-Organism-Response
SPSS	Statistical Software Package for the Social Sciences
VIF	Variance Inflation Factor

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INTRODUCTION

Actuality of topic

Powerful brands create meaningful images in the minds of consumers¹ with brand images serving as a means of differentiation from the competition and thus positively influencing customer's purchasing behavior. This notion is well established in academia and practice when it comes to private consumption. In contrast, until recently most discussions of marketing in Business-to-Business settings focused exclusively on the performance characteristics of the product or on the needs of buyers addressed by rational and tangible features of the product and price.² Industrial marketers have long argued that brands play little role in the decision making process because B2B buyers are often rationally trained professionals and thus different from private consumers, thereby limiting the impact of brand stimuli typically viewed as playing more to emotions and self-expressive desires on behalf of buyers.³ However, an increasing amount of studies indicate cases where price and tangible factors do not fully explain buying decisions made by B2B customers. Increasing complexity and price pressures continues to boost brand importance in the B2B sector⁴, making branding a necessity in the struggle for competitiveness. The notion which has arisen since the brink of the new millennium is that B2B customers, who normally operate within organizational constructs called buying centers, can be influenced by brand images that are also based on nonfunctional and subjective attributes.⁵ This can be seen in managerial practice by the fact that among the world's top 100 brands, names like Caterpillar, Cisco, SAP and Xerox can be found, all of which are either largely or fully B2B brands.⁶ In managerial practice B2B companies have adopted communication methods such as the product placement of Caterpillar excavators in the 2012 Hollywood movie "Skyfall" or Kuka industry robots in the earlier James Bond picture "Die another Day".⁷ These examples show that the importance of branding B2B is being increasingly acknowledged and, moreover, that through targeting B2B customers as private persons and appealing to their emotions, marketers attempt to emotionalize the image of their brands to influence the purchasing behavior of their

¹ Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 2.

² Cf. Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380, p. 371.

³ Cf. Lindgreen, A., Beverland, M. B., & Farrelly, F. (2010). From strategy to tactics: Building, implementing, and managing brand equity in business markets. *Industrial Marketing Management*, 39(8), 1223–1225, p. 1223.

⁴ Cf. Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, pp. 34-35.

⁵ Cf. Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380, p. 371.

⁶ Cf. Interbrand. (2015). Best Global Brands 2015. Retrieved from <http://bestglobalbrands.com/>*

⁷ Cf. Homburg, C., & Schmitt, J. (2010). Von Robotern und Emotionen. *Harvard Business Manager*. (09). Retrieved from <http://www.harvardbusinessmanager.de/heft/artikel/a-714747.html>*

organizational customers. In line with these developments, the literature review of empirical evidence of the importance of B2B branding and its behavioral consequences shows that brands seem to have a role to play in B2B and that both rational as well as emotional image dimensions are important. At the same time, however, while interest in B2B branding continues to grow, studies within this field have been slower to emerge than those examining the role of brands in consumer markets⁸ which makes B2B branding still a relatively under-researched subfield of marketing research. Particular shortcomings of existing research are that the construct brand image were often conceptualized and measured in very generic and limited terms and separate from product, price and service dimensions. Little knowledge exists about how individual brand image dimensions influence the purchasing behavior of B2B market participants and which dimensions have the highest impact. Existing studies appear quite fragmented and methodologically hardly generalizable. Another shortcoming is that despite investigating customer response many empirical studies capture only marketer's input. Taking into account the peculiarities of B2B markets and purchasing processes, little is known about the relative impact of intervening variables explaining the relationship between brand images and purchasing behavior. From a sectorial standpoint, there is a particular lack of empirical research in the heavy equipment sector and especially in the railway industry, in which some of the world's strongest B2B brands are active.

Purpose

The purpose of this dissertation is to analyze through scientific triangulation comprising literature review, empirical investigation and expert feedback, how different dimensions of brand image influence the purchasing behavior of B2B market participants and which intervening variables are the most influential in explaining this relationship, in order to explain underlying cause and effect relationships on a holistic level.

⁸ Cf. Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204, p. 194.

Tasks

- 1) An extensive literature review of the theories of branding in B2B context is to be conducted in order to capture the state of research in this subfield of marketing management and identify research gaps requiring further scientific investigation.
- 2) A causal model to analyze the impact of brand images on B2B purchasing behavior including intervening variables and contextual variables is to be constructed.
- 3) A suitable measuring instrument for brand images in B2B context is to be developed. Existing measures must be reviewed and, where needed, adapted to suit them to the research purpose.
- 4) A pre-survey is to be conducted, employing the exploratory method of multidimensional scaling, in order to gain a better understanding of the nature of purchasing, which underlies this research in the railway industry.
- 5) The postulated causal model is to be submitted to empirical testing. In order to improve the quality of the research, the author does not rely on single respondents but instead identified, through a function analysis, several buying center members within each firm so as to better reflect multipersonality which is common to B2B purchasing in a most realistic way.
- 6) Empirically gathered data is to be analyzed and interpreted, applying both descriptive as well as inferential statistical procedures.
- 7) In order to add more depth and richness to the empirical results, the findings experts are to be fed back to industry experts in a focus group discussion for qualitative interpretation.
- 8) Based on both the qualitative and quantitative research results, the research questions are to be answered and conclusions as well as comprehensive suggestions for the research discipline as well as for managerial practice are to be developed.

Research Object

Management of brand images within the railway industry.

Research Subject

Dimensions having an impact on the brand image and variables relevant to the purchasing behavior of B2B market participants.

Research questions

The comprehensive literature review has shown that, despite a long-standing negligence of branding for B2B settings, the importance of branding to B2B marketing has meanwhile been widely established. At the same time, studies within this field have been slower to emerge and they appear more fragmented than those conducted in consumer markets. Therefore the following research questions have been posed based on the literature review and the identified research gaps:

- RQ₁:** How do different dimensions of brand image impact the purchasing behavior of B2B market participants?
- RQ₂:** Which image dimensions influence the purchasing behavior of B2B market participants most strongly?
- RQ₃:** Which are the intervening variables impacting the degree of influence of brand images on the purchasing behavior of B2B market participants most significantly?
- RQ₄:** How can a valid and reliable measuring instrument for brand images in B2B context be developed and operationalized?

Hypotheses

- H_B:** The rational brand image dimension impacts the purchasing behavior of B2B market participants through the intervening effects of both the emotional image dimensions and the intervening variables of switching costs, customer satisfaction and brand attachment.

Due to the high number of variables of interest for this research, the author summarized individual relationships into meaningful higher order aggregations, as overarching sub-hypotheses. The five derived main sub-hypotheses are:

- SH₁:** The rational image dimension positively impacts the emotional image dimensions.
- SH₂:** The emotional brand image dimensions positively impact brand attachment.
- SH₃:** Brand attachment, customer satisfaction and switching costs positively impact purchasing behavior.

SH₄: Brand attachment impacts purchasing behavior more strongly than both customer satisfaction and switching costs.

SH₅: Purchase complexity and purchase risk are positively related to switching costs.

Theses for defense based on the research results

- 1) The rational brand image dimension impacts the purchasing behavior of B2B market participants through the intervening effects of both the emotional image dimensions and the intervening variables of switching costs, customer satisfaction and brand attachment.
- 2) There are two rational paths of influence: One from brand performance via switching cost to purchasing behavior and one from brand performance via customer satisfaction to purchasing behavior. Likewise there is an emotional path of influence from brand performance through brand feelings and brand attachment to purchasing behavior.
- 3) Brand attachment is a superior influencer of purchasing behavior compared to customer satisfaction and switching cost.
- 4) Purchase complexity is a significant influencer of purchase risk, which makes brand image an important heuristic towards reducing purchase risk perceived by buying center members, particularly so in highly complex purchase situations.

Novelty

- A new model was developed to empirically address the cause and effect relations from brand performance to purchasing behavior, intervened by switching costs, customer satisfaction and brand attachment, while also integrating contextual variables. The model further allows a comparison between the impact strength of brand attachment, customer satisfaction and switching costs on purchasing behavior. This allows for a uniquely holistic understanding of the role of brand images on the purchasing behavior of B2B market participants. The model can therefore be regarded as the most comprehensive framework in the research field to date.
- Through dimensioning brand image into five sub-dimensions being brand performance, brand credibility, brand trust, brand feelings and company reputation, the interrelation between image dimensions and their respective impact are revealed in a uniquely fine grading. Hence, the newly

developed measuring instrument allows measuring brand image in greater detail than any existing measures.

- Introduction of the brand feeling dimension is a novelty which has not been addressed in a similar way before in B2B.
- The present dissertation is the first one to gain empirical evidence of the influence of brand images on the purchasing behavior of B2B market participants in the railway industry, an industry branch which is representative of capital goods in Original Equipment Manufacturer and project business and which has never been subject to similar studies before. Hence, the novelty comprises both the research model as well as the industry sector in which it was empirically tested.

Used methods

Scientific databases were searched using key words such as B2B, branding, brand image, organizational purchasing/buying behavior. After the relevant body of literature was identified, the author reviewed articles, publications and books dating back to the 1950s for general image theory and to the late 1960s for contents related to B2B specifics.

Expert interviews with both industry representatives and a professor, who is active in the railway industry, were conducted in order to identify relevant image dimensions and indicators for their operationalization.

A pre-survey was conducted in order to test the stimulus brands for perceived discriminance. The method applied was multidimensional scaling. This exploratory pre-survey revealed that the 13 brands in the category of rail drive systems showed a high degree of discriminance, which in combination with high levels of customer involvement places the present research in the field of complex buying behavior.

An empirical survey was conducted based on a self-completion online questionnaire programmed by the author. Data analysis was conducted utilizing the partial least squares (PLS) approach.

As the final step of the triangulation, the empirically gathered results were reflected with the same experts who supported conceptualization and measure development of relevant image dimensions applying the method of focus group research.

Approbation of results of research (publications, conferences)

The development of this dissertation was guided by regular presentation and discussion of the results within the scientific community through the following international business conferences and publications:

a) Conferences

- 1) Haußmann, Aaron Leander (2013). The Impact of Brand Images on the Buying Behavior of B2B Customers, International Business and Economics Conference, University of Applied Science Kufstein, Nov. 29-30, 2013, Kufstein, Austria.
- 2) Haußmann, Aaron Leander (2014). Measuring Brand Emotions in Applied Business to Business Marketing Research, EDAMBA International Scientific Conference for Doctoral Students and Young Researchers, University of Economics in Bratislava, Nov. 13-14, 2014, Bratislava, Slovak Republic.
- 3) Haußmann, Aaron Leander (2015). Exploring Relative Brand Perception of B2B Brands using Multidimensional Scaling, 73rd Annual Scientific Conference of University of Latvia, Riga, Jan. 27-28, 2015, Riga, Latvia.
- 4) Haußmann, Aaron Leander (2015). The Association between Brand Emotions and B2B Buying Relevance, IAI Conference on Modern Economics and Social Sciences, Academy of Management and Administration in Opole (WSZiA Opole), Opole, Apr. 09-10, 2015, Opole, Poland.
- 5) Haußmann, Aaron Leander (2015). The Impact of Brand Images on B2B Buying Relevance, WEI 2015 International European Academic Conference, Vienna, Apr. 12-15, 2015, Vienna, Austria. [Part 1: Focus of the presentation was the holistic image construct in relation to general purchasing relevance]
- 6) Haußmann, Aaron Leander (2015). The Impact of Brand Emotions on B2B Buying Relevance, ICEM 2015 International Scientific Conference Economics and Management, May 6-8, 2015, Kaunas, Lithuania. [Part 2: Focus of the presentation were aspects of customer ethnocentrism when evaluating B2B brands in purchasing decisions]

7) Haußmann, Aaron Leander (2016). Brand Performance and B2B Buying Behavior: The Impact of Customer Satisfaction, Brand Feelings, and Brand Attachment on B2B Buying Behavior, Institute for the Study of Business Markets (ISBM) Biennial Academic Conference, August 3-4, 2016, Atlanta, USA.

8) Haußmann, Aaron Leander (2016). The impact of customer satisfaction and brand attachment on B2B purchasing behavior, Summer American Marketing Association (AMA) Conference, August 5-6, 2016, Atlanta, USA. (Session Chair for the Consumer Behavior track).

b) Publications

1) Haußmann, Aaron Leander (2014). Measuring Brand Emotions in Applied Business to Business Marketing Research. In: Conference Proceedings, Bratislava, Slovak Republic pp. 194-203.

http://www.euba.sk/edamba/files/conferences/1/web/EDAMBA_2014_Proceedings.pdf. ISBN 978-80-225-4005-6 (Best Paper Award).

2) Haußmann, Aaron Leander (2015). The Association between Brand Emotions and B2B Buying Relevance. In: Conference Proceedings IAI Conference on Modern Economics and Social Sciences, Academy of Management and Administration in Opole (WSZiA Opole), Opole, Poland, pp. 96-105. ISBN 978-9941-22-736-3.

3) Haußmann, Aaron Leander (2015). The Impact of Brand Images on B2B Buying Relevance. In: Journal of WEI Business and Economics (JWEIBE), December 2015, vol. 4, no. 3, pp. 1-6. ISSN 2168-7135 (Online) USA.

4) Haußmann, Aaron Leander (2015). Measuring Brand Emotions in Contemporary Business to Business Marketing Research. In: Humanities and Social Sciences Latvia. 2015, vol. 23, no. 2., pp. 103-121 ISSN 1022-4483.

5) Schlesinger, Michael, Haußmann, Aaron Leander (2016). Emotional Branding im B2B-Bereich – Der Markenauftritt beeinflusst die emotionalen Einflussfaktoren der Markenbindung und damit das industrielle Beschaffungsverhalten. In: Transfer Werbeforschung & Praxis, 62 (2), pp. 52-58. ISSN 1436-789-X.

6) Haußmann, Aaron Leander (2016). Rationality versus Emotionality in Organizational Purchasing Behavior: The Role of Brands in Classic and Contemporary Management Theory. In: International

Content of dissertation

Chapter one reviews the pertinent theoretical foundations and developments of branding and brand image theory (1.1.). In light of the high degree of equivocality in the B2B sphere, the theoretical classification was a main focus in order to set a proper foundation for the theoretical grounding of this dissertation in the arena of B2B marketing management theory (1.2.). In part 1.4. paradigms of consumer behavior are introduced and transcended into organizational purchasing behavior. Finally, part 1.4. reviews the notions of rationality versus emotionality of organizational purchasing behavior.

After the theoretical foundations were laid in the first chapter, chapter two analyses examples of the importance and usage of brands in managerial practice (2.1.) as well as the importance of brands for the purchasing behavior of B2B market participants based on empirical research previously conducted by other researchers. The chosen industry for the empirical survey is described in 2.2. Empirical evidence on intervening variables and contextual variables is examined in 2.3. Existing conceptual frameworks explaining the nature and dimensions of brands and thus providing conceptual guidance for the subsequent model development are explained in preparation of the third chapter in 2.4.

In the third chapter, the author provides a deeper probation by addressing literature gaps which have been identified through the extensive literature review conducted in the previous chapter. Firstly research questions are formulated and hypotheses derived in 3.1. In order to be able to empirically test the postulated hypotheses, a causal model is constructed in 3.2., and the operationalization of the variables is discussed (3.3.). The third chapter is concluded in 3.4. with sampling considerations as well as pre- and post-survey considerations as final steps before the causal model is submitted to empirical testing.

The fourth and last chapter begins with the explanation of the statistical analysis of the collected data, succeeded by the descriptive results about the underlying sample in 4.1. The aim of the demographic analysis was to verify if the drawn sample represents the general population. In a next step, the location parameters of the results of the survey for all variables used in the causal model are described. Following a stringent procedure, the measurement model is tested (4.2.) for appropriateness to represent validly and reliably the variables of the causal model. In 4.3. the structural model and hence the hypotheses are tested.

Finally, the results are interpreted and topic of dissertation is answered in 4.4. so as to provide a basis for conclusions and recommendations.

Main results

It was found that none of the brand image constructs has a significant direct influence on purchasing behavior. Brand image dimensions only impact B2B purchasing behavior through the intervening effect of brand attachment, customer satisfaction and switching costs. While the rational attributes are the foundation driving the formation of emotional brand image dimensions, it is brand feelings and brand trust leading to brand attachment which, in turn, is the strongest influencer of purchasing behavior compared to customer satisfaction and switching costs as intervening variables. Feelings and trust evoked by business brands appear to lead to an emotional attachment which, as the major intervening variable in the causal model, impacts purchasing behavior. Following the most strongly pronounced structural paths in the causal model, it was found that brand performance leads to brand credibility which, in turn, leads to brand trust. The research revealed major pathways leading from brand performance to purchasing behavior. The pathway leading from the rational dimension brand performance to customer satisfaction ($\beta = .640$, $t = 10,634$, $p = 0,000$) and from satisfaction to purchasing behavior is significant ($\beta = .313$, $t = 4,747$, $p = 0,000$), but the final impact on purchasing behavior is weaker than the “emotional path” via the emotional brand image dimensions and brand attachment. The same applies to the other rational path from brand performance ($\beta = .263$, $t = 3,499$, $p = 0,001$) via switching costs to purchasing behavior ($\beta = .200$, $t = 2,778$, $p = 0,006$). Of all three analyzed intervening variables, brand attachment impacts B2B purchasing behavior most strongly ($\beta = .462$, $t = 6,362$, $p = 0,000$) compared to customer satisfaction ($\beta = .313$, $t = 4,747$, $p = 0,000$) and switching costs ($\beta = .200$, $t = 2,778$, $p = 0,006$). These results show that the higher the emotionality of any of the constructs in the causal model is, the higher its respective impact on purchasing behavior. This is a highly interesting result since emotionality was long believed to play a subordinate role in B2B purchasing.

Limitations

The research is related to capital items as subject to marketing in Original Equipment Manufacturer and project business constellations under high customer involvement conditions. While it was taken care to develop a measuring instrument which can be applied to other B2B markets, the dissertation investigates

real brands with real customers within the railway industry. Hence the results may represent industry-specific factors that are not representative of all B2B markets. Therefore, since the research was conducted between 2012 and 2016 surveying Original Equipment Manufacturers, operators, distributors, remanufacturers, leasing firms, service providers and suppliers in the international railway industry, its results are limited to this branch and these companies of the B2B sector. Finally, the results are limited to the variables used in the causal model.

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1. THEORETICAL FOUNDATIONS OF BRANDING IN B2B CONTEXT AND ORGANIZATIONAL PURCHASING THEORY

Initially the pertinent theoretical foundations and developments of branding and brand image theory (1.1.) are reviewed. In light of the high degree of equivocality in marketing literature, the demarcation and definition of relevant concepts was a main focus in order to set a univocal and clear foundation for the theoretical grounding of this dissertation in the arena of marketing management theory (1.2.). In part 1.3. paradigms of consumer behavior are introduced and transcended into organizational purchasing behavior. Finally, part 1.4. reviews the notions of rationality versus emotionality of organizational purchasing behavior.

1.1. Historical development of branding and the brand image concept

The word brand stems from the old Norsk word *brandr* which means to burn, as it was practiced to mark livestock in order to be able to identify the animals and tell them from those of another owner.¹⁰ Branding has existed for centuries in varying forms. The original motivation for branding was by craftsmen to identify the outcomes of their labor so that potential customers could recognize them. Early endeavors of branding, in a sense of marking goods that sometimes were manufactured far from the place where they were sold, can be found in pottery such as clay lamps and porcelain from ancient Greece, Rome, China and India dating back to about 1300 B.C. The oldest generic brand, in continuous use in India since the Vedic period (app. 1100 B.C. to 500 B.C.), is the herbal paste known as “Chyawanprash”.¹¹ The concept of branding then spanned throughout the medieval times in a similar way. It also includes industrial brands, of which many have a long and rich history enduring to date such as Saint Gobain (1665), Siemens (1847), Bosch (1886) or Caterpillar (1925).¹²

In North America of the late nineteenth century, branded goods were confined to a few industries such as patent medicine and tobacco products. Due to advances in production processes, the development of the

⁹ Parts of this chapter are published in „Humanities and Social Sciences in Latvia”, vol. 23, issue 2 and in “International Journal of Recent Advances in Organizational Behavior and Decision Sciences”, 2016, vol. 2, issue 1.

¹⁰ Cf. Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 2.

¹¹ Ibid.

¹² Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 50.

railways and the rise of postal services and telegraphy, manufacturer-branded products became a possibility on a national level in the following decades.¹³ Improvements in packaging, advances in printing technology made it additionally easier to create and reproduce individual packages, as opposed to standardized bulk packages, and distinctive labels. It was also during that time when newspaper's and magazine's revenues became increasingly reliant on advertising revenues. From a macro-economic perspective, megatrends of industrialization and urbanization led to a shift from self-production to consumption among American citizens. Hence by 1915, manufacturer brands like Heinz and Coca Cola were well established in American consumer life. In the course of the great depression that followed the "roaring 20s" in the United States, the "battle of the brands" became a fierce one putting strain on manufacturer brands.¹⁴ Some of the wholesalers and retail chains started to their own cheaper dealer brands which made weaker manufacturer brands even weaker.¹⁵ In its modern sense, branding, which began as a mark of ownership, trust and quality, evolved into a more sophisticated symbol of differentiation and identification in the post-World War II era.¹⁶ While shortly after the war the discipline of marketing merely consisted of distributing goods to needy consumers, as commerce started to become global and markets began to become saturated, the need to differentiate and provide customers with assistance in making their purchase choices increased as well. By the 1970s and 80s, manufacturers acknowledged the way in which consumers developed relationships with brands. This trend became even more strongly pronounced through the rise of the internet as well as digital and mobile technology, which started to emerge in the late 1990s¹⁷, making markets even more transparent and customers, both private consumers as well as organizational customers, more educated and demanding. This development again posed new threats to the concept of branding. An abundance of choice is not reserved to B2C customers but nowadays also more than true for B2B markets. In this context, Roberts criticizes that brands in their traditional sense are worn out from overuse and fail to connect with people.¹⁸ With the concept of "Lovemarks" he advocates the "future beyond branding" were brands that consumers truly love, which would create loyalty beyond reason.¹⁹ Roberts claims that there can be Lovemarks to which customers are strongly attached in any category of product or service, hence he is questioning the distinction between

¹³ Cf. Low, G. S., & Fullerton, R. A. (1994). Brands, Brand Management, and the Brand Manager System: A Critical-Historical Evaluation. *Journal of Marketing Research*, 31(2), 173–190, p. 175.

¹⁴ Cf. Low, G. S., & Fullerton, R. A. (1994). Brands, Brand Management, and the Brand Manager System: A Critical-Historical Evaluation. *Journal of Marketing Research*, 31(2), 173–190, p. 180.

¹⁵ Ibid.

¹⁶ Cf. Frampton, J. (2014). *Best Global Brands 2014: Report*. Retrieved from www.bestglobalbrands.com, Report, p. 15.

¹⁷ Cf. Frampton, J. (2014). *Best Global Brands 2014: Report*. Retrieved from www.bestglobalbrands.com, Report, p. 19.

¹⁸ Cf. Roberts, K. (2005). *Lovemarks: The future beyond brands* (2. ed.). New York, NY: PowerHouse Books, p. 35.

¹⁹ Cf. Roberts, K. (2005). *Lovemarks: The future beyond brands* (2. ed.). New York, NY: PowerHouse Books, p. 66.

B2C and B2B.²⁰ In his concept, it is the customer who engages in an intimate, sensual and mysterious relationship with a Lovemark which makes it a consumer-focused conception, regardless of markets and industries. This customer-centric notion is also adopted by Frampton, who postulates that brands seeking to lead in the “Age of You”, i.e. the era of digitalized commerce connecting businesses to people and people to each other, will have to recognize the human in the data space generated by ubiquitous computing, in order to create a truly personalized and curated experience.²¹

Development of the brand image concept and its different focal points

Various attempts at describing and defining the brand construct have emerged in the last decades. Wood noted that the different approaches which exist to defining the brand construct partly stem from differing philosophy and stakeholder perspectives.²² Originally the American Marketing Association (AMA) in the 1960s defined a brand as a “name, term, sign, symbol, or design, or a goods or services of one seller or group of sellers and to differentiate them from those of competitors”. This definition was shaped when manufacturer’s brands emerged and only comprises brand elements such as names, logos or jingles. According to the latest AMA definition, a brand is a “name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers”.²³ This definition, deviates from the AMA’s original definition in that it now contains the words “any features”, leaving room for intangibles and emotional dimensions such as image to be the point of differentiation.²⁴ Keller, however, states that further contrasting brands from products is important.²⁵ He defines a product to be anything that can be offered to a market for attention, acquisition, use of consumption that satisfies a need or want. Following this logic, a product can be a physical item, a service, a shop, a person, organization, place or idea. He distinguishes five levels²⁶ for products being defined as:

1. The **core benefit** level: The fundamental need or want that consumers satisfy.

²⁰ Cf. Roberts, K. (2005). *Lovemarks: The future beyond brands* (2. ed.). New York, NY: PowerHouse Books, p. 70.

²¹ Frampton, J. (2014). *Best Global Brands 2014: Report*. Retrieved from www.bestglobalbrands.com. Report, p. 13.

²² Cf. Wood, L. (2000). Brands and brand equity: Definition and management. *Management Decision*, 38(9), 662–669, p. 664.

²³ American Marketing Association. (2015). Marketing dictionary: "Brand". Retrieved from <http://www.marketing-dictionary.org/ama>*

²⁴ Wood, L. (2000). Brands and brand equity: Definition and management. *Management Decision*, 38(9), 662–669, p. 664.

²⁵ Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 2.

²⁶ Cf. Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 3.

2. The **generic product** level: A basic version of the product containing only those attributes or characteristics absolutely necessary for its functioning.
3. The **expected product** level: A set of attributes or characteristics that customers expect and agree to when they purchase a product or service.
4. The **augmented product** level: Additional attributes, benefits or related services that distinguish the product from its competitors.
5. The **potential product** level: All of the augmentations and transformations a product could ultimately undergo.

Keller concludes his argumentation stating that

“A brand is therefore a product, but one that adds other dimensions that differentiate it from other products designed to satisfy the same need”.²⁷

What becomes clear from this definition, which shall guide the understanding of brands for the present research, is that competition is an essential aspect of the endeavor to brand a product or service. Competition allows customers to choose from alternatives and therefore puts them in a powerful position, forcing marketers to differentiate their offerings in order to be favored over their competitors in purchasing decisions.

Brand equity

The concept of brand equity has been extensively studied in marketing literature since the 1980s.²⁸ An attempt at defining the relationship between customers and brands created the term brand equity in the marketing literature.²⁹ Over the years the concept of brand equity has come to include a variety of views and meanings, whereas significant differences exist between the marketing and the accounting view. The former regards brands as the relationship between customer and brand whereas the latter considers it from

²⁷ Cf. Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 3..

²⁸ Cf. Wood, L. (2000). Brands and brand equity: Definition and management. *Management Decision*, 38(9), 662–669, p. 662.

²⁹ Ibid.

a monetary dimension that accrues the brand owner.³⁰ Feldwick provides a classification for the different meanings³¹:

- The total value of a brand as a separable asset;
- A measure of the strength of consumer's attachment to a brand;
- A description of the associations and beliefs the consumer holds about the brand.

Because the purpose of this dissertation is to research the impact of brand images on the purchasing behavior of B2B market participants, the focus is on brand effects on the individual buying center member. Keller's customer-based brand equity definition therefore guides the present research. Keller defines customer-based brand equity (CBBE) as "the differential effect of brand knowledge on consumer response to the marketing of the brand".³² In line with this definition, a brand is said to have positive (or negative) customer-based brand equity if consumers react more (or less) favorably to the marketing mix elements of a certain brand than they do to the same marketing mix elements when it is attributed to a alternatively named or unnamed version of a product of the same category.³³ Keller's definition comprises three important concepts; "differential effect", "brand knowledge," and "consumer response to marketing." The differential effect is important as it considers competing brands or unbranded alternatives which a purchaser may encounter in a purchase situation. Brand knowledge is addressed in terms of brand awareness and brand image and is conceptualized according to the characteristics and relationships of brand associations. Consumer response to marketing is addressed in terms of consumer perceptions, preferences, and, very importantly, actual behavior arising from marketing mix activity and brand choice.

Brand image

As the historical review in branding already illustrated, brands in their early forms go back as far as commercial trade itself. In their classic review of 28 prior studies, Dobny and Zinkhan find that since its formal introduction in the 1950s, the notion of brand image has become commonplace in consumer

³⁰ Cf. Wood, L. (2000). Brands and brand equity: Definition and management. *Management Decision*, 38(9), 662–669, p. 662.

³¹ Cf. Feldwick, P. (1996). Do we really need 'Brand Equity'? *Journal of Brand Management*, 4(1), 9–28.

³² Cf. Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22, p. 8.

³³ Ibid.

behavior research.³⁴ The author used the analysis of Dobny and Zinkhan as a guideline for research on salient articles and augmented it with findings of his own literature review based on data base search.

Gardner and Levy have been credited with extracting brand image as the first researchers in their 1955 article.³⁵ They criticized previous research as too superficial due to its focus on stereotypical purchase reasons and claimed that it was time to identify more enduring motivations for purchase. Their idea was that products had a social, a psychological and a physical nature. Finally they laid out that the totality of feelings, ideas and attitudes that consumers had about brands were crucial to purchase choice. That was how the term of “image” was originally coined. Conceptions of brand image in the past six decades can be summarized into:

- Generic **blanket definitions**,
- **symbolic** definitions,
- definitions from a **meaning** point of view,
- from a **personification** standpoint and
- with **cognitive or psychological** focal points.

Blanket definitions

That the perception of reality is more important than reality itself is a notion that underlies most conceptualizations of brand image.³⁶ Blanket definitions of brand image are very generic and broad definitions, which contribute little practical guidance for distinction or even operationalization, however, they capture the general sense of the image concept well.

Such references have been provided by Newman who defines brand image as “everything people associate with the brand”.³⁷ In line with Newman, Herzog³⁸ describes brand image as “the sum of the total

³⁴ Cf. Dobny, D., & Zinkhan, G. M. (1990). In Search of Brand Image: a Foundation Analysis. *NA - Advances in Consumer Research*. (17), 110–119. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=7005*

³⁵ Cf. Gardner, B. B., & Levy, S. J. (1964). The product and the brand. *Modern marketing strategy*, 115–127

³⁶ Cf. Dobny, D., & Zinkhan, G. M. (1990). In Search of Brand Image: a Foundation Analysis. *NA - Advances in Consumer Research*. (17), 110–119. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=7005*

³⁷ Newman, J. W. (1957). New insight, new progress, for marketing. *Harvard business review : HBR ; ideas with impact ; published for professional managers, is a programm in executive education of the Graduate School of Business Administration, Harvard University*, 35(6), 95–102

³⁸ Herzog, H. (1967). Behavioral science concepts for analyzing the consumer. *Readings in marketing : the qualitative and quantitative areas*, 187–195

impressions the customer receives from many sources...". According to Runyon and Stewart³⁹, brand image is "the product perception". Finally, Dichter states that an image "describes not individual traits or qualities, but the total impression an entity makes on the minds of others".⁴⁰

Symbolism

Levy, who is understood to be the founding father of the image construct, found in his early studies that products are often purchased (or avoided) not for their functional qualities, but because of how, as symbols, they impact the buyer-user's status and self-esteem.⁴¹ Levy defines symbol as a "thing which stands for or expresses something else". The notion of symbolism, as a label contrasting from functional utility, has endured in marketing research. Pohlman and Mudd mention "symbolic utility" to describe the intangible aspect of consumer evaluation of a product.⁴² Grubb and Grathwohl stress the role of the image that an individual has of himself as a motivator of human behavior in the marketplace. They conclude that because the self-concept is of such importance, the individual will direct his consumption behavior to maintain and enhance this self-concept.⁴³ Frazer argues that advertisers can formulate a claim of superiority or distinction based on factors extrinsic to the product and products are often associated with symbols.⁴⁴ According to Frazer, the resulting differentiation is of psychological nature rather than physically based.

Meanings and messages

This category focuses on the underlying meaning that consumers attribute to a product as a differentiator. Sommers emphasizes the recognition of brand communication as an important view point of brand image by saying "brand image is consumers' perception and recognition of a product's symbolic attribute".⁴⁵ By the definition of Levy and Glick⁴⁶, the concept of brand image captures the idea that consumers buy brands not

³⁹ Cf. Runyon, K. E., & Stewart, D. W. (1987). *Consumer behavior and the practice of marketing* (3. ed.). Columbus, Ohio: Merrill.

⁴⁰ Dichter, E. (1985). What's In An Image. *Journal of Consumer Marketing*, 2(1), 75–81.

⁴¹ Cf. Levy, S. J. (1965). Symbols by which we buy. *Dimensions of consumer behavior*, 58–64

⁴² Pohlman, A., & Mudd, S. (1973). Market image as a function of consumer group and product type: A quantitative approach. *Journal of Applied Psychology*, 57(2), 167–171.

⁴³ Cf. Grubb, E. L., & Grathwohl, H. L. (1967). Consumer self-concept, symbolism and market behavior: A theoretical approach. *Journal of marketing : a quarterly publication of the American Marketing Association*, 31(4,1), 22–27

⁴⁴ Cf. Frazer, C. F. (1983). Creative Strategy: A Management Perspective. *Journal of Advertising*, 12(4), 36–41.

⁴⁵ Sommers, M. S. (1963). *Product symbolism and the perception of social strata*. Chicago: [s.n.].

⁴⁶ Cf. Levy, S. J., & Glick, I. O. Imagery and Symbolism. In *Marketing Manager's Handbook* (pp. 961–969)

only for their physical attributes and functions, but also for the meanings connected with them. Reynolds and Gutman emphasize the brand image to be “the set of meanings and associations that serve to differentiate a product or service from its competition”.⁴⁷

Emphasis on Personification

Marketers started to consider the notion of personality in regard to brand images in the early 1980s, as Hendon and Williams state.⁴⁸ In their 1985 article they argue that what can also be named “brand personality” or “brand character” involves describing a product as if it were a human being. They conclude that this is an effective way of generating consumer interest as people favor products which match their own self-image or personality. Similarly, Sirgy finds that a product is more likely to be used and enjoyed if there is congruity between its image and the actual or ideal self-image of the user.⁴⁹ Debevec and Iyer, introduced the aspect of gender image to the field of research. They found that products can be “genderized” and, more specifically, that a spokesperson’s gender is an effective promotional cue in influencing respondent’s perceptions of the gender image of products.⁵⁰ While the 1980s saw a rise in the notion of brand personification, it was already in 1957 when Martineau⁵¹ stressed that “brand image reflects consumers’ characteristics, and they purchase the brand to express themselves”.

Emphasis on cognitive or psychological elements

Definitions adopting a cognitive or psychological view concentrate on mental effects by naming any one of "ideas", "feelings", "attitudes", "mental constructs", "understandings" or "expectations" as the main determinant of brand image.⁵²

⁴⁷ Reynolds, T. J., & Gutman, J. (1984). Advertising is image management. *Journal of Advertising Research*, 24(1), 27–37

⁴⁸ Cf. Hendon, D. W., & Williams, E. L. (1985). WINNING THE BATTLE FOR YOUR CUSTOMER. *Journal of Consumer Marketing*, 2(4), 65–75.

⁴⁹ Sirgy, M. (1985). Using self-congruity and ideal congruity to predict purchase motivation. *Journal of Business Research*, 13(3), 195–206.

⁵⁰ Debevec, K., & Iyer, E. (1986). The Influence of Spokespersons in Altering a Product's Gender Image: Implications for Advertising Effectiveness. *Journal of Advertising*, 15(4), 12–20.

⁵¹ Martineau, P. (1957). *Motivation in Advertising: Motives that make people buy*. McGraw-Hill Series in Advertising and Selling. New York: McGraw-Hill.

⁵² Dobny, D., & Zinkhan, G. M. (1990). In Search of Brand Image: a Foundation Analysis. *NA - Advances in Consumer Research*. (17), 110–119. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=7005*

Gardner and Levy state in their classic article that brand image consists of “consumers’ opinion, attitude and emotion toward a brand, which reflects the cognitive or psychological elements of the brand”.⁵³ Gutman and Reynolds also pick up on the link between products and emotion as being feelings.⁵⁴ Reynolds also acknowledges the role of the individual consumer and hence the psychological components in the image formation process by saying that “images are ordered wholes built by consumers from scraps of significant detailing much the same way that writers and artists use significant detail to illumine complex totalities”.⁵⁵ Reynolds conceptualizes that the message milieu is subject to selection within the consumer’s mind, resulting in an elaborated image. Keller captures brand image as “perceptions about a brand as reflected by the brand associations held in consumer memory”.⁵⁶ Kapferer makes the distinction between a brand’s identity and its image by differentiating between the roles of sender and receiver.⁵⁷ He states that “brand image is on the receiver’s side. Image focuses on the way in which certain groups perceive a product, a brand, a politician, a company or a country”. He goes on saying that “image refers to the way in which these groups decode all of the signals emanating from the products, services and communications covered by the brand”. Similarly, Dichter emphasizes that image is not anchored in objective data and details. He points out that it is “the configuration of the whole field of the object”, and “the customer’s disposition and the attitudinal screen through which he observes”.⁵⁸ The notion of brand image as being entirely subjective allows for the conclusion that as many images of the same brand may exist as there are individuals holding an image about that brand. Aaker therefore mentions clarity of the image as important, and, more precisely, the question whether customers agree upon the associations with a brand which would result in a clear, sharp image which often means a strong, differentiated brand, or whether this image differs across people.⁵⁹ For the purpose of the present research, however, Keller’s definition of brand image as “perceptions about a brand as reflected by the brand associations held in consumer memory”⁶⁰ is deemed the most suitable one as it emphasizes the customer centered notion and contrasts well from a marketer’s view of a brand where firms try to shape their brand’s identities. What

⁵³ Gardner, B. B., & Levy, S. J. (1964). The product and the brand. *Modern marketing strategy*, 115–127.

⁵⁴ Reynolds, T. J., & Gutman, J. (1984). Advertising is image management. *Journal of Advertising Research*, 24(1), 27–37

⁵⁵ Reynolds, W. H. (1965). The Role of the Consumer in Image Building. *California Management Review*, 7(3), 69–76.

⁵⁶ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22, p. .

⁵⁷ Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, pp. 94 ff.

⁵⁸ Dichter, E. (1985). What's In An Image. *Journal of Consumer Marketing*, 2(1), 75–81.

⁵⁹ Cf. Aaker, D. A. (1991). *Managing brand equity: Capitalizing on the value of a brand name*. New York, NY: Free Press, p. 152.

⁶⁰ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22, p. .

also becomes apparent to the author after the previous review of various image conceptions is that the construct is a holistic one, comprising both rational emotional dimensions. Due to the manifold market and product characteristic, identification of relevant individual dimensions must be effected on a research-specific manner in the further course of the dissertation.

1.2. Theoretical classification of B2B markets for the present research

From a theoretical point of reference, the present research is located within the field of business management. More specifically, the subfield of marketing management and, at a final stage, industrial marketing management are associated theoretical subfields. Generally B2B marketing is concerned with organizational sellers marketing their goods and services to other organizations or organizational buyers as opposed to private consumers.⁶¹ The products and services which can be subject to B2B purchasing transactions can be classified with the following categories:⁶²

- Materials and parts, e.g. raw materials, manufactured materials and parts.
- Capital items, e.g. buildings or equipment used in a buyer's production or operations process.
- Supplies and services, e.g. operating supplies, maintenance or repair items.

In order to simplify and classify the wide range of products and services which may fall under the above categories by business types, Backhaus⁶³ proposes a comprehensive a typology for marketing in the B2B sector. This distinction is important since in B2B marketing not only the products and services themselves but also the nature of the customers, the relationships and interaction patterns are of importance.⁶⁴ Backhaus distinguishes between OEM business, system business, project business and product business which are explained below.

OEM business⁶⁵ is characterized by marketing programs directed at individual customers with which sellers maintain long-lasting relationships. From a seller's perspective, sellers typically develop specific

⁶¹ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, p. 4.

⁶² Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 21.

⁶³ Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 199 ff.

⁶⁴ Cf. Choffray, J.-M., & Lilien, G. L. (1978). Assessing Response to Industrial Marketing Strategy. *Journal of Marketing*, 42(2), 20–31.

⁶⁵ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 493 ff.

products for these selected customers. From a customer perspective this high degree of specificity goes along with a certain level of dependence on their suppliers, e.g. in the automotive, aerospace or railway industry. From a marketing standpoint, OEM tend to use the brand recognition and image strength of main suppliers, using techniques of ingredient branding to enhance their own image. Likewise, suppliers aim at creating increased awareness in other steps of the value chain by advertising their OEM-purchased brands to end customers.

Subject to marketing in **system business**⁶⁶ constellations are products targeting an anonymous market or defined market segments. Thereby exists a consecutive sequence of inter-related purchasing processes often found in the scope of IT- and telecommunication systems.

Project business.⁶⁷ Marketing communication in project business targets individual or at the most very few customers. Goods are produced in smaller quantities Backhaus⁶⁸ advocates the view that image is a factor of central importance in project business as the quality of the products can only be evaluated after handover to the customer. Trying and testing of such goods is not possible since their value and the time of completion is so large. This makes these goods so called “quasi-trust goods”, emphasizing the role of trust as a relevant dimension in customer’s perception when conducting purchases. Möhringer adds particularly corporate image to be of importance in project business constellations.⁶⁹

Product business⁷⁰ is characterized by preproduction in large quantities whereby products are marketed to anonymous mass markets. Customers utilize these products in an isolated manner, i.e. independent from other products they purchase and with no significant interaction with their own-produced goods. Therefore goods marketed in product business settings have a low degree of specificity. Figure 1.1. illustrates the four B2B business types as per Backhaus’ classification. As an augmentation of Backhaus’ schema, the author added information for which business types the specificity of investment lies with the buyer or the seller.

⁶⁶ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 419 ff.

⁶⁷ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 325 ff.

⁶⁸ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, p. 332.

⁶⁹ Cf. Möhringer, S. (1998). *Kompetenzkommunikation im Anlagengeschäft: Konzeptionelle Analyse und empirische Ergebnisse*. Techn. Univ., Diss.--Darmstadt, 1998 (Als Ms. gedr). *Berichte aus der Betriebswirtschaft*. Aachen: Shaker, pp. 28 ff.

⁷⁰ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 209 ff.

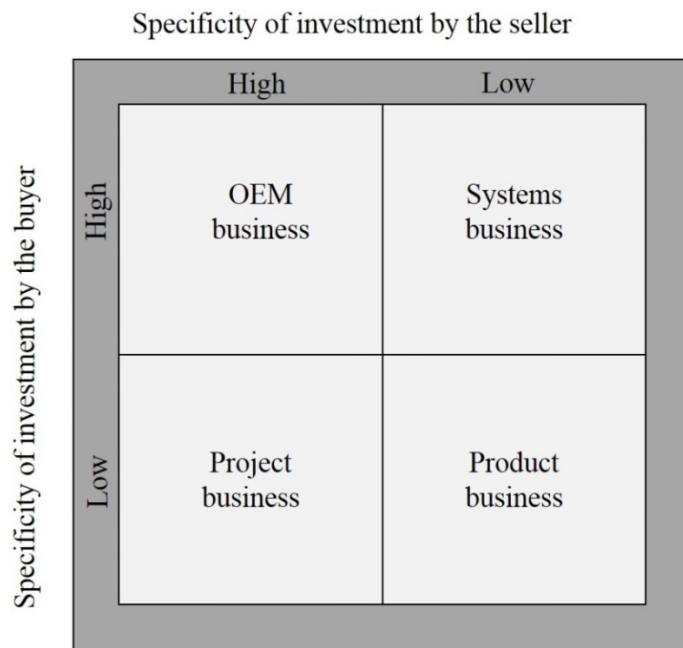


Figure 1.1. B2B business type categorization

Source: Author's own construction adapted from on Backhaus and Voeth, 2011, p. 206.

1.3. The S-O-R paradigm as a guiding principle of purchasing behavior and transfer to organizational purchasing behavior

Findings from social psychology and consumer behavior have resulted in a widespread paradigm of consumer involvement – the stimulus-organism-response paradigm. Based on the classic neo-behaviorist S-O-R paradigm of learning theory, the paradigm developed by Houston and Rothschild in 1977 divides the concept of consumer involvement into three types.⁷¹ Firstly, situational involvement, external to the individual is a product of the specific marketing or buying situation. Secondly, enduring involvement is internal to the individual, reflecting the pre-existing relationship between the individual and a particular purchase decision. Situational involvement and enduring involvement are hypothesized to combine and trigger a third type of involvement, the so-called response involvement. Thus, the analogy to the S-O-R

⁷¹ Cf. Thomas L. Parkinson and Carolyn Turner Schenk. (1980). An Empirical Investigation of the S-O-R Paradigm of Consumer Involvement. *NA - Advances in Consumer Research*. (07), 696–699. Retrieved from http://acrwebsite.org/volumes/9769/volumes/v07/NA-07*

paradigm involving an external stimulus, the organism, and a response.⁷² Kroeber-Riel and Weinberg broke down the three stages of Stimulus, Organism and Response into marketing-related stages, as shown in figure 1.2., the author augmented the figure by assigning the particularities of brand stimuli, intervening processes and purchasing behavior to the appropriate parts of the figure.

Observable phenomena	Non-observable phenomena	Observable phenomena
S_i (Stimuli) e.g. brand stimuli	I_j (Intervening variables) (a) Activating processes, e.g. motivation (b) Cognitive processes e.g. Purchase intention	R_k (Reactions) e.g. Purchasing Behavior

Figure 1.2. Neo-behaviorist S-O-R model

Source: Author's own construction, adapted from Kroeber-Riel & Weinberg, 2003, p. 30.

The external stimulus dimension may be occur in the form of a brand stimulus. Upon being exposed to such a stimulus, activating processes such as motivations for a purchase, in the interaction with knowledge about a brand, Kroeber-Riel and Weinberg also consider the existence of intervening variables mediating the relation between a stimulus and subsequent processes. Following these internal and non-observable instances, the cognitive formation of intention, or, as relevant for the present research, purchase intentions, takes place.⁷³ The model by Trommsdorff and Teichert⁷⁴ attempts to disperse this internal and non-observable process as illustrated in figure 1.3. Trommsdorff and Teichert postulate moderating effects in this process, with perceived norms and external situational influences moderating the influence of attitudes on (purchase) intention. Consequently, the relationship between intended and actual behavior is moderated by situational factors.

⁷² Cf. Thomas L. Parkinson and Carolyn Turner Schenk. (1980). An Empirical Investigation of the S-O-R Paradigm of Consumer Involvement. *NA - Advances in Consumer Research*. (07), 696–699. Retrieved from http://acrwebsite.org/volumes/9769/volumes/v07/NA-07*

⁷³ Cf. Kroeber-Riel, W., & Weinberg, P. (2003). *Konsumentenverhalten* (8., aktualisierte und erg. Aufl.). *Vahlens Handbücher der Wirtschafts- und Sozialwissenschaften*. München: Vahlen, p. 30.

⁷⁴ Cf. Trommsdorff, V., & Teichert, T. (2011). *Konsumentenverhalten* (8., vollst. überarb. und erw. Aufl.). *Kohlhammer Edition Marketing*. Stuttgart: Kohlhammer, p 145.

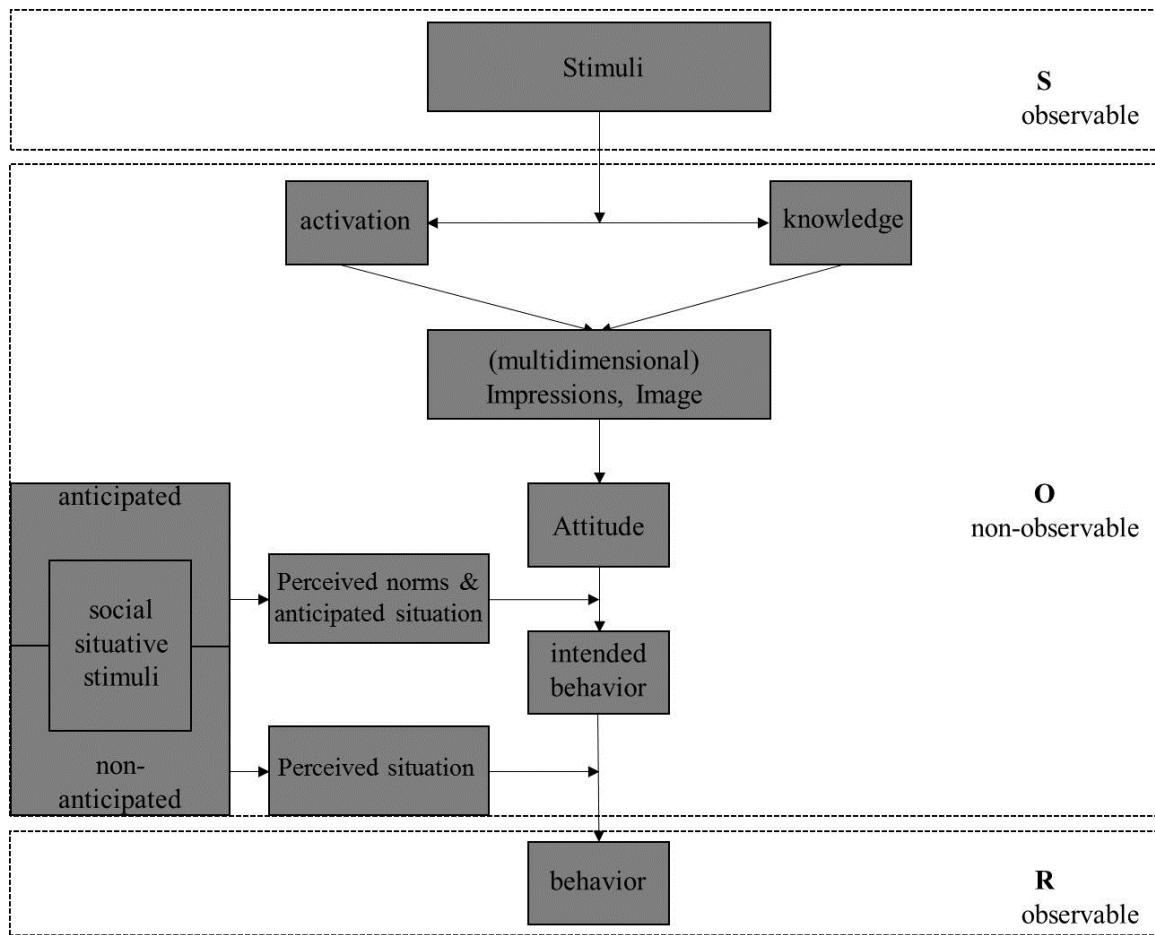


Figure 1.3. Image and attitude as the center of S-O-R models

Source: Author’s own construction adapted from Trommsdorff and Teichert, 2011, p. 127.

As the model explains, an observable stimulus leads to activation and an interplay with existing knowledge about the source of the stimulus. In accordance with the prominent position of knowledge in this model, in regard to brand knowledge, Keller states “Perhaps a firm's most valuable asset for improving marketing productivity is the knowledge that has been created about the brand in consumers' minds”.⁷⁵ He defines brand knowledge as consisting of two components, brand awareness and brand image. While brand awareness is the degree to which consumers to recall and recognize a certain brand, brand image refers to the sum of associations linked to a brand that consumers hold in their memory. The strength of an image is determined by the nature of these associations. They should be favorable, strong and unique from associations held about competing brands. The types of brand associations can be both

⁷⁵ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22, p. 2.

product-related and non-product-related. Likewise, they can be functional, experiential and symbolic. This variety of associations exemplifies the complexity of the image construct as laid out in figure 1.4.

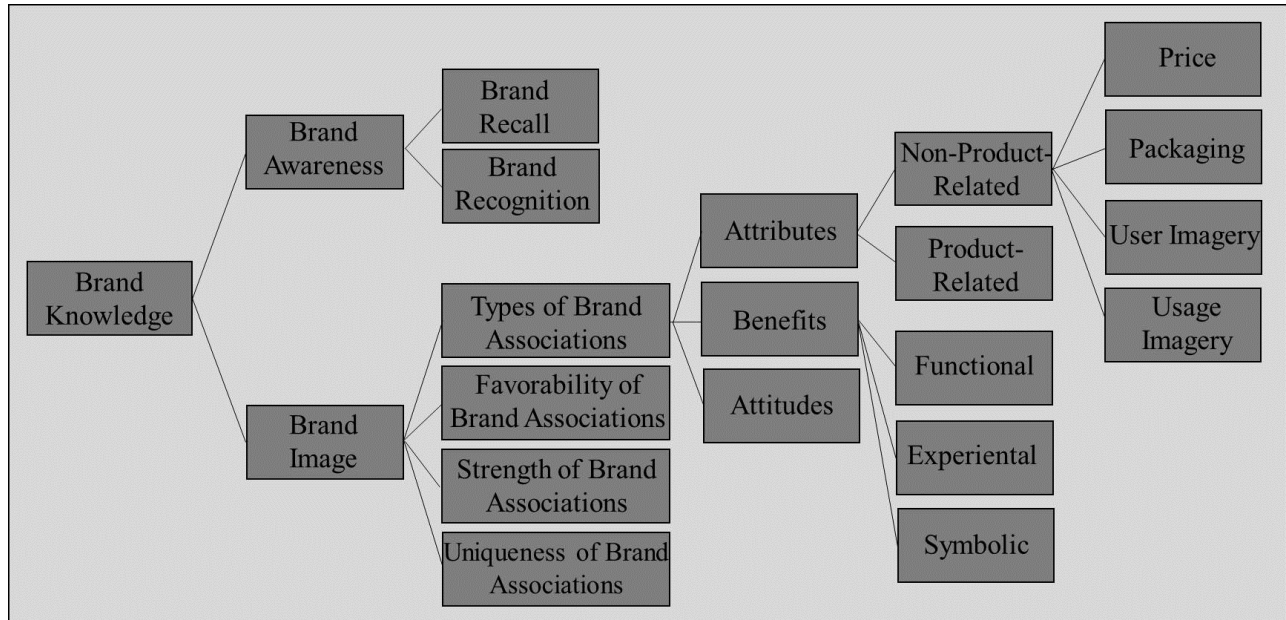


Figure 1.4. Types of brand associations

Source: Author’s own construction based on Keller, 1993, p. 7.

Keller’s marketing centered view is consistent with Collins’ and Loftus’ theory in the field of psychology about memory structure and processing which has also become relevant for marketing science. Their model on semantic paths includes that when a concept, for instance about a brand, is stimulated, activation spreads outward along the paths of the memory network. Activation, however decreases over time and/or intervening activity. Also, they postulate that the more concepts will be “primed”, the less each will be primed.⁷⁶ In this regard Keller’s call for uniqueness and strength of brand associations forming an image becomes clear. These associations held about a brand lead to multidimensional impressions and the formation of a mental image which consequently frames an attitude a person holds about the source of the stimulus. Kroeber-Riel and Weinberg propose to replace the image term with attitude, they argue that attitude is more sharply operationalized but finally concede that multidimensional image measurement practically equals attitudinal measurement.⁷⁷ As can be seen from Trommsdorff’s model, attitudes and images play a prominent role in both theory and practice as they are

⁷⁶ Cf. Collins, A. M., & Loftus, E. F. (1975). A Spreading-Activation Theory of Semantic Processing. *Psychological Review*, 6(82), 407–428, p. 411.

⁷⁷ Cf. Kroeber-Riel, W., & Weinberg, P. (2003). *Konsumentenverhalten* (8., aktualisierte und erg. Aufl.). *Vahlens Handbücher der Wirtschafts- und Sozialwissenschaften*. München: Vahlen, p. 198.

regarded to be determining of actual behavior.⁷⁸ Behavior, however, is preceded by intention. After the concepts of involvement and stimuli have been introduced, it is relevant for the evaluation of purchasing behavior to lay out how these two concepts interrelate. Assael⁷⁹ proposes four types of purchasing behavior along these two dimensions as shown in figure 1.5.

	High involvement	Low involvement
Significant differences between brands	Complex buying behavior	Variety seeking buying behavior
Few differences between brands	Dissonance-reducing buying behavior	Habitual buying behavior

Figure 1.5. Four types of buying behavior

Source: Author's own construction based on Assael, 1992, p. 87.

Customers show complex purchasing behavior when they intensively involve in the purchase and significant differences between the brands exist. Further, according to Assael, purchasing behavior is complex when the product subject to the purchasing decision is of high value, associated with a high degree of risk and is not purchased on a frequent basis. When involvement in the purchasing decision is high but few differences between the brands are perceived, Assael speaks of dissonance reducing behavior. The purchasing decision is typically made rather quickly as the alternatives at hand, i.e. brands, do not show major differences. It is then post-purchase when consumers try to reduce dissonances that can occur when certain features of the purchased product cause discomfort with the consumer. In this type of behavior, the consumer will be inclined to reduce these dissonances by searching for information, but only after the actual purchase has been conducted. Transferring Assael's model to B2B purchases, McQuiston defines purchase importance as "the impact of a purchase on organizational profitability and productivity."⁸⁰ Derived from this definition, it can be inferred that the higher the impact on profitability and productivity is, the higher the levels of involvement will be for the evaluation of the purchase.

⁷⁸ Cf. Trommsdorff, V., & Teichert, T. (2011). *Konsumentenverhalten* (8., vollst. überarb. und erw. Aufl.). Kohlhammer Edition Marketing. Stuttgart: Kohlhammer, p. 125.

⁷⁹ Cf. Assael, H. (1992). *Consumer behavior and marketing action* (4. ed.). Boston: PWS-KENT Publ, pp. 67 ff.

⁸⁰ Mc Quiston, D. (1989) *Novelty, Complexity, and Importance as Causal Determinants of Industrial Buyer Behavior. Journal of Marketing*, (53), 66-79, p. 70.

Zeithaml's framework proposes a continuum for evaluation ranging from products and services which can easily be evaluated to such that are difficult to evaluate.⁸¹ As a general narrative it is often stated that consumer products are easy to evaluate and hence associated with low levels of involvement whereas B2B products are difficult to evaluate. However, this narrative does not always apply as there are consumer products which are difficult to evaluate, for instance the purchase of an expensive car for the family that must fulfill various purposes and is associated with high expenditure. On the other hand there are B2B products which are easy to evaluate, such as office supplies which are purchased on a routine basis. The consumer versus B2B Market Dimensions Continuum by Gillian and Johnston implies that each market has unique properties and that the involvement and behavioral consequences vary by degrees along a continuum between markets according to certain characteristic conditions.⁸² With this continuum in mind, due to the importance, the capital nature and the complexity of most B2B purchases, industrial buyers are expected to differ from private consumers in regard to their generally higher level of involvement. More specifically, consumer-like products such as the afore mentioned example of office supplies and purchase decisions made under straight re-buy conditions based on approved lists may be connected with lower levels of involvement. High involvement can be found in modified or new buy tasks as well as in project- and OEM constellations where specificity of buyer investment, impact on organizational profitability, complexity and novelty are given. Therefore, in markets which are characterized by brands with significant differences and purchase decisions of high involvement, the relevance of favorable, strong, clear and unique associations forming a strong brand image as suggested by Keller again becomes apparent analyzing Assael's four types of purchasing behavior.

Theories of organizational purchasing behavior

Theories of organizational purchasing behavior are largely grounded in contingency theory. Early contingency theorists Burns and Stalker identified two divergent systems of management practice, mechanistic and organic.⁸⁴ Both systems can be classified as "rational" systems in that they both be "deliberately created and maintained to exploit the human resources of a concern in the most efficient

⁸¹ Cf. Zeithaml, V.A. (1981). *How consumer evaluation processes differ between goods and services. Marketing of Services.* Chicago, pp. 186-190.

⁸² Cf. Gilliland, D.I., Johnston, W.J. (1997). Toward a model of business-to-business marketing communication effects. *Industrial marketing management* (26)1, pp. 15-29.

⁸³ The following terms are used synonymously in this dissertation as they can be regarded to be congruent in meaning: *Buying* and *purchasing*, *industrial* and *organizational* purchasing.

⁸⁴ Cf. Burns, T., & Stalker, G. M. (1961). *The management of innovation.* [London]: Tavistock Publications, pp. 103 ff.

manner feasible in the circumstances of the concern”.⁸⁵ According to Burns and Stalker, mechanic management systems are appropriate to stable conditions which among other actors are characterized by the precise definition of rights and obligations and technical methods as well as the functionaries tending to pursue the technical improvement of means, rather than the accomplishment of the ends of the concern. The organic form is argued by the authors to be appropriate to changing conditions where novel problems and unforeseen requirements for action which cannot automatically be broken down or delegated based on the functional roles defined within a hierarchic structure. In that sense Spekman finds that those increasing levels of task uncertainty lead to involvement of lower level members of the organizational hierarchy with less focus on formalized rules and procedures.⁸⁶ The following parts elaborate on the distinctive features of organizational purchasing which, as outlined, is rooted in the wider context of contingency theory.

Buying center theory of organizational purchasing

Unlike in private consumption situations, purchasing in the B2B sector is typically under the involvement of several persons.⁸⁷ Further, organizational purchasing is characterized by profit-motivated and budget constrained firms.⁸⁸ Webster and Keller note that industrial buying is a “combination of individual and organizational decision making processes, and brands have an influence on both processes”.⁸⁹ Robinson, Faris and Wind captured the earlier mentioned idea of multi-personality introducing the concept of the buying center to the marketing literature. The buying center refers to all members of an organization who become involved in the purchasing process for a particular product or service.⁹⁰ In buying center theory, several different roles are assigned to the members of a buying center as described below.

- Buyer: Formal authority and task assignment to select suppliers and conduct purchases.
- Decider: Ultimate decision on order assignment due to hierarchical position.

⁸⁵ Ibid, p. 104

⁸⁶ Cf. Spekman, R. E. (1977). *A contingency approach to power relationships within the industrial buying task group*.

⁸⁷ Cf. Dawes, P. L., Dowling, G. R., & Patterson, P. G. (1992). Factors affecting the structure of buying centers for the purchase of professional business advisory services. *International Journal of Research in Marketing*, 9(3), 269–279.

⁸⁸ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p. 392.

⁸⁹ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p. 393.

⁹⁰ Cf. Robinson, P. J., Faris, C. W., & Wind, Y. (1967). *Industrial buying and creative marketing. Series of books / Marketing Science Institute, Philadelphia*. Boston, Mass.: Allyn & Bacon.

- Gatekeeper: Direct the information flow within and into the buying center, influence partially indirectly or informally by preselecting information.
- Influencer: No formal involvement in the purchase, but influence the decision informally.
- User: Work with the goods which are to be purchased and therefore hold a crucial position in the process.

In practice, a clear-cut role assignment is often lacking. In the railway industry which provides the context for the empirical part of the research, the *buyer* role is adopted by representatives of the purchasing department who are assigned to implement a certain purchase in accordance with technical specifications who are typically elaborated by engineering personnel, who in turn often belong to the *gatekeepers* group collecting information from suppliers or internal sources and directing their flow. The role of deciders falls to management levels, depending on the organizational structure either within purchasing, or as purchase value and risk increases, general management of the firm. *Users* in the specific industry context can be production staff, or again, engineering who have to include the subject of the purchase decision into their stream of work and therefore have an interest in solutions that comply with their specific requirements. *Influencers* can belong to any part of the organization, justification of their influence may lie either in part experience, personal expertise or proximity to decision makers. Figure 1.6. displays the buying center with the roles as per Robinson, Faris and Wind's concept.

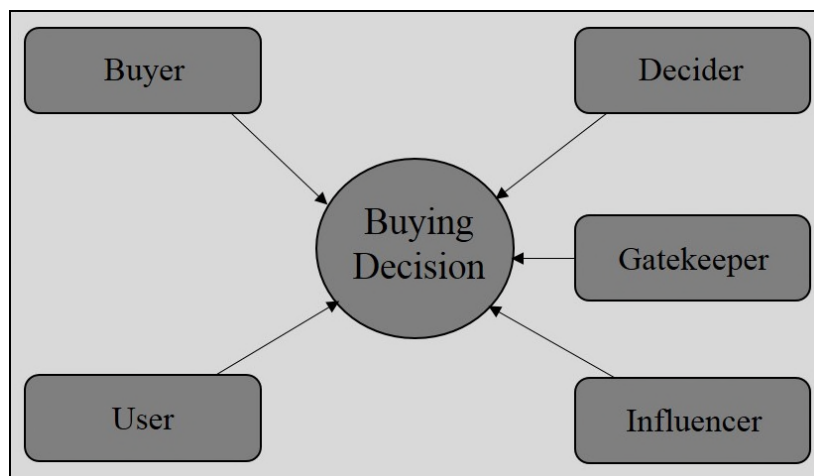


Figure 1.6. Webster and Wind's buying center roles

Source: Author's own construction based on Backhaus & Voeth, 2011, p. 51.

Bonoma later augmented the classic model by the role of the initiator, who starts the purchasing process. In the railway industry, *initiators* can be sales representatives, marketing or product management who

initiate a purchase based on the identified needs of a certain market segment or concrete project at hand. Bonoma also states that “unfortunately, power does not correlate perfectly with organizational rank. Those with little formal power may be able to stop a purchase or hinder its completion”⁹¹, suggesting a high influence of lower level employees depending on their expertise. Each member of the buying center may thereby give priority to very different decision criteria throughout the process.⁹² Engineering personnel may for instance give priority to maximizing the performance of the product whereas financial personnel may be focused on the initial purchase price.⁹³ Hence the buying center is of crucial importance to marketers if they can tailor marketing programs to the specific interests of the different members of a buying center.⁹⁴ According to Webster and Keller, strong brand awareness and favorable attitudes among the members of the buying center can exert major influence throughout the process.⁹⁵ According to De Chernatony and Lynch, this is especially so as there is no seclusion from a business decision to the individual buying center member being involved in it. The risk associated with major purchases is not confined to financial or organizational consequences but also yields personal risk for the individual buying center members, for instance the loss or one’s job.⁹⁶ Relief from negative personal consequences can therefore be an efficient means for marketers to address the individual buying center member’s personal priorities.

Theories on purchasing situations and their implications for purchasing behavior

As outlined earlier, intervening variables can play an important role in the processes between stimulus and actual behavior. This part therefore seeks to introduce important situational influences along the process which B2B purchasing is assumed to follow and the situations depending in the nature of the relationship between customers and brands, which can influence subsequent behavioral outcomes. B2B purchasing is understood to be a process rather than a single event as it is often the case with lower involvement purchase decisions in the consumer arena. Kotler and Bliemel attempted at conceptualizing this process by

⁹¹ Cf. Bonoma, T. V. (2006). *Major Sales: Who really does the buying?* Boston, MA: Harvard Business Review.

⁹² Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p. 395.

⁹³ Ibid.

⁹⁴ Cf. Moon, J., & Tikoo, S. (2002). Buying decision approaches of organizational buyers and users. *Journal of Business Research*, 55(4), 293–299, p. 293.

⁹⁵ Cf. Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p. 394.

⁹⁶ Cf. Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets*. *Working paper series / Birmingham Business School: 2003-28*. Birmingham: University of Birmingham, Birmingham Business School, p. 409.

dividing it into five main phases being problem recognition, information search and evaluation of alternatives, purchase decision and post-purchase behavior as shown in figure 1.7.

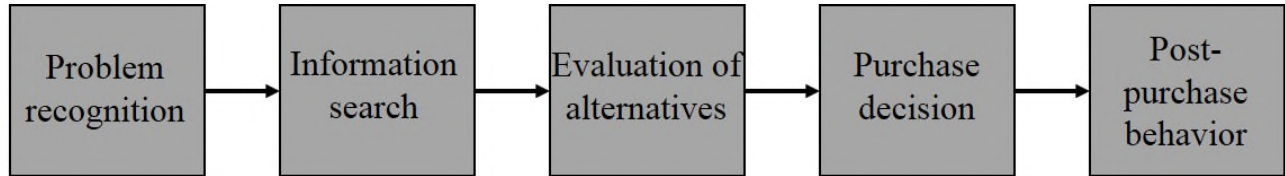


Figure 1.7. Purchasing process model

Source: Author's own construction based on Kotler & Bliemel, 2001, p. 355.

Based on the level of involvement and purchase importance, not all of the phases are always equally emphasized. These process-oriented stages are associated more generically with awareness, familiarity, formation of a preferred set of brands, purchasing and loyalty as mentioned by Caspar and Metzler.⁹⁷ A similar, if more elaborate, process was described by Lilien and Wong, who identified the following seven buying decision phases in the context of organizational purchasing:⁹⁸

1. Initiating the purchase
2. Determining the type of equipment of material to be purchased
3. Drawing up detailed specifications for the product
4. Evaluating sources of supply
5. Selecting specific suppliers
6. Determining the amount of expenditure
7. Giving final authorization for the purchase

Analyzing situational aspects, Kotler and Pfoertsch find that in literature exist the three following principal types of purchasing situations which can occur in the B2B arena:⁹⁹

- **Straight re-buy:** typically repeat purchases based on existing specifications and contracts. Mostly low involvement items are purchased as straight re-buys based on “approved lists” and standard procedures.
- **Modified re-buy:** A situation in which an existing need is satisfied in a modified manner. Motivations for reevaluation can be cost reduction, improvement of performance or changing requirements. Modified re-buy situations are common to high involvement products and services.

⁹⁷ Cf. Caspar, M., & Metzler, P. (2002). *Entscheidungsorientierte Markenführung: Aufbau und Führung starker Marken. Arbeitspapier: Vol. 3.* Münster: MCM, p. 15.

⁹⁸ Lilien, G. L., & Wong, M. A. (1984). An Exploratory Investigation of the Structure of the Buying Center in the Metalworking Industry. *Journal of Marketing Research*, 21(1), 1–11, p. 3.

⁹⁹ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 25.

- **New task:** Is characterized by a new requirement for products or services. The lack of experience adds to uncertainty and risk involved in such a situation. Therefore the purchasing process tends to take longer and involve more individuals compared to straight or modified re-buys.

The analysis purchasing situations in which purchasing takes place in sequential process stages indicates that purchasing in B2B can take on different manifestations going beyond the mere act of purchasing. These include the earlier stages of **awareness** and **familiarity** with a brand which may be fit to solve a certain organizational purchasing problem. One major difference in B2B purchasing the notion of **derived demand**¹⁰⁰, i.e. organizational buyers are only in a position of making an actual purchase if and when their organization is facing a demand, e.g. due to production demand based on their own realized sales. Therefore from the brands of which an organizational buyer is aware and about which they hold certain attributes, i.e. an image, in their mind, a **feasible set** has to be derived. Particularly in OEM – supplier relationships long-term planning and a **commitment to a specific brand** long before making a purchase is typical due to the high efforts which are associated with the harmonization and integration of a supplier product into an OEMs own product. Therefore occurrence of impulsive buying as it happens in B2C contexts is highly unlikely to happen. Only after these stages **actual purchasing behavior** can be observed. Homburg et al., name actual purchasing behavior as an observable manifestation, but also recommendation in the industry and likelihood of re-buy based on the experience a customer has made with a certain brand.¹⁰¹ Similarly, other authors emphasized a purchaser's **willingness to recommend a brand** as a highly relevant dimension in the B2B market for industrial products.¹⁰² Finally, Yoo & Donthu mention it as relevant to detect if a customer **prefers a certain brand** to any other despite the fact that they all have the same features as it can be regarded as a sign that brand equity exists as an added value beyond functional attributes.¹⁰³ Since especially in re-buy situations where a priory information and experience exists on the customer's side, these purchasing situations are reviewed hereafter.

Rebuy purchasing behavior

In a mature stage of a customer relationship, i.e. when analyzing re-buy situations, the concept of switching barriers has to be considered as customers are in a position to decide whether to sustain the

¹⁰⁰ Cf. Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, pp. 22-23.

¹⁰¹ Cf. Homburg C., Becker, A., & Hentschel, F. (2010). Der Zusammenhang zwischen Kundenzufriedenheit und Kundenbindung. In M. Bruhn (Ed.), *Handbuch Kundenbindungsmanagement* (7th ed., pp. 111–144). Wiesbaden: Gabler, pp. 11-144.

¹⁰² Cf. for instance Bendixen et al. (2004), Hutton (1997), van Riel, Pahud de Mortanges, and Streukens (2005).

¹⁰³ Yoo, B., & Donthu, N. (2001). *Developing and validating a multidimensional consumer-based brand equity scale*. [S.l.]: [s.n.].

relationship with a brand which has been purchased before or whether to switch to an alternative brand. Bruhn proposes five types of switching barriers as displayed in figure 1.8.¹⁰⁴

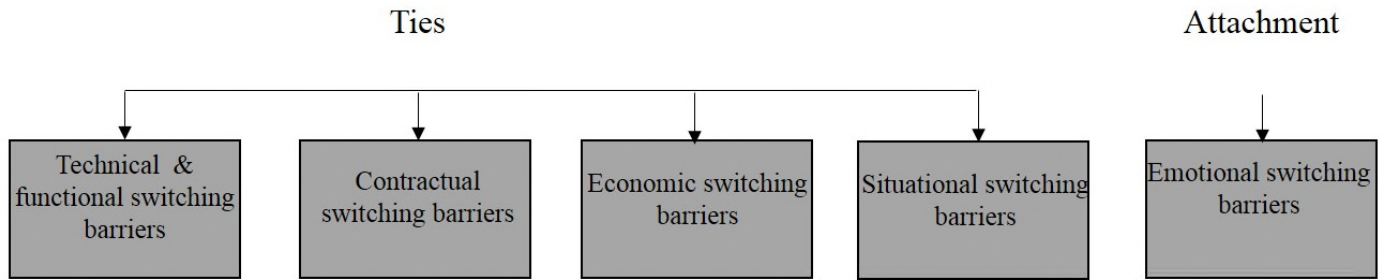


Figure 1.8. Switching barriers in organizational purchasing behavior

Source: Author's own construction based on Bruhn, 2009, p. 214.

Technical switching barriers aiming at tying customers to a certain supplier by designing a product or service in a way that it is not, or hardly, compatible with competitor products so that changing brands becomes a difficulty. Contractual switching barriers prevent, by nature of a legal relationship, that customers can change brands. The concept of economic switching barriers comprises any measures making it economically unfeasible to change brands. Situational switching barriers tie customers to a certain brand due to factors of convenience, for instance when it is opportune to adhere to an existing supplier because of time pressure or geographic proximity to an existing supplier. Lastly, emotional switching barriers occur when customers are emotionally attached to a brand due to personal preferences and a high level of satisfaction with the brand. Bruhn distinguishes emotional switching barriers by referring to them as attachment, whereas the other four barriers are referred to as ties. The three major intervening variables, as they can be regarded in line with the previously outlined S-O-R paradigm in part 1.4., are explained in more detail below:

Customer satisfaction

Oliver, who was the first author to introduce the concept of satisfaction to consumer research¹⁰⁵, in his classic book defines satisfaction as "the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of

¹⁰⁴ Cf. Bruhn, M. (2009). *Relationship Marketing: Das Management von Kundenbeziehungen* (2., vollst. überarb. Aufl.). *Vahlen's Handbücher der Wirtschafts- und Sozialwissenschaften*. München: Vahlen, pp. 213 ff.

¹⁰⁵ Cf. Ameer, I. A. (2014). Satisfaction- A behavioral perspective on consumer: Review, criticism and contribution. *International Journal of Research Studies in Management*, 3(1), p. 76.

consumption-related fulfillment, including levels of under- or over-fulfillment".¹⁰⁶ In line with the expectancy disconfirmation paradigm, in an organizational purchasing context Homburg et al.¹⁰⁷ use the terms of “confirmation” and “disconfirmation”, indicating the degree to which the expectations of a customer set a priori are either met, failed to meet or exceeded. The theory suggests that customers will be satisfied when the product performs better than initially expected (positive disconfirmation), neutrally satisfied when the product performance matches expectations (confirmation or zero disconfirmation) and dissatisfied when initial expectations exceed the product’s actual performance.

Beside expectation-based norms other researchers have investigated alternative comparison standards such as experience-based norms advocated by Woodruff et al.¹⁰⁸

Prior to Oliver’s classic book, he and Swan published an article on satisfaction with a merchant and product focus¹⁰⁹ in which they employ equity theory to discuss customer responses to service failures and company efforts to recover. Along with other equity theorists they argue that consumer’s evaluation of companies with whom they made negative experiences will increase when they are offered favorable recovery. Common to all views on customer satisfaction is that it has a significant impact on customer loyalty, which is why the topic has such high relevance in business management. In this respect, Oliver mentions loyalty as the most important long-term impact of customer satisfaction.

Brand attachment

Elaborating on attachment, the concept was originally coined by Mary Ainsworth in order to understand the deep and enduring emotional bonds that connect one person to another or a person to an object across time and space.¹¹⁰ The basic principle of attachment theory is that individuals are naturally inclined to seek proximity to certain attachment figures to secure protection from physical and psychological threats. Bowlby, who built on Ainsworth’s research and contributed to the wide acceptance of the concept in development psychology, concludes in his classic work on Attachment and Loss that “Intimate attachments to other human beings are the hub around which a person's life revolves, not only when he is

¹⁰⁶ Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the consumer*. McGraw-Hill series in marketing. Boston, Mass.: Irwin McGraw-Hill, p. 13.

¹⁰⁷ Cf. Homburg, C., Schäfer, H., & Schneider, J. (2012). *Sales Excellence: Systematic Sales Management. Management for Professionals*. Berlin, Heidelberg: Springer.

¹⁰⁸ Cf. Woodruff, R. B., Cadotte, E. R., & Jenkins, R. L. (1983). Modeling Consumer Satisfaction Processes Using Experience-Based Norms. *Journal of Marketing Research*, 20(3), 296–304.

¹⁰⁹ Oliver, R. L., & Swan, J. E. (1989). Equity and disconfirmation perceptions as influences on merchant and product satisfaction. *Journal of consumer research : JCR ; an interdisciplinary quarterly*.

¹¹⁰ Cf. Ainsworth, M. The development of infant–mother attachment. In *Review of child development research* (pp. 1–94) (Original work published 1973).

an infant or a toddler or a schoolchild but throughout his adolescence and his years of maturity as well, and on into old age. From these intimate attachments a person draws his strength and enjoyment of life and, through what he contributes, he gives strength and enjoyment to others“.¹¹¹ As the main outcome of attachment is the individual's willingness to maintain proximity with the attachment figure, which is not limited to human beings but also products or brands, this construct has often been applied in marketing studies to explain the phenomenon of (brand) loyalty and repeat purchase.¹¹² As a very deep and intimate priming, attachment is characterized by its sustainability. Bowlby argues that when the attachment figure is withdrawn at an early stage, absence of the earlier attachment can be observed.¹¹³ In analogy of Bowlby's theory to branding, marketers must build their brand consistently and sustainably so that attachment between a customer and a brand similar to that between human beings can form. Without sustainability no enduring attachment as an antecedent to purchasing behavior can form. According to Keller, who highlights the role of attachment as part of the pinnacle of consumer response to a brand, the construct of brand attachment is related to that of satisfaction but with the difference that attachment to a brand can only be achieved when an extraordinarily high level of satisfaction is associated with a brand. Keller therefore concludes attachment to be a higher indicator of loyalty than satisfaction.¹¹⁴

Switching costs

A concept related to the other switching barriers laid out in figure 1.8. which have been mentioned before is the construct of switching costs. Burnham, Frels and Mahajan define switching costs as “onetime costs that customers associate with the process of switching from one provider to another”.¹¹⁵ Differently put, but in line with this understanding, Biedenbach describes switching costs as an indicator of “how easy it is for the customer to be disloyal”.¹¹⁶ Three general types of switching costs exist in literature:¹¹⁷

¹¹¹ Bowlby, J. (1969-1980). *Attachment and loss*. New York: Basic Books, p. 441.

¹¹² Cf. Pedeliento, G., Andreini, D., Bergamaschi, M., & Salo, J. (2015). Brand and product attachment in an industrial context: The effects on brand loyalty. *Industrial Marketing Management*, p. 2.

¹¹³ Cf. Bowlby, J. (1969-1980). *Attachment and loss*. New York: Basic Books, p. 19.

¹¹⁴ Cf. Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 72.

¹¹⁵ Burnham, T. A., Frels, J. K., & Mahajan, V. (2003). Consumer Switching Costs: A Typology, Antecedents, and Consequences. *Journal of the Academy of Marketing Science*, 31(2), 109–126, p. 110.

¹¹⁶ Biedenbach, G., & Marell, A. (2009). The impact of customer experience on brand equity in a business-to-business services setting. *Journal of Brand Management*, 17(6), 446–458.

¹¹⁷ Cf. Burnham, T. A., Frels, J. K., & Mahajan, V. (2003). Consumer Switching Costs: A Typology, Antecedents, and Consequences. *Journal of the Academy of Marketing Science*, 31(2), 109–126.

- **Financial switching costs**, e.g. fees to break existing contracts, additional expenditure related to qualification of an alternative brand.
- **Procedural switching costs**, e.g. time and effort in identifying, adopting and using a new brand.
- **Relational switching costs**, e.g. giving up on personal relationships and identification with an existing brand.

In an attempt to classify these three types of switching costs, it can be said that financial and procedural switching costs are of a rather rational nature whereas the relational switching costs are considered emotional. Based on the review of the three concepts of customer satisfaction, brand attachment and switching costs, which can all be antecedents to (re-)purchasing behavior in a sense of intervening variables, there appears to be a clear ranking indicating that switching costs in their rational form may be inferior to customer satisfaction which, in turn, is a less powerful predictor of purchasing behavior in existing brand-customer relationships than brand attachment.

Total view of organizational purchasing behavior

The prior analysis of theories of organizational purchasing behavior illustrated that a great variety of factors influence this specific form of purchasing. In light of this complexity, total models attempt to analyze all main factors of influence simultaneously.¹¹⁸

One of the first and most comprehensive models was developed by Webster and Wind¹¹⁹ who distinguish between four groups of influencing factors being, environmental, organizational, social and individual factors. Webster and Wind aim at overcoming the inadequacies of consumer buying frameworks for organizational settings. Another reason was that traditional models lacked comprehensiveness as they either overemphasized rational economic factors or, as the opposite, erred by overly appreciating the role of emotion and personal goals. Webster and Wind hence found these models incomplete and for industrial practitioners and researchers as they leave out task and non-task variables while the overemphasis on certain variables is misleading. The authors of this then new general model acknowledged buying behavior as a complex process involving many persons, multiple goals, and potentially conflicting decision criteria. It often takes place over an extended period of time, requires information from many sources, and encompasses many inter-organizational relationships. They defined organizational buying

¹¹⁸ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, p. 89.

¹¹⁹ Webster, Frederick E., Jr., & Wind, Y. (1972). A General Model for Understanding Organizational Buying Behavior. *Journal of Marketing*, 36(2), 12–19.

behavior as a process which includes all activities of organizational members as they define a buying situation and identify, evaluate, and choose among alternative brands and suppliers. While Webster and Wind stressed the formal organization of the buying center, the contemporary view is that buying centers are neither formal nor structured and their size and composition varies greatly depending on the purchasing task and its complexity.¹²⁰

Sheth and Sharma developed a model of industrial buying behavior¹²¹ which was an extension of the earlier Howard-Sheth model of consumer behavior that was constructed along the S-O-R paradigm. The model has a psychological as well as a behavioral emphasis, focusing on the mental states and decision processes of individual participants in the buying process. Among the key concepts in Sheth and Sharma's model are purchasers' expectations, perceptions, role orientations, lifestyles, and the perceived risk. Organizational variables are comprised by the three overarching constructs of orientation, size and degree of centralization. The Sheth model shows that differences among buyers' expectations are due to the background of the individuals involved in the purchasing process, their sources of information, the notion of active search, perceptual distortions as well as satisfaction with past purchases.

Choffray and Lilien¹²² developed a total model in 1978, which puts into account the earlier model by Webster and Wind and also the model by Sheth and Sharma. Choffray and Lilien strive at a more operational model than the one by Webster and Wind. Their model takes on a process-oriented view dividing the organizational purchasing process into the three phases of selection of alternatives, formation of preferences among the members of the buying center and formation of an organizational preference. After pre-selection of available alternatives, the so-called evoked set, a feasible set is remains depending on environmental as well as organizational constraints. Every involved buying center member develops their own preferences based on their individual traits and criteria. When selecting alternatives, Choffray and Lilien find that corporate engineers, the equivalent of *buyers* in Webster and Wind's model, are concerned with the initial acquisition costs, reduction of complexity and the product to be field proven and reliable. Production engineers, corresponding with *users* according to buying center theory, are more concerned with operating costs and energy savings. Top Management as another of their functional definitions, associated with Webster & Winds concept of *decider*, are said to be more concerned with the

¹²⁰ Cf. Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, pp. 26-27.

¹²¹ Cf. Sheth, J. N. (1973). A Model of Industrial Buyer Behavior. *Journal of Marketing*, 37(4), 50-56.

¹²² Choffray, J.-M., & Lilien, G. L. (1978). Assessing Response to Industrial Marketing Strategy. *Journal of Marketing*, 42(2), 20-31.

product being up-to-date, energy efficient and with low energy costs. Figure 1.9. displays Choffray and Lilien’s model:

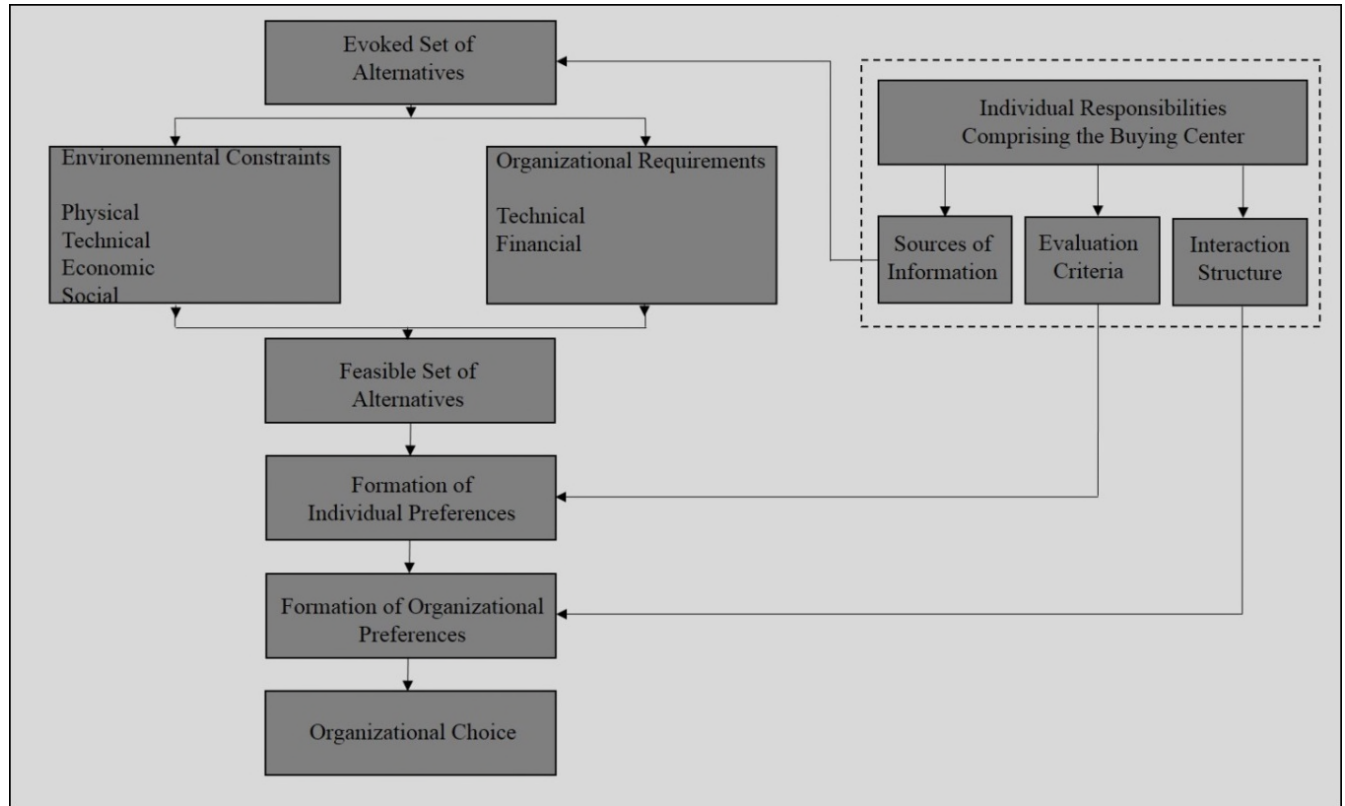


Figure 1.9. Major elements of organizational buying behavior

Source: Author’s own construction based on Choffray & Lilien, 1978, p. 22.

Since purchasing decision is a collective one, the power structures within the buying center determine which individuals can assert themselves most strongly. According to Voeth, the following three traits of buying center members appear to be of particular relevance¹²³:

- Personal concern: A higher degree of personal concern of buying center members appears to correlate with a higher degree of influence.
- Experience: Likewise personal experience seems to have an influence on the weight a certain buying center member is given. And
- Cultural background: Depending on the cultural background of buying center members, buying centers can vary e.g. in their composition, size and interaction patterns.

¹²³ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp. 47-48.

With Choffray and Lilien's above model in mind, theory of group preference¹²⁴ as outlined in figure 1.10. illustrates that after identification of n feasible brands as purchasing alternatives, individual preferences are formed. In a second stage through the mediating effect of situational stimuli a group preference is formed. As can be seen from the figure, the individual influence of the buying center members involved in the process is important to the outcome in the form of group preference.

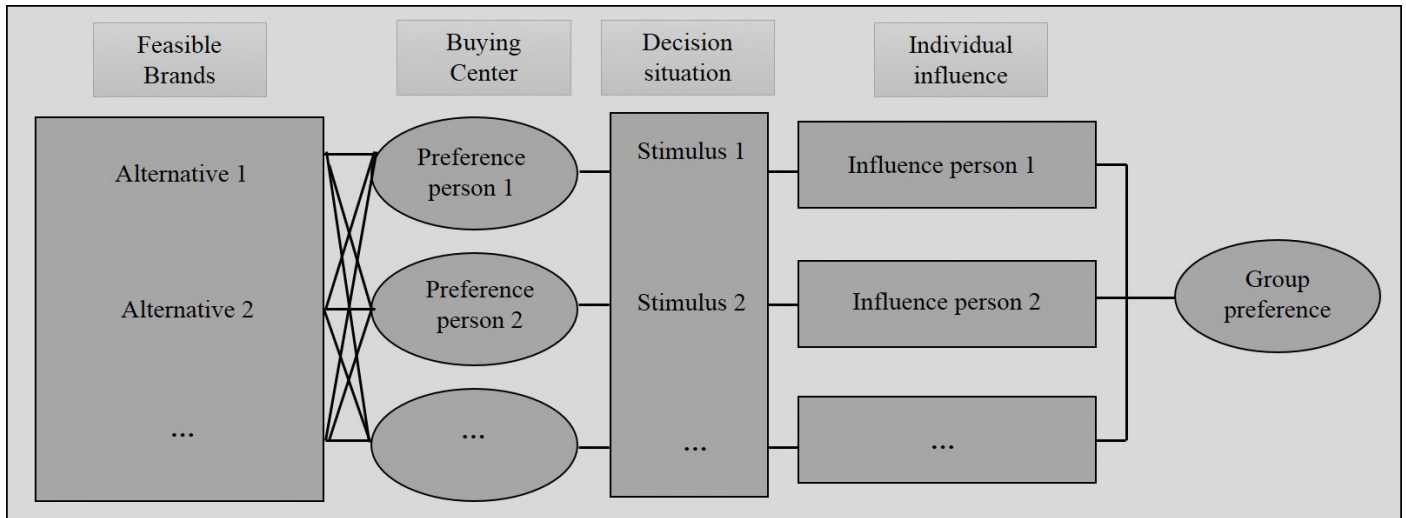


Figure 1.10. Formation of B2B purchasing behavior

Source: Author's own construction based on Backhaus & Voeth, 2004, p. 67.

Despite the introduced concepts of multi-personal purchasing and the interaction structures in organizational buying, Webster and Wind argue "In the final analysis, all organizational buying behavior is individual behavior. Only the individual as an individual or a member of a group can define and analyze buying situations, decide, and act".¹²⁵ In their argumentation they place the individual buying center member at the heart of the buying process, and conclude that "it is the specific individual who is the target for marketing effort, not the abstract organization"¹²⁶ Therefore, it is important to analyze the organizational buyer's personality, perceived role set, motivation, cognition, and learning are the basic psychological processes which affect his response to the buying situation and marketing stimuli provided by potential vendors through their brands.

¹²⁴ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, pp.66-67.

¹²⁵ Webster, Frederick E., Jr., & Wind, Y. (1972). A General Model for Understanding Organizational Buying Behavior. *Journal of Marketing*, 36(2), 12-19, p. 18.

¹²⁶ Ibid.

1.4. Rationality versus emotionality in organizational purchasing behavior

Evaluation of human behavior over centuries was determined by rational choice theories, in which context the economic man or homo economicus, in its twentieth century form as a rational utility maximizer striving to increase their benefit, traditionally was a major conception.¹²⁷ In the course of being economic, the economic man is also postulated to be rational.¹²⁸ Such theories attempt at explaining complex social behavior with simple and generalizable and objective assumptions. Such rationalist notions stem from the fact that until the late nineteenth century, research had focused on “inanimate objects in a physical world” of which Newton’s works are influential manifestations.¹²⁹ Developments in economics in the theory of the business firm in the 20th century have raised major doubts as to whether the model of the economic man builds a suitable foundation of how firms do or should behave.¹³⁰ In this regard, Simon made an important contribution. He challenged classical concepts of rationality as they, according to Simon, make severe demands on the choosing organism who must be able to attach definite pay-offs to each potential outcome of a decision situation without any room for unanticipated outcomes.¹³¹ For the construction of a theory for the behavior of an individual or of groups of individuals who are making decisions in an organizational context, he substitutes the economic man with a choosing organism with limited abilities. But even far into the twentieth century, rational assumptions lasted, even sparked with the event of computers, comparing the human brain and subsequently human decision making with rational and logical processes similar to electronic computing. Hence, when it comes to emotions and their influence on decision making, it was not until in the mid-nineties of the twentieth century when American neurobiologists Damasio and LeDoux found through their research on injured brains, that emotions by no means were mere disturbances in the decision process, but rather requirements for decision making processes and that without emotions decisions were not even possible.¹³² However, Levine et al. argue that despite the fact that the canonical model of the homo economicus, which they call “both descriptively misleading and insufficiently predictive”, persists in cognitive and behavioral sciences. They find that this “ghost” of homo economicus endures because a unified and accessible synthesis of alternative models has

¹²⁷ Cf. Levine, J., Chan, K. M., & Satterfield, T. (2015). From rational actor to efficient complexity manager: Exorcising the ghost of Homo economicus with a unified synthesis of cognition research. *Ecological Economics*, 114, 22–32, p. 22.

¹²⁸ Simon, H. A. (1955). A behavioral model of rational choice. *The quarterly journal of economics*, 69(1), 99–118, p. 99.

¹²⁹ Collis, J., & Hussey, R. (2009). *Business research: A practical guide for undergraduate & postgraduate students* (3rd ed.). Basingstoke: Palgrave Macmillan, p. 55.

¹³⁰ Simon, H. A. (1955). A behavioral model of rational choice. *The quarterly journal of economics*, 69(1), 99–118, p. 99.

¹³¹ *Ibid*, p. 103.

¹³² Cf. Häusel, H.-G. (2012). *Neuromarketing: Erkenntnisse der Hirnforschung für Markenführung, Werbung und Verkauf* (2. Aufl.). Freiburg im Breisgau: Haufe, pp. 73-74.

yet to emerge from the diversity of findings of the different sciences.¹³³ The assumption of rational behavior has begun to shift in consumer research as early as the 1950s as the emergence of the brand image concept shows. In this context, Trommsdorff and Teichert mention that image research can be understood as a critique of economic theory of household and the homo economicus assumption.¹³⁴ However, it was not until the brink of the new millennium when research slowly started to adopt a similar view on B2B settings. What hindered the earlier convergence of B2C and B2B marketing in regard to the relevance of branding was that traditionally, classic organizational buying models as the one by Webster and Wind¹³⁵ tend to portray organizational buyers as rational decision makers who rely on objective attributes when making decisions. This rational view of organizational purchasing behavior has not left a significant role for emotive or self-expressive benefits which are an integral part of brand conceptions.¹³⁶ It was therefore due to the process which was believed to be of very rational nature¹³⁷ as well as the general setting where purchasers are trained professionals operating in buying centers¹³⁸ which eliminates the influence of brand images that are based nonfunctional and subjective attributes.¹³⁹ De Chernatony notes that B2B buyers are generally more knowledgeable about the products they purchase and more rational in their decision making than private consumers. She concludes that this focus on rationality has fostered the assumption that organizational buyer is making rational business decisions as opposed to emotional or impulsive ones.¹⁴⁰ However, leading representatives of the scientific community have increasingly questioned these propositions. Kotler and Pfoertsch claim: “Forget about the entirely rational and perfect business person. They no longer exist, if they ever did at all. We are all human beings with emotions and feelings and this makes us automatically susceptible to branding whether we are at home or

¹³³ Levine, J., Chan, K. M., & Satterfield, T. (2015). From rational actor to efficient complexity manager: Exorcising the ghost of Homo economicus with a unified synthesis of cognition research. *Ecological Economics*, 114, 22–32, pp.22-23.

¹³⁴ Cf. Trommsdorff, V., & Teichert, T. (2011). *Konsumentenverhalten* (8., vollst. überarb. und erw. Aufl.). Kohlhammer Edition Marketing. Stuttgart: Kohlhammer, p. 130.

¹³⁵ Webster, Frederick E., Jr., & Wind, Y. (1972). A General Model for Understanding Organizational Buying Behavior. *Journal of Marketing*, 36(2), 12–19.

¹³⁶ Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204.

¹³⁷ Leek, S., & Christodoulides, G. (2011). Brands: Just for consumers? Introduction to the special issue on B2B branding. *Industrial Marketing Management*, p. 830.

¹³⁸ Cf. Lindgreen, A., Beverland, M. B., & Farrelly, F. (2010). From strategy to tactics: Building, implementing, and managing brand equity in business markets. *Industrial Marketing Management*, 39(8), 1223–1225, p. 1223.

¹³⁹ Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380, p. 371.

¹⁴⁰ Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets. Working paper series / Birmingham Business School: 2003-28*. Birmingham: University of Birmingham, Birmingham Business School, p. 405.

at work”.¹⁴¹ They further negate the notion of branding as an attempt to seduce customers into an irrational decision but instead emphasize the brand as a transmitter of a meaningful value proposition which can serve making business-related purchasing decisions.¹⁴² Since business is always done with people, who are constrained by time, intellectual computing skills and other environmental influences as noted by Simon, branding can assist in emotionally transmitting relevant messages and value propositions which “cut through the noise in that way”.¹⁴³ In line with Chahal’s thoughts, it may be that B2B marketers employ very rational brand communication because they believe it more appropriate with their target groups.¹⁴⁴ Similarly, Freundt et al. found that a “surprising gap” between B2B brand messages and what customers really want to know.¹⁴⁵ Therefore, the discourse comes down to two alternative views. The first and traditional view is that managers reduce their increasing purchase risk by pursuing choice strategies based on the evaluation of objective and rational criteria, in which information search constitutes the major risk reduction behavior. The alternative, brand-driven view of decision making suggests that organizational purchasers rely on heuristic decision behavior when facing high risk purchase decisions.¹⁴⁶ This more recent notion in the arena of B2B branding correspond with the work by Gigerenzer and Brighton. By introducing the concept of “Homo heuristicus”, as an individual with a biased mind, ignoring part of the available information. They state that a biased mind can handle uncertainty more efficiently than an unbiased mind which relies on more resource-intensive and general-purpose strategies. The assumption that “if you have heard of one player but not the other, predict that the recognized player will win the game”¹⁴⁷ can also be applied to a B2B product or service with a distinct brand image compared to a product with no or merely a weak brand image. Brands can therefore create such biases as, according to Fischer et al., one of their main functions is information efficiency.¹⁴⁸ They argue that information efficiency in particular relates to the preparation of the purchase decision making where brands support the processes of information collection, consolidation and processing within the limits of the organism. As a new synthesis and a further alternative to the homo economicus, Levin et al. propose

¹⁴¹ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 58.

¹⁴² Cf. Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, pp. 2-3.

¹⁴³ Chahal, M. (2014). B2B branding: where is the love? *Marketing Week*, 3, 1

¹⁴⁴ Ibid.

¹⁴⁵ Freundt, T., Hillenbrand, P., & Lehmann, S. (2013). *How B2B customers talk past their customers*. Mc Kinsey Quarterly.

¹⁴⁶ Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204, p. 202.

¹⁴⁷ Gigerenzer, G., & Brighton, H. (2009). Homo heuristicus: why biased minds make better inferences. *Topics in cognitive science*, 1(1), 107–143, p. 129.

¹⁴⁸ Fischer, M., Hieronimus, F., & Kranz, M. (2002). *Markenrelevanz in der Unternehmensführung: Messung, Erklärung und empirische Befunde für B2C-Märkte. Arbeitspapier: Vol. 1*. Münster: MCM, p. 18.

an “efficient complexity manager”, referred to as “Homo efficens”. The essence of this model is that humans “work within biological limits to efficiently filter massive environmental complexity”. This model appears comprehensive and relevant to buying center members in purchasing situations in regard to constraints in time and budget, increasing complexity as well as proliferation of products and services and increase of global competition¹⁴⁹ providing them with more options to select from when making a purchasing decision. As a perspective, the principal distinction between B2C and B2B marketing when it comes to the relevance of branding seems to become obsolete or, as Kramer puts it, that there is no B2B or B2C, but only H2H – Human to Human.¹⁵⁰

Intermediate conceptualization

Based on the theoretical analysis of the first chapter, in the further course the research is guided by a theoretical research framework constructed along the neo-behaviorist S-O-R paradigm previously introduced. It ranges from brand communications and other stimuli, e.g. interaction with brand representatives, to which the individual buying center member is exposed, over the internal organism-related processes, where brand information is processed and reflected with existing brand knowledge by the individual person. Through the variables of switching costs, customer satisfaction and brand attachment, which were identified to intervene the relationship, brand image leads to purchasing behavior. Based on this theoretical background, the following variables were identified to be included in the investigation of brand image on B2B purchasing behavior in the chosen industry:

- **Brand image**, which comprises both **rational** and **emotional** dimensions. The conceptualization of brand image and its dimensions is effected in the dissertation’s analytic part (chapter 2).
- **Switching costs, customer satisfaction and brand attachment** as intervening variables which, along the S-O-R, paradigm explain the relationship between brand image and purchasing behavior.
- **Purchasing behavior** as the research’s dependent variable.
- **Purchase complexity and purchase risk** as main contextual variables characterizing B2B purchasing.

¹⁴⁹ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag.

¹⁵⁰ Kramer, B. (2014). *There is No B2B or B2C: It's Human to Human: #H2H* (1st ed.): PureMatter.

The framework illustrated in figure 1.11. comprises the essence of all concepts and variables elaborated previously and hence lays the foundation for the analysis of existing research in the field (chapter 2), the construction of the causal model (chapter 3) as well as data collection and evaluation (chapter 4).

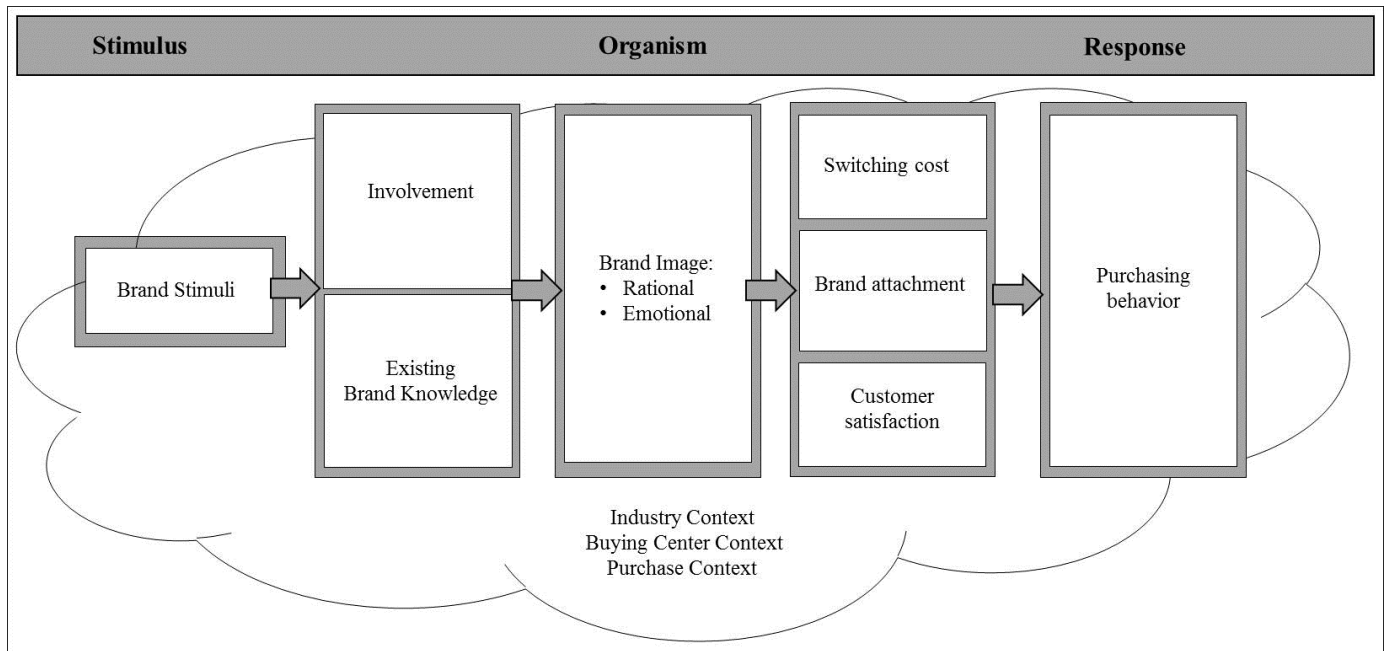


Figure 1.11. Theoretical framework of the research

Source: Author's own construction

Chapter 1 summary

- Branding is as old as tradesmanship itself. However, the discipline has moved from a product differentiation-oriented concept to a more wide-spanning notion, comprising rational and emotional aspects. These are reflected in the brand image based on multiple stimuli in the individual's mind.
- Major differences exist in the way purchasing is conducted in B2B markets compared to B2C. Particularly, multi-personality, complexity and process-orientation distinguish B2B purchasing from consumer purchasing. This led to a long-standing notion that branding, due to its largely emotional and self-expressive nature, would not be applicable to B2B markets.
- Globalization, proliferation of industrial products, increase of e-commerce and new media seem to bring additional momentum to B2B branding. Differences between B2B and B2C are blurring, emphasizing the human factor behind every purchasing situation and crediting the individual buying

center member as a focal point of decision making. Therefore marketing efforts of industrial vendors must be directed at meeting the individual buying center member's needs and priorities.

- Due to the peculiarities of organizational purchasing behavior, mediating and contextual variables must be considered when investigating the impact of brand images on purchasing behavior.

2. REVIEW OF EXISTING BRANDING FRAMEWORKS AND LITERATURE ON B2B BRANDING

After the theoretical foundations were laid in the first chapter, chapter two analyses examples of the importance and usage of brands in managerial practice (2.1.) as well as the importance of brands for B2B purchasing behavior based on empirical research previously conducted by other researchers. Empirical evidence on intervening variables (2.2.) and contextual variables is examined (2.3.) subsequently. In conclusion of the second chapter, existing conceptual frameworks explaining the nature and dimensions of brands and thus providing conceptual guidance for the subsequent model development are explained in 2.4., to mark the transition to the third chapter.

2.1. Importance of branding in contemporary B2B academia and managerial practice and selection of an industry sector for the research

Despite the traditional negligence of B2B branding, many industrial brands have a long and rich history such as Saint Gobain (1665), Siemens (1847), Bosch (1886) or Caterpillar (1925)¹⁵¹, and even today B2B brands can be found among the world's most powerful as the example of General Electric, Caterpillar and Xerox demonstrate.¹⁵² A recent overview of the world's strongest brands not only includes Coca Cola, Apple or L'Oreal but also industrial brands like Caterpillar, GE and Xerox. Table 2.1. shows the ten currently highest ranked industrial brands.

Table 2.1. B2B brands among the best 100 global brands 2015

Brand	Ranking 2015	Industry
IBM	5	IT, business services
General Electric	8	Various, incl. railway, aviation, health care
Cisco	15	IT
Oracle	16	IT

¹⁵¹ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 50.

¹⁵² Interbrand. (2015). Best Global Brands 2015. Retrieved from <http://bestglobalbrands.com/>*

Table 2.1. (continued). B2B brands among the best 100 global brands 2015

SAP	26	IT, business services
Accenture	42	Consulting
Siemens	53	Various, incl., railway, health care
Caterpillar	72	Heavy equipment
Xerox	71	IT, business machines
John Deere	83	Various, incl. heavy equipment

Source: Author's own construction based on Interbrand, 2015.

It should be noted that the consumer business of these brands number in the millions, giving the brands some of the characteristics of consumer brands, yet they can also be deemed B2B brands.¹⁵³ Conversely, some largely consumer focused brands have B2B branches as well, as the example of Mercedes-Benz' truck business illustrates. While in B2B, mostly company brands are communicated and known with end users, some B2B product brands have become known such as Kevlar and Teflon (DuPont) or Pentium and Celeron (Intel).¹⁵⁴

Convergence of B2C and B2B branding: Examples of managerial practice

Caterpillar, a mainly B2B-focused brand featured among Interbrand's world's strongest brands, has been investing in brand communication through classic consumer channels for a long time. The latest example is the over two minute long appearance of a Caterpillar excavator in the Hollywood movie "Skyfall". The image which Caterpillar tries to create with this placement is that the Caterpillar brand has the ability to develop and produce equipment tailored to customer's requirements.¹⁵⁵ Caterpillar communicated joint appearance of "two iconic brands" in their PR communication and highlighted the provision of technical support, parts, on-site expertise and service, all of which are desirable attributes for their customers.¹⁵⁶ Despite the fact that no private consumer is very likely to purchase the kind of product placed in the movie, the company invested significant resources, both financially and in terms of time and manpower,

¹⁵³ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p. 388.

¹⁵⁴ Cf. Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533, p. 532.

¹⁵⁵ (2012). *Caterpillar meets James Bond*. Mannheim. Retrieved from http://www.mwm.net/mwm-kwk-bhk/presse/pressemitteilungen/caterpillar-meets-james-bond/*

¹⁵⁶ (2012). *Cat® Machine Featured in Latest Bond Film -- SKYFALL*. Peoria. Retrieved from http://www.prnewswire.com/news-releases/cat-machine-featured-in-latest-bond-film----skyfall-174178271.html*

to elicit those favorable associations in their viewer's minds, ultimately meant to influence those individual's decision making in professional situations.

An appearance of a straight B2B brand is the placement of KUKA industrial robots, again in a James Bond movie, the 2009 release "Die another Day". In the movie scene, the robots power and precision, the machine is even able to cut diamonds, is highlighted. However, apart from those performance-related attributes, the placement is an attempt by KUKA management at emotionalizing the brand, as the scene in which its product appears transfers a high degree of excitement, and making managers of their customers think about new ways of use for the machine featured in the movie.¹⁵⁷

These examples show that the distinction between managerial practice and the developments in outlined in the theory part indicate that the formerly stringent distinction between B2B and B2C may no longer be valid. Martin Homlish, Chief Marketing Officer and Corporate Officer for SAP AG, a typical B2B company, put it this way:

"The distinction between B2B and B2C brands is becoming irrelevant. Behind every Business "B" is a person who expects a consumer-like experience. SAP is a B2B company, but if we continue to think of ourselves as B2B we won't be successful. We must evolve our mindset from B2B to B2P: Business to People. This change in approach will be part of a larger culture change in the near term."¹⁵⁸

What can also be concluded from these examples is that B2B marketers increasingly impose on both rational and emotional dimensions of their brands.

Scientific Research on B2B branding and its behavioral relevance

Whereas the importance of branding industrial products and services can be seen by these examples of managerial practice, the development of academic research also shows an increasing acknowledgement of the importance of branding in B2B contexts. Guzmán et al.¹⁵⁹ performed a literature review on the topicality of B2B branding and found the academic interest grow steadily since the emergence of the scientific inquiry on B2B branding in the early 1970s until 2010. Subject to their analysis were peer-reviewed journal articles published in English language. The analysis does not include conference

¹⁵⁷ Cf. Homburg, C., & Schmitt, J. (2010). Von Robotern und Emotionen. *Harvard Business Manager*. (09). Retrieved from <http://www.harvardbusinessmanager.de/heft/artikel/a-714747.html>*

¹⁵⁸ Martin Homlish (2010). Interview by Interbrand [Video]

¹⁵⁹ Guzmán, F., Keränen, J., Piirainen, K. A., & Salminen, R. T. (2012). Systematic review on B2B branding: Research issues and avenues for future research. *Journal of Product & Brand Management*, 21(6), 404–417.

proceedings and dissertations. The authors detected an increase in academic publications in the field of B2B branding since 1973, with an increase in the second half of the 2000s.

With the quantitative increase, a shift in the perception of the role of B2B branding took place, supposedly catalyzed by the advent of e-commerce and the increase of global competition.¹⁶⁰ While the literature review by Guzmán et al. demonstrates the general increase of the importance of B2B branding, a more targeted review of the literature on the organism- as well as response-related impact of brands and their images had to be performed by the author. For this purpose, empirical research as well as books and chapter on the impact of brands on customer response was analyzed. Included was literature in both English and German language as it turns out that due to the large degree of industrialization of German speaking countries, there is a significant body of research published in German.

Table 2.2. provides an overview of the research emerged since 1970 and classifies it by the respective author's assessment on the importance of brand image in the B2B sector followed by an review of the main statements and findings of the respective authors in chronologically ascending sequence.

Table 2.2. Empirical studies on the relevance of branding in B2B

Brand relevance	Research by author(s) and year of publication
Non-existent	Saunders & Watt (1979).
Low	Udell (1972), Sinclair/ Seward (1988), Krämer (1993), Sattler/ PWC (2001).
Moderate	Wind (1970), Gordon/Calantone/di Benedetto (1993), Shipley/Howard (1993), Yoon/ Kijewski (1995), Firth (1997), Hutton (1997), Baumgarth (1998), Michell/ King/ Reast (2001), Mudambi (2002), Bendixen et al (2004), Beverland et al. (2007), Backhaus et al. (2011).
High	Aaker (1991), McDowell Mudambi/ Doyle/ Wong (1997), Backhaus (2001), Caspar/Hecker/ Sabel (2002), De Chernatony (2003), Cretu et al. (2007), Kotler/Pförsch (2007), Walley et al. (2007), Kuhn et al. (2008), Homburg (2010).

Source: Author's own construction based on literature review

Table 2.2. summarizes the introduced research and shows that, along with the increased academic interest, the general evaluation of the effectiveness and importance of branding in B2B markets increased as well. At the same time, however, there appear to exist different levels of importance depending on the

¹⁶⁰ Cf. Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533, p. 532.

respective B2B market under investigation, as comparison of the evaluations between “Moderate” and “High” around the brink of the year 2000 suggest. This is why a number of author’s call for empirical research in further B2B industries.

The following section reviews the research ascendingly from the earliest research to the most contemporary.

1970 - 1990

The first mention of an empirical investigation of the role of brand in organizational purchasing behavior dates back to 1970. It was Wind who studied industrial source loyalty in the advanced electronics industry. While his results are partly indecisive, he found and found that “in those few cases” in which the user, as per the buying center role concept, “specifies a particular brand, the buyer tends to accept his judgment and remain loyal to this source”.¹⁶¹

As one of the first authors to elaborate on B2B branding, Udell stated that the formation of brands is of inferior priority in industrial companies.¹⁶² Following this initial seizure of the topicality, there was a long-standing negligence of B2B branding in the 1970s.

In 1979, Saunders and Watt investigated branding in the man-made fibers industry and the company’s efforts to overcome the loss of identity by branding at the end consumer’s level. Their findings concluded that due to the large amount of brands in the marketplace, consumers were confused and branding was not helpful. Their methodology, however, was doubtful as not organizational but private end-users were sampled in their research.¹⁶³

Sinclair and Steward wrote about a survey within the wood industry where manufacturers decided to brand their products. According to their results, the high dependence on price in this market suggests a low effectiveness of a manufacturer’s brand. Products were still commoditized which implies that branding has a low relevance.¹⁶⁴

¹⁶¹ Cf. Wind, Y. (1970). Industrial source loyalty. *Journal of marketing research : JMR*, 7(4), 450–457, p. 454.

¹⁶² Jon G. Udell. (1972). *Successful Marketing Strategies in American Industries*. Madison: Mimir Publishers.

¹⁶³ Saunders, J. A., & Watt, F. (1979). Do brand names differentiate identical industrial products? *Industrial Marketing Management*. (8), 114–123

¹⁶⁴ Sinclair, S. A., & Seward, K. E. (1988). Effectiveness of Branding a Commodity Product. *Industrial Marketing Management*. (17), 23–33.

1990 - 2000

As one of the earlier author's, Aaker in 1991 argues that brand equity may be more important in industrial goods markets than in consumer marketing. He further states that brand-name awareness is often pivotal in being considered by an industrial buyer. He goes on saying that many industrial purchase options may be "toss-ups", and, the decisive factor can turn upon what a brand means to a buyer.¹⁶⁵

In 1993, Gordon et al. studied circuit breakers in the electrical products and components market in the US. Their study suggested that brand equity was "alive and well"¹⁶⁶ in the B2B sector and moreover emphasize the role of corporate reputation as a source of brand image. However, they also state that because firm loyalty exists and not brand loyalty, the efforts to position new products differing from existing ones would be difficult, if not impossible.¹⁶⁷

In the same year, Krämer published a book in which he states that marketing politics only make up 5% of manufacturers marketing activities and therefore finds the issue of branding underrepresented in B2B. His findings are exclusively based on marketer inputs and feature no empirical customer responses.¹⁶⁸

Firth, who studied the pricing of accounting services in New Zealand, found that the use of brand names resulted in a 4% price premium.¹⁶⁹

Shipley and Howard sampled small and large industrial product manufacturers in the UK to research the importance of branding industrial products. Their findings indicate that branding is commonly practiced and that the manufacturers find it to yield benefits. Customer's perceptions were, however, not included in their research.¹⁷⁰

Yoon/Kijewski find that in the North American semi-conductor industry, there is a correlation between brand awareness and preference, varying between different purchase process types, but generally suggesting brands to be of importance in this B2B setting. They also find that the average threshold level

¹⁶⁵ Aaker, D. A. (1991). *Managing brand equity: Capitalizing on the value of a brand name*. New York, NY: Free Press, p. preface xi.

¹⁶⁶ Ibid, p. 15

¹⁶⁷ Gordon, G. L., Calantone, R. J., & Di Benedetto, C. A. (1993). Brand Equity in the Business-to-Business Sector. *Journal of Product & Brand Management*, 2(3), 4–16.

¹⁶⁸ Krämer, C. (1993). *Marketingstrategien für Produktionsgüter*. DUV. Wiesbaden, s.l.: Deutscher Universitätsverlag.

¹⁶⁹ Firth, M. (1993). Price Setting and the Value of a Strong Brand Name. *International Journal of Research in Marketing*, 10(4), 381–386

¹⁷⁰ Shipley, D., & Howard, P. (1993). Brand-naming industrial products. *Industrial Marketing Management*, 22(1), 59–66.

to be app. 10%, implying that a brand must surpass this level of awareness before beginning to generate meaningful additions to its share of brand preference.¹⁷¹

In 1997 Hutton conducted empirical research on brand equity in the B2B IT industry. His research resulted in customer's willingness to pay price premiums for known brands compared to unfamiliar ones. The price differential in favor of branded products ranged from 12% (floppy discs) to 19% (personal computers).¹⁷²

An exploratory research by Mudambi et al. found that consumer branding strategies are not directly transferrable to B2B context. They advise buyer-seller relationships as well as industrial market segmentation to be taken into account. The pinwheel of brand value to the customer as a conceptual framework defines a differentiation between tangible and intangible brand dimensions.¹⁷³

Baumgarth found through surveying firms in the chemical industry, that firms were satisfied with their ingredient branding strategies as they were perceived to be effective. Customers were not included in his research.¹⁷⁴

2000 to present

Michell et al., built their research on the study by Shipley and Howard. They adopted a seller-oriented view and found that industrial companies believed branding to be relevant and provided an increase in brand equity as well as competitiveness of branded products.¹⁷⁵ Their results confirm the earlier work of Shipley and Howard.

In 2001 Sattler conducted a study with German industrial firms and found that the importance of brands in industrial markets is lower than on consumer markets. A certain weakness of this study is that only marketers and not customers were sampled.¹⁷⁶

¹⁷¹ Yoon, E., & Kijewski, V. (1996). The Brand Awareness-to-Preference Link in Business Markets. *Journal of Business-to-Business Marketing*, 2(4), 7–36.

¹⁷² Hutton, J. G. (1997). A study of brand equity in an organizational-buying context. *The journal of product & brand management*, 6(6), 428–439.

¹⁷³ Mudambi, S. M., Doyle, P., & Wong, V. (1997). An exploration of branding in industrial markets. *Industrial Marketing Management*, 26(5), 433–446.

¹⁷⁴ Cf. Baumgarth, C. (1998). *Vertikale Marketingstrategien im Investitionsgüterbereich: Dargestellt am Beispiel von Einsatzstoffen*. Univ., Diss.--Siegen, 1998. *Marktorientierte Unternehmensführung: Vol. 23*. Frankfurt am Main: Lang.

¹⁷⁵ Michell, P., King, J., & Reast, J. (2001). Brand Values Related to Industrial Products. *Industrial Marketing Management*, 30(5), 415–425.

¹⁷⁶ Sattler, H. (Ed.). (2001). *Praxis von Markenbewertung und Markenmanagement in deutschen Unternehmen: Industriestudie* (2. Aufl.). [S.l.]: Fachverl. moderne Wirtschaft.

A substantive research was conducted by Caspar et al.¹⁷⁷ in 2002. Based on an empirical survey of more than 750 deciders, the authors in cooperation with Mc Kinsey and MCM determined the relevance of brands in 18 business markets. They examined the inherent brand functions, image benefit, information efficiency and risk reduction, and compared their importance to B2C settings. The findings suggest that brands are about equally important in B2B markets as they are in B2C, the main differences can be found in the relevance of the brand functions. Risk reduction is the predominant dimension in B2B, followed by information efficiency. Image benefit, being the most important function in B2C, plays a subordinate role in B2B according to their research.

A highly recognized exploratory article was authored by Mudambi. She states that through e-commerce and global competition, branding strategies can improve competitiveness in B2B markets. Thereby, she stated, the company brand will remain the focus of branding strategy. She found branding to be not equally important to all firms and not in all purchasing situations. She identified three clusters of buyers, “highly tangible”, “branding receptive” and “low interest”. She also found that intangible and emotional factors do matter, even in rational and systematic decision making, however, with a tendency of buying center members towards looking for objective and tangible benefits of the products.¹⁷⁸

De Chernatony and Lynch stated in their conceptual article that branding is of growing interest to B2B firms.¹⁷⁹ They also emphasized that both rational and emotional brand values can influence B2B buyers and concluded that there is a clear need for further research on how brands are used, communicated and perceived in B2B markets.

Bendixen et al. undertook a survey in the electrical equipment industry in South Africa. Their research found that the brand has a role to play but price and delivery were more important.¹⁸⁰

Cretu et al. The results suggest that the brand’s image has a more specific influence on customers’ perceptions of product and service quality, whereas a company’s reputation has a broader impact on perceptions of customer value and loyalty.¹⁸¹

¹⁷⁷ Cf. Caspar, M. (2002). Markenrelevanz in der Unternehmensführung: Messung, Erklärung und empirische Befunde für B2B-Märkte. Arbeitspapier / McKinsey&Company: Nr. 4. Münster: Marketing Centrum.

¹⁷⁸ Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533.

¹⁷⁹ Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets. Working paper series / Birmingham Business School: 2003-28*. Birmingham: University of Birmingham, Birmingham Business School.

¹⁸⁰ Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380.

Beverland et al. conducted a survey in the UK tractor industry and found that “brand” accounts for 38.95 per cent of the purchase decision, ahead of price (25.98 per cent) and service (14.90 per cent). Their research also revealed that importance of brand varies according to the individual tractor brand.¹⁸²

Kuhn et al. researched brand equity in the Australian market electronic systems for waste management. Applying Keller’s customer-based brand equity (CBBE) model, they found a large degree of transferability of Keller’s model, however, with different points of emphasize regarding the importance of the conceptual building blocks of brand equity. That is, corporate brands were found to be more relevant in B2B. Also, user profiles, purchase and usage situations as well as credibility were found to be more important in B2B than suggested by Keller.¹⁸³

Through a cross-industry study, Homburg et al. found that brand awareness significantly drives market performance. Moreover, this relation was found to be moderated by market and buyer characteristics.¹⁸⁴

Backhaus et al., conducted a survey on brand relevance in various B2B areas in 2011, as yet the most comprehensive research, including industrial automation, auditing, office furniture systems and business travel. They conclude that branding depends primarily on risk and information-cost reducing effects. Depending on the product category, branding may or may not be a promising strategy.¹⁸⁵

The literature review of empirical evidence of the importance of B2B branding and its behavioral consequences shows that brands seem to have a role to play in B2B and that both rational as well as emotional image dimensions are important. At the same time, it is not possible to make general inferences as the featured studies appear quite fragmented and methodologically hardly generalizable. Another shortcoming is that, despite investigating customer response, probably for reasons of feasibility many studies capture only marketer’s input.

¹⁸¹ Cretu, A. E., & Brodie, R. J. (2007). The impact of brand images and company reputation where manufacturers market to small firms: A customer value perspective. *Industrial Marketing Management*, 36(2), 230–240.

¹⁸² Beverland, M., Walley, K., Custance, P., Taylor, S., Lindgreen, A., & Hingley, M. (2007). The importance of brand in the industrial purchase decision: A case study of the UK tractor market. *Journal of Business & Industrial Marketing*, 22(6), 383–393.

¹⁸³ Kuhn, K.-A. L., Alpert, F., & Pope, N. K. L. (2008). An application of Keller's brand equity model in a B2B context. *Qualitative market research : an international journal*, 11(1), 40–58.

¹⁸⁴ Homburg, C., Klarmann, M., & Schmitt, J. (2010). Brand awareness in business markets: When is it related to firm performance? *International Journal of Research in Marketing*, 27(3), 201–212.

¹⁸⁵ Backhaus, K., Steiner, M., & Lügger, K. (2011). To invest, or not to invest, in brands?: Drivers of brand relevance in B2B markets. *Industrial Marketing Management*, 40(7), 1082–1092, p. 1082.

The chosen industry and its representativity of the B2B sector

Due to the versatility of the B2B sector, which is due to the differences in products and services, buying processes and interaction structures, it is neither feasible nor expedient to aspire towards a universal B2B survey. Now that the general relevance of branding in B2B markets has been established, other authors identified the need to continue research in new areas of the B2B sector. In pursuit of the present research, the author faced the decision whether to survey various B2B industries or to focus on one specific industry. One advantage of researching the influence of brand images on B2B purchasing behavior within a variety of industries is the advantage of higher external validity and access to a much larger sample. On the other hand, studying a single, specific industry provides more depth and the possibility of increasing both the number of market participants and the number of key respondents within the respective organizations. Also, considering that general importance of branding to the B2B sphere has been acknowledged, the depth which can be gained through researching a certain market in more detail is expected to add more richness to the research results. In light of these trade-offs, the author decided to study actual buying center members within one industry but include a variety of sub-branches within that particular industry into the study.

The examples from managerial practice illustrate that some of the strongest B2B brands include products for the railway industry. Analyzing the industrial context in which existing research in behavioral impacts of brand have been investigated shows that there is a research gap related to the railway industry.

Since the 19th century, the railway industry has been a branch of industry which has traditionally been a catalyst of economic development. There are several trends¹⁸⁶ that have driven the growth of the rail supply industry in the past and are likely to continue doing so. There are the megatrends such as global growth of population, urbanization and increased demand for mobility, climate change and environmental concerns, deregulation, and liberalization that will further contribute to the growth of the railway industry. Moreover, several initiatives at a European Union level such as free-trade agreements between the EU and USA and Japan and an increase in investment in international infrastructure and signaling systems will most likely improve the competitiveness of the railway industry so as to meet the changing transport needs. At the same time, these common standards also increase competition within the industry. Lastly, overall market demand is growing due to increased order volumes in emerging markets and policies and measures like those mentioned above will enable mature markets in Western Europe to remain stable in

¹⁸⁶ Roland Berger Strategy Consultants. (2014). *World rail market study: Forecast 2014 to 2019*. Hamburg.

upcoming years. As figure 2.1. shows, the market volume of the global railway industry in a 2011 to 2013 time frame was roughly 150 bn. EUR, divided into services (58,3 bn. EUR), rolling stock (47,9 bn. EUR), infrastructure (29,6 bn. EUR) rail control (12,6 bn. EUR) and turnkey management (1,517 bn. EUR) .

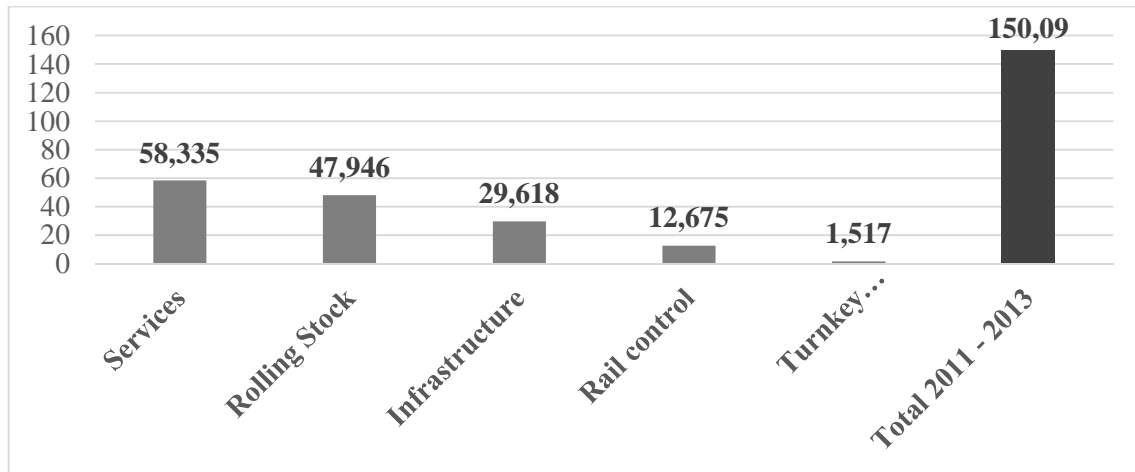


Figure 2.1. Current annual global railway market volume by segment [in EUR bn.]

Source: Author's own construction based on UNIFE, 2014.

The market for rolling stock will be the focus of the further analysis as due to the complexity of the equipment, the high degree of competition providing customers with more alternatives for purchasing decisions, this market, apart from representing a large share of the railway industry, is more distinct from research in the services industry which is not expected to differ significantly from other services analyzed in previous research. Analyzing the railway industry's value chain relations¹⁸⁷, and particularly the market for rolling stock, the business and value structures of the industry indicate that transportation companies, infrastructure companies and service providers are the end customers of rolling stock equipment. OEM manufactures provide the vehicles which are needed for rail transportation of either passengers or freight. Tier 1 suppliers provide main subsystems which are needed for production such as drive systems, braking systems or control systems. Tier 2 and Tier 3 suppliers provide components and parts respectively which are needed for the production of subsystems. As figure 15 displays, the supply industry ranging from Tier 1 down to Tier n suppliers, provide to OEM system providers who, in turn, supply to end customers who can be transportation companies, infrastructure companies and other service providers. Thereby, as further indicated in figure 2.2., the end customers have relationships not only with their direct OEM and system suppliers, but also interact with agents of subordinate supply stages in order to secure quality,

¹⁸⁷ Cf. Wolf, A., Wille, N., Schüller, N., & Schumacher, A. (2010). *Dieseltriebwagen/ Elektrotriebwagen - weltweite Marktentwicklungen: Forecast, Bestände, Hersteller, Beschaffungsprojekte*. Köln, pp. 40-44.

transfer requirements and specifications and monitor critical works. The intensity of interaction, however, lessens with increasing distance to the end customers. This results in Tier 1 suppliers being in close interaction with end customers and Tier n suppliers having increasingly fewer points of contact.

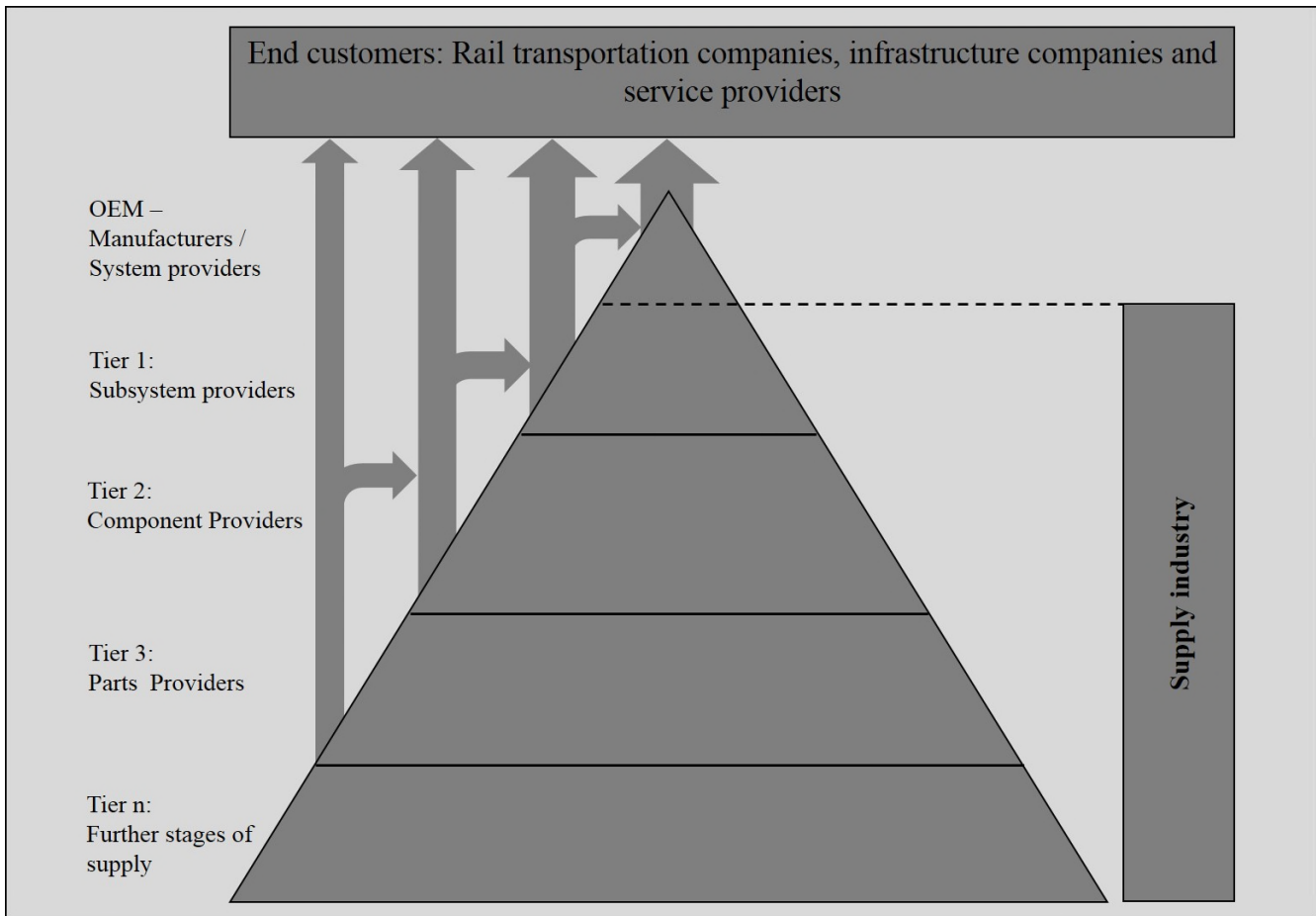


Figure 2.2. Value chain relations in the railway industry

Source: Author's own construction based on SCI Verkehr, 2010, p. 40.

Looking more deeply at the world's largest OEM manufacturers which, among further market participants, will be subject to surveying in the course of this research, it becomes apparent that they mainly consist of global large-scale corporations with some focusing exclusively on the railway sector and others being quite diversified. Companies like Alstom, Bombardier, GE, Hitachi and Siemens and are examples for the latter while the smallest of the major train manufacturers, Stadler and

Transmashholding, exclusively focus on this one branch of the B2B industry. Figure 2.3. provides an overview of the world's largest OEM train manufacturers within the railway industry.¹⁸⁸

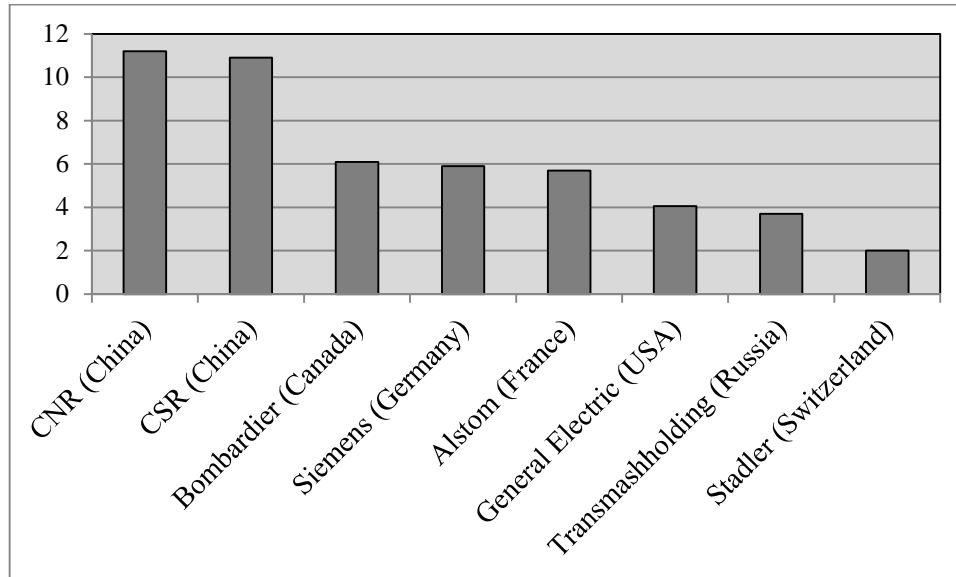


Figure 2.3. The world's largest train manufacturers (2012 revenues in EUR bn.)

Source: Author's own construction based on F.A.Z., 2014, p. 23.

As shown by this figure, the main manufacturers are global players with headquarters on different continents. They also have subsidiaries and production sites in all major markets in which they are active. In the railway industry there is a limited number of OEM manufacturers and operators representing the demand, and, on the supply side, a limited number of suppliers offering complex and individualized subsystems of high value. Infrastructure investment is conducted in the form of mostly long-term projects with specific boundary conditions. Concerned with the impact of brand images on the purchasing behavior of B2B customers, in accordance with Backhaus' classification¹⁸⁹, the present research is therefore anchored in **capital items as subject to marketing in OEM and project business constellations** as the empirical research will be conducted in such an industry.

With the two biggest players, CNR and CSR recently merging to form the by far biggest provider of rolling stock, now named CRRC, there is an increased degree of movement in the industry.¹⁹⁰ General Electric on the other hand has acquired Alstom¹⁹¹ while Bombardier and Siemens are negotiating a

¹⁸⁸ Cf. Chinesen lehren Siemens und Co. das Fürchten (2014, October 29). *F.A.Z. Frankfurter Allgemeine Zeitung*, pp. 22–24

¹⁸⁹ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen.

¹⁹⁰ Cf. Goh, B. (2015, May 6). China's CNR, CSR kick off merger process with trading halt. *Reuters*.

¹⁹¹ Cf. GE Set To Expand Its Power Business With Alstom Acquisition (2014, June 25). *Forbes*.

merger of their train divisions.¹⁹² The situation in the railway industry with few global players holding most of the market share, trying to expand through takeovers and mergers hint in the direction that the industry can be considered to be in the mature stage of the product life cycle.¹⁹³ Competition is fierce in this market, European railway firms are facing competition from foreign players, expanding into the European markets¹⁹⁴, further consolidation including layoffs at European forms are expected.¹⁹⁵ The strength of their brands as a means of differentiation may play a key role in this regard.

As the above demonstrates, the railway industry is a branch of the B2B sector which, through its size and future importance, but also due to its competitive intensity and structural changes is worthy of studying. The author therefore aims at adding insights into the railway industry, and specifically how brand images impact the purchasing behavior in this branch, to the stream of knowledge. By also including contextual variables into the research model it becomes possible to compare the results of this research to others in the B2B sphere. As an interim conclusion it can be said that given the industry context as described purchasing behavior will be complex when OEM customers will make purchase decisions on complex, Tier 1 supplied systems. Particularly so, if significant differences exist between several brands on offer.

2.2. Empirical research on switching cost, customer satisfaction and brand attachment intervening the impact of brand images on B2B purchasing behavior

After the literature on relevance and impact of brands and the images they elicit have been reviewed and the industry context of the present study defined, this part reviews switching costs, customer satisfaction and brand attachments as they may antecede purchasing behavior, particularly so in existing relationships between suppliers and customers as intervening variables. This part therefore elaborates on managerial and empirical findings on these concepts.

¹⁹² Cf. Plück, M. (2015, July 30). Neuer Poker um Siemens-Zugsparte. *RP Online*.

¹⁹³ Cf. Gordon, G. L., Calantone, R. J., & Di Benedetto, C. A. (1993). Brand Equity in the Business-to-Business Sector. *Journal of Product & Brand Management*, 2(3), 4–16.

¹⁹⁴ Cf. Chinas neuer Bahngigant droht Siemens zu überrollen (2015, February 15). *Die Welt*.

¹⁹⁵ Cf. Fockenbrock, D. (2015, September 10). Aufs Abstellgleis: Europas Bahnindustrie sorgt sich zunehmend um ausbleibende Aufträge. *Handelsblatt*..

Switching Costs

Relationship marketing literature acknowledges the importance of switching costs for customer retention.¹⁹⁶ Especially high-technology markets feature unique problems for organizational buyers and their sellers due to the existence of switching costs.¹⁹⁷ Switching costs is understood to be a multidimensional concept with the higher order dimensions being financial, procedural and relational switching costs¹⁹⁸, as explained in the first chapter, the underlying dimensions of the construct of switching costs are manifold and can include manifestations such as lost performance, uncertainty, set up costs, and sunk costs.¹⁹⁹ This means that they can take on rather rational as well as emotional dimensions.

Biedenbach²⁰⁰ finds that it is a variable closely linked to customer loyalty. Ganesh et al.²⁰¹ state switching costs to be a major factor affecting customer retention and switching behavior. Heide and Weiss²⁰² highlight the implication in B2B that an “in vendor”, i.e. a vendor which is already selling to a particular customer, exist a series of factors which “buffer” from competition. They mention compatibility concerns as one potential buffer for the “in vendor”. Therefore switching costs is a highly relevant concept for the present research in the frame of re-buy purchasing tasks in a high-technology market.

Determining the differential effect that keep sellers and buyers in a relationship has been empirically researched by Geiger et al.²⁰³ in a multinational survey they found out that buyers base their future relationship intentions more on the current status of the relationship than sellers do. The research by Geiger hence shows the importance of switching costs by providing empirical evidence about their role as bonding mechanisms in relationships between B2B customers and their suppliers.

¹⁹⁶ Cf. Blut, M., Evanschitzky, H., Backhaus, C., Rudd, J., & Marck, M. (2015). Securing business-to-business relationships: The impact of switching costs. *Industrial Marketing Management*, p.1.

¹⁹⁷ Cf. Heide, J. B., & Weiss, A. M. (1995). Vendor Consideration and Switching Behavior for Buyers in High-Technology Markets. *Journal of Marketing*, 59(3), 30–43, p. 30.

¹⁹⁸ See Chapter 1.3.

¹⁹⁹ Jones, M. A., Mothersbaugh, D. L., & Beatty, S. E. (2002). Why customers stay: Measuring the underlying dimensions of services switching costs and managing their differential strategic outcomes. *Journal of Business Research*, 55(6), 441–450.

²⁰⁰ Cf. Biedenbach, G., & Marell, A. (2009). The impact of customer experience on brand equity in a business-to-business services setting. *Journal of Brand Management*, 17(6), 446–458,

²⁰¹ Ganesh, J., Arnold, M. J., & Reynolds, K. E. (2000). Understanding the Customer Base of Service Providers: An Examination of the Differences between Switchers and Stayers. *Journal of Marketing*, 64(3), 65–87.

²⁰² Heide, J. B., & Weiss, A. M. (1995). Vendor Consideration and Switching Behavior for Buyers in High-Technology Markets. *Journal of Marketing*, 59(3), 30–43, p. 40.

²⁰³ Geiger, I., Durand, A., Saab, S., Kleinaltenkamp, M., & Baxter, R. (2012). The bonding effects of relationship value and switching costs in industrial buyer-seller relationships: An investigation into role differences. *Industrial Marketing Management*, 41(1), 82–93.

Blut et al.²⁰⁴ conducted an empirical survey in five B2B industries, investigating how different dimensions of switching costs influence customer purchasing behavior. Switching costs were conceptualized into procedural, financial and relational switching costs. Purchasing behavior consists of switching behavior, share of wallet and cross buying of both products and services. Their results indicate that relational switching costs have an impact on switching behavior whereas procedural and relational switching costs have an impact on share of wallet, i.e. the percentage a certain seller holds with the total amount of a certain product purchased by a customer. Both financial and relational switching costs have an impact on each, cross-buying behavior on a product and on a service level. Blut et al. conclude the concept of switching costs as highly relevant in B2B settings.

Different types of perceived switching costs are found to have significant effects on affective, cognitive, and behavioral loyalty.²⁰⁵ Although the concept of switching costs comprises of several monetary and non-monetary dimensions, it can be seen as a vastly tangible and rational concept as far as financial and procedural switching costs are concerned. It is therefore of interest in this dissertation to include switching cost and compare its effect on purchasing behavior, particularly in comparison with customer satisfaction and brand attachment as more emotive constructs.

Customer satisfaction

Customer satisfaction is widely accepted as an important issue for marketing managers, and it is also supported by scientific research that a satisfied customer is more likely to repeat purchase behavior and willingness to give positive word of mouth.²⁰⁶ The economic importance of customer satisfaction becomes evident in light of the findings of Hart et al., who identified that it costs up to five times as much to recruit new customers than it does to keep current customers “happy”.²⁰⁷

As one of the first researchers in B2B marketing, Lam et. al developed a model for the testing of the interrelations between customer value, loyalty, satisfaction and switching costs. Loyalty was measured in two dimensions being customer recommendation and customer patronage. Analyzing the relationships

²⁰⁴ Cf. Blut, M., Evanschitzky, H., Backhaus, C., Rudd, J., & Marck, M. (2015). Securing business-to-business relationships: The impact of switching costs. *Industrial Marketing Management*.

²⁰⁵ Barroso, C., & Picón, A. (2012). Multi-dimensional analysis of perceived switching costs. *Industrial Marketing Management*, 41(3), 531–543.

²⁰⁶ Sondoh, S. L., Omar, M. W., Wahid, N. A., Ismail, I., & Harun A. (2007). The Effect of Brand Image on Overall Satisfaction and Loyalty Intention in the context of Color Cosmetic. *Asian Academy of Management Journal*, 1(12), 83–107.

²⁰⁷ Hart, C., Heskett, J., & Sasser Jr, W. E. (1990). The profitable art of service recovery. *Harvard Business Review*, 68(4), 148–156.

between switching costs and the two loyalty constructs ($\beta = .32$ and $.35$) on the one hand and satisfaction and loyalty on the other ($\beta = .36$ and $.31$), the relationships are about equally strong.²⁰⁸

Picón et al, propose a multi mediation model in order to analyze the relationship between satisfaction and loyalty in the B2B insurance service industry. They found a significant ($p \leq 0,01$) and strong ($\beta = .75$) relationship between satisfaction and loyalty, analyzing the solitary relationship between customer satisfaction and loyalty, with an R^2 value of $.56$ on the loyalty construct. An alternative mediation model with perceived switching costs and attractiveness of alternatives as two separately mediating variables. Both mediator variables showed a significant impact and the explanatory power increased on the loyalty construct increased with an R^2 value of $.64$. The research therefore suggests that perceived switching costs, to a stronger extent, and attractiveness of alternatives to a lesser extent mediate the relationship between satisfaction and loyalty.

Kumar et al. identified through an extensive analysis of contemporary literature a general framework of customer satisfaction and its relationship to loyalty. They conclude that this link exists, however, it is not as strong as it is believed to be. They call for models encompassing other antecedent variables, moderators and mediators which would be better predictors of loyalty.²⁰⁹

Brand attachment

The concept of emotional branding has emerged in the second half of the 1990s.²¹⁰ Through establishment of brand-customer linkage at a sensual and emotional level, marketers try to create long-lasting and strong brand attachment.²¹¹ While the relationship between customer satisfaction and loyalty has been established in academia, prior research has revealed that mere satisfaction may not be sufficient

²⁰⁸ Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.

²⁰⁹ Kumar, V., Pozza, I. D., & Ganesh, J. (2013). Revisiting the Satisfaction–Loyalty Relationship: Empirical Generalizations and Directions for Future Research. *Journal of Retailing*, 89(3), 246–262.

²¹⁰ Akgün, A. E., Koçoğlu, İ., & İmamoğlu, S. Z. (2013). An Emerging Consumer Experience: Emotional Branding. *Procedia - Social and Behavioral Sciences*, 99, 503–508, p. 504.

²¹¹ Akgün, A. E., Koçoğlu, İ., & İmamoğlu, S. Z. (2013). An Emerging Consumer Experience: Emotional Branding. *Procedia - Social and Behavioral Sciences*, 99, 503–508, p. 503.

to successfully sustain a customer relationship. Exclusive brand repurchase can only occur when customers develop deep emotional bonds with a brand.²¹²

The role of attachment relative to switching costs is described by Stewart²¹³, who states “Neuter competition or satisfy customers completely”. By neutering competition he refers to ties²¹⁴ such as contractual ties or economic ties making change very expensive in the sense of high switching costs. As it may not always be possible or sufficient to create switching costs as transactional barriers, the concepts of customer satisfaction and brand attachment are of importance.

Comparing satisfaction to attachment, even though the constructs of customer satisfaction and brand attachment are related, significant differences exist in their behavioral consequences. Taylor states that “companies began to notice that they often were losing customers despite high satisfaction”.²¹⁵ As an example, the successful B2B company Xerox reported that when customers rated their satisfaction between 1 (completely dissatisfied) and 5 (completely satisfied), customers who rated Xerox products with 4 (satisfied) were six times more likely to defect to competitor products than those who rate the products with “5”.²¹⁶ This observation of managerial practice is described by Morrison and Crane who define emotional branding as “engagement of consumers in a deep-long lasting intimate emotional connection with the brand, which is beyond the benefit-based satisfaction, and which creates a special trust-based relationship for the development of a holistic emotional experience”.²¹⁷ Keller argues that behavioral loyalty cannot be seen as the sole indicator for attachment, as purchasing behavior may only be a result of situational factors.²¹⁸ Keller therefore advocates the view that creation of greater loyalty requires greater attitudinal attachment.²¹⁹ With the concept of “Lovemarks” he advocates the “future beyond branding” were brands that consumers truly love, which would create loyalty beyond reason.²²⁰

²¹² Grisaffe, D. B., & Nguyen, H. P. (2011). Antecedents of emotional attachment to brands. *Journal of Business Research*, 64(10), 1052–1059, p. 1052.

²¹³ Stewart, T. A. (1997). A satisfied customer isn't enough. *FORTUNE Magazine*, p. 12.

²¹⁴ Refer to 1.3. ties vs. attachment

²¹⁵ Taylor, T. B. (1998). Better loyalty measurement leads to business solutions. *Marketing News*, 32(22), p. 41

²¹⁶ Jones, T. O., & Sasser Jr, W. E. (1995). Why satisfied customers defect. *Harvard Business Review*, 88–100.

²¹⁷ Morrison, S., & Crane, F. G. (2007). Building the service brand by creating and managing an emotional brand experience. *Journal of Brand Management*, 14(5), 410–421.

²¹⁸ Cf. Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 72.

²¹⁹ Ibid.

²²⁰ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 66.

Roberts claims that there can be Lovemarks in any category of product or service, questioning the distinction between B2C and B2B²²¹, however, the statement was then not backed by empirical evidence.

As an initial research in B2B, Pedeliento et al. found a notable lack of empirical investigation on the role of attachment in B2B. They conducted a research within the industry of heavy truck owner-operators.²²² Their findings that brand attachment positively and directly influences brand loyalty. Further variables in their model were product attachment and product irreplaceability. Product attachment was found to indirectly drive brand loyalty through the mediating effect of brand attachment, giving the brand a comparative advantage over product attachment. Along with brand attachment, product irreplaceability was also found to directly influence brand loyalty. As irreplaceability can be seen as a rational acknowledgement of a buyer that there is no feasible alternative, it can be concluded from the results that both rational and emotional variables intervene the relationship between brand image and purchasing behavior.

Since empirical evidence for the existence of this loyalty beyond the benefit level is still scarce, the relative impact of switching costs, customer satisfaction and brand attachment on purchasing behavior in the railway industry will be tested, with the three constructs introduced in this part as intervening variables between brand image and purchasing behavior.

2.3. Empirical research on purchase complexity and purchase risk as main contextual variables of B2B purchasing behavior

While generally the concept of B2B branding has found more attention, brand relevance is essentially dependent on the context in which a firm operates.²²³ Previous research suggests that situational and industry specific factors can influence the degree of relevance of branding. After an intensive literature review, the author identified complexity and risk as highly important contextual variables in organizational purchasing behavior. Therefore, empirical evidence on these two contextual variables are examined in this part.

²²¹ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 70.

²²² Cf. Pedeliento, G., Andreini, D., Bergamaschi, M., & Salo, J. (2015). Brand and product attachment in an industrial context: The effects on brand loyalty. *Industrial Marketing Management*.

²²³ Cf. Caspar, M. (2002). *Markenrelevanz in der Unternehmensführung: Messung, Erklärung und empirische Befunde für B2B-Märkte. Arbeitspapier / McKinsey&Company: Nr. 4*. Münster: Marketing Centrum, p. 15.

Purchase complexity

It was explained that the typically higher degree of complexity in B2B settings can influence the decision making and hence purchasing behavior of industrial buyers. Kotler and Pfoertsch note that the enormous complexity of industrial products affects the purchasing process and behavior significantly as qualified experts are needed on both the seller's and the purchaser's side.²²⁴ Purchase complexity, in turn, can take on different perspectives.

Hill, who captured the essence of research on product characteristics and their influence on the buying decision process, suggests that two dimensions must be considered in purchasing research in B2B context, product complexity and commercial uncertainty.²²⁵ From a product standpoint, unlike the mostly standardized consumer products, industrial products tend to be individual solutions.²²⁶ Their assessment relates to both the product-related complexity and the procedural complexity, created through the multi-personality of organizational purchasing.

Referring to the latter, Lilien and Wong, who analyzed the results of an exploratory study of purchase influence in the metal working industry, note that "organizational buying reflects a complex set of activities, pursued by many members of the organization."²²⁷

Hutton's research showed that the better known a certain industrial brand is the higher the chance of the degree of perceived complexity to be lower is and the concern arising from too little time to background-check the product subject to purchase.²²⁸ Brown et al. conducted a research in various industries with an overall sample of 273 respondents. Their findings suggest that under conditions of low competitive intensity or when marketing maintenance repair and operations supplies, brand consciousness is the primary determinant of brand importance and under conditions of high competitive intensity or when marketing high-tech products, brand preference is the primary determinant of brand importance.²²⁹

²²⁴ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, pp. 21-22.

²²⁵ Hill, R. W. (1972). The nature of industrial buying decisions. *Industrial Marketing Management*, 2(1), 45-55.

²²⁶ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 22.

²²⁷ Lilien, G. L., & Wong, M. A. (1984). An Exploratory Investigation of the Structure of the Buying Center in the Metalworking Industry. *Journal of Marketing Research*, 21(1), 1-11, p. 1.

²²⁸ Hutton, J. G. (1997). A study of brand equity in an organizational-buying context. *The journal of product & brand management*, 6(6), 428-439.

²²⁹ Brown, B. P., Zablah, A. R., Bellenger, D. N., & Donthu, N. (2012). What factors influence buying center brand sensitivity? *Industrial Marketing Management*, 41(3), 508-520.

Purchase risk

Many organizational buyers are involved in high value purchasing decisions. De Chernatony and Lynch emphasize that the “fear factor” can be a major influencer of purchasing decisions as the risk associated with large purchases is not only limited to financial or organizational failure but may also incorporate personal risk for the acting persons.²³⁰ „Nobody ever got fired for buying an IBM” has become a prominent claim which shows how B2B marketers can leverage on their brands ability to reduce purchase risk.²³¹

McQuiston through a case study in the steel industry analyzed how perceived risk of the purchase is related with the company’s brand. He found that having a strong brand provides the customer with the confidence that they will be making the right decision and hence it will reduce the risk of making a bad decision.²³²

An influential research was conducted by Caspar et al. in 2002.²³³ Based on an empirical survey of more than 750 deciders, the authors in cooperation with Mc Kinsey and MCM determined the relevance of brands in 18 business markets. They examined the inherent brand functions, image benefit, information efficiency and risk reduction, and compared their importance to B2C settings. Figure 2.4. provides an overview of the results.

²³⁰ Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets. Working paper series / Birmingham Business School: 2003-28.* Birmingham: University of Birmingham, Birmingham Business School, p. 409.

²³¹ Chernatony, L. de, & McDonald, M. (2000). *Creating powerful brands in consumer, service, and industrial markets* (2nd ed., repr). *CIM professional.* Oxford: Butterworth-Heinemann.

²³² McQuiston, D. H. (2004). Successful branding of a commodity product: The case of RAEX LASER steel. *Industrial Marketing Management*, 33(4), 345–354.

²³³ Cf. Caspar, M. (2002). *Markenrelevanz in der Unternehmensführung: Messung, Erklärung und empirische Befunde für B2B-Märkte. Arbeitspapier / McKinsey&Company: Nr. 4.* Münster: Marketing Centrum.

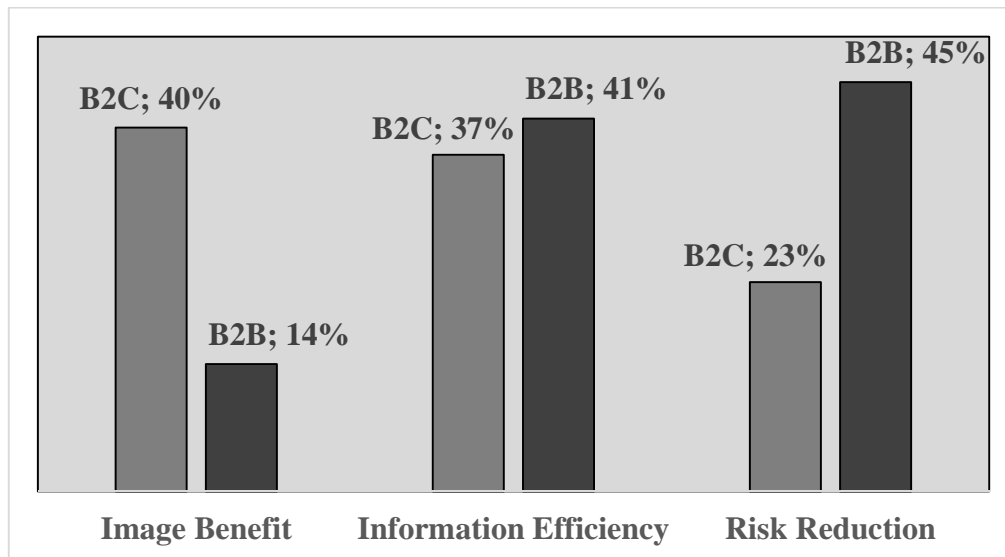


Figure 2.4. Importance of image benefit, information efficiency & risk reduction in B2C vs. B2B

Source: Author's own construction based on Caspar et al., 2002, p. 43.

The findings suggest that brands are about equally important in B2B markets as they are in B2C, the main differences can be found in the relevance of the brand functions. Risk reduction is the predominant dimension in B2B, followed by information efficiency. Information efficiency is related to the earlier introduced concept of complexity as information efficiency practically means that the complexity of a product to be purchased is perceived lower with a branded industrial product. Finally, image benefit as the brands ability to endow the purchaser with an increased personal reputational gain was found to be of minor importance. These results were confirmed in 2011, when Backhaus et al. conducted an empirical research on brand functions across different B2B markets.²³⁴

Brown et al.²³⁵ attempt at bridging two views on the importance of branding in risky purchasing situations in B2B contexts. The first view is that managers reduce their increasing purchase risk by pursuing choice strategies based on the evaluation of objective criteria in which information search constitutes the major risk reduction behavior. The alternative, brand-driven view of decision making suggests that organizational purchasers rely on heuristic decision behavior when facing high risk purchase decisions. In a simplified way, these two views can be seen as the difference between rational and emotional approaches in B2B purchasing. The results of the empirical research by Brown et

²³⁴ Cf. Backhaus, K., Steiner, M., & Lügger, K. (2011). To invest, or not to invest, in brands?: Drivers of brand relevance in B2B markets. *Industrial Marketing Management*, 40(7), 1082–1092.

²³⁵ Cf. Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204.

al. provides evidence of a U-shaped relationship between purchase risk and brand sensitivity indicating that buying center members to be more sensitive when purchasing risk is relatively high, but also when it is relatively low as a means of simplification in low-risk situations.²³⁶

2.4. Appraisal of frameworks for the structuring of multidimensional brand images for the image conceptualization of the present research

For a better understanding of potential brand attributes and associations, several frameworks to structure brand strength have emerged in in behavior-oriented branding research.²³⁸ The idea of rationality versus emotionality as being part of purchasing behavior is as present as it is generally in the related field of decision theory. This idea is similarly common to brands and their appeal to different needs and priorities of organizational purchasers. Therefore, the conception of tangible versus intangible attributes is well-established in the purchasing behavior literature.²³⁹ In order to structure and categorize the dimensions which emerge out of this theoretical duality of rationality and emotionality, this part reviews existing frameworks as a basis for subsequent extraction and operationalization of the brand image construct. What is common to almost all of the brand image models is the hierarchic classification of attributes, higher order benefits and the resulting overall attitude.²⁴⁰ The author identified five original brand dimensioning frameworks which aim at capturing brand facets which are hereafter explained. As a first narrative, table 2.3. illustrates the respective model's perspective, their principal approach to dimensioning as well as the question of previous application to B2B context before assessing the models in more detail and choosing the most appropriate one for the image dimensioning of the present research.

²³⁶ Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204, p. 202.

²³⁷ Parts of this sub-chapter are published in „Humanities and Social Sciences in Latvia”, vol. 23, issue 2.

²³⁸ Cf. Caspar, M., & Metzler, P. (2002). *Entscheidungsorientierte Markenführung: Aufbau und Führung starker Marken. Arbeitspapier: Vol. 3.* Münster: MCM, p. 8.

²³⁹ Mudambi, S. M., Doyle, P., & Wong, V. (1997). An exploration of branding in industrial markets. *Industrial Marketing Management*, 26(5), 433–446, p. 438.

²⁴⁰ Caspar, M., & Metzler, P. (2002). *Entscheidungsorientierte Markenführung: Aufbau und Führung starker Marken. Arbeitspapier: Vol. 3.* Münster: MCM, p. 8.

Table 2.3. Overview of original brand image frameworks

Framework	Focus perspective	Principal approach	Previous application to B2B context
Aaker's brand identity model	Marketer	Layered structure, distinction between core and extended identity.	No
Kapferer's identity prism	Marketer	Six facets along internal vs. external and sender vs. recipient distinction.	No
Esch's brand steering wheel	Marketer and customer	Hemispherical structure, rational vs. emotional and verbal vs. non-verbal dimensions.	No
McKinsey Brand Diamond	Marketer and customer	Four facets, distinction between rational vs. emotional and tangible vs. intangible dimensions.	No
Keller's brand equity pyramid	Customer	Hierarchical structure, six building blocks, separation into rationality vs. emotionality and tangibility vs. intangibility.	Yes, Kuhn et al. (2010)

Source: Author's own construction based on literature review

After this principal overview it becomes clear that all featured frameworks constitute unique and original models by leading marketing scientists. They all offer a certain guidance for the dimensioning of brand images. While Aaker's model is the oldest and probably most frequently cited, it can be regarded as quite elusive and non-operational. Similarly, if more finely graded, Kapferer's framework lacks consumer focus and is more concerned with the marketer's efforts toward *creating* an image. The frameworks by Esch and McKinsey and Keller, in comparison, are more operational and include the customer's perceptive side as well. Keller's framework has the advantage of the latter two models and particularly impresses with its stringent customer focus and the inclusion of customer response, which fits the purpose of this research. All mentioned frameworks are original and influential, the newer ones appear to consider and refine the previous models. Therefore all five models are explained in below section. As Keller's framework is, to the author's knowledge, the only one thus far to be applied to B2B context, this application and adaptation of the framework by Kuhn et al. is reviewed at the end of this section.

Brand identity models by Aaker and Kapferer

Aaker defines brand equity as “a set of brand assets and liabilities linked to a brand its name and symbol, that add to or subtract from the value provided by a product or service to a form and/or to that firm’s customers”.²⁴¹ In his brand identity model, Aaker²⁴² uses the analogy to onions and artichokes when describing how brand identity is built. In his layered model, he distinguishes between a brands core identity and its extended identity. The core identity is described to be the constant and stable core of the brand central to both its meaning and its success. Aaker says the core identity follows to some introspective questions regarding:²⁴³

- The brand’s soul,
- The fundamental values and believes driving the brand,
- The competencies of the organization behind the brand,
- What the organization behind the brand stands for.

The extended identify includes elements which provide “texture and completeness”.²⁴⁴ Aaker notes that the extended fills the picture and adds details and elements that have or should become visible associations through the brands marketing program. This notion allows the conclusion that the core identity includes the implicit and invisible introspective core whereas through the layers of the external identity, the brand becomes more tangible and visible to customers. At the same time, the author finds that Aaker’s model does not allow for a very sharp conceptualization of a brands dimensionality as especially the four questions said to form the brand core appear somewhat blurred. Similar to Aaker’s model, Kapferer’s identity prism²⁴⁵ seeks to capture a brand’s identity. His model is a hexagonal prism constructed of the following six facets as illustrated in figure 2.5.

²⁴¹ Aaker, D. A. (1991). *Managing brand equity: Capitalizing on the value of a brand name*. New York, NY: Free Press, p. 15.

²⁴² Aaker, D. A. (2010). *Building strong brands* (Paperback ed.). London: Pocket Books, pp 85 ff.

²⁴³ Aaker, D. A. (2010). *Building strong brands* (Paperback ed.). London: Pocket Books, p. 87.

²⁴⁴ Ibid.

²⁴⁵ Cf. Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, pp. 99 ff.

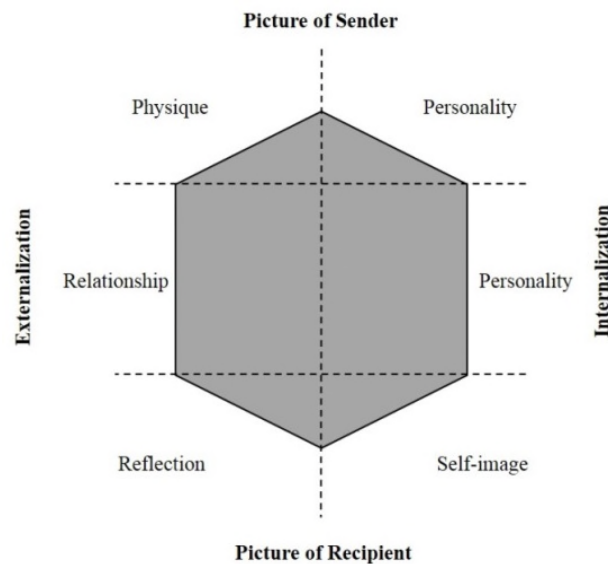


Figure 2.5. Kapferer's identity prism

Source: Author's own construction based on Kapferer, 2003, p. 100.

Kapferer argues that a brand first of all has objective, physical qualities, its “physique”. This aspect describes the tangible aspect indicating what the brand is, what it does and what it looks like. Second, “personality” describes the way in which a brand speaks of its products and hence shows what kind of person the brand would be if it were human. From this notion also stems the popular practice of giving brands spokespersons and endorsers. The third aspect is “culture” According to Kapferer, culture means the “set of values feeding the brand’s inspiration”.²⁴⁶ Culture also comprises national culture from which brands emerge and the values they therefore convey such as German values conveyed by a Mercedes, American values by Nike or French values by Evian. As the fourth aspect of the identity prism, Kapferer defines “relationship”. Brands are said to be crucial for the exchange between people. Kapferer highlights this notion especially in the context of the service sector and in retail. The fifth aspect is “reflection”, understood in the brand’s perceived client type. Kapferer postulates that a brand will always tend to build a reflection or an image of the buyer or user it appears to address, such as being a brand for young people or for parents.²⁴⁷ Finally, as the sixth dimension, a brand communicates a “self-image”. Kapferer makes the distinction between reflection and self-image as reflection being the outward mirror and self-image being the own internal mirror. Self-image describes how a brand’s customers see themselves or wish to

²⁴⁶ Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, p. 101.

²⁴⁷ Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, p. 103.

see themselves. Kapferer states the brand identity concept to be a defense against “idealized”, “fickle” or “opportunistic” image in the customer’s minds.²⁴⁸

Esch’s brand steering wheel

Evaluating the identity-based models by Aaker and Kapferer, Esch criticizes that, while generally these models provide a narrative towards brand identity, the classifications do not allow a distinction between verbal and non-verbal impressions and rational and emotional brand elements.²⁴⁹ The brand steering wheel by icon added, which was further developed by Franz-Rudolf Esch²⁵⁰, attempts at closing the gaps left by Aaker’s and Kapferer’s models. It is constructed based on hemisphere research analogous to the two cerebral hemispheres in the brain. The left side of the brand wheel represents the hard facts, e.g. brand attributes (which properties does the brand have?), the brand benefits (what do we offer?), of a brand whereas the right side stands for the soft facts, i.e. feeling and non-verbal impressions such as brand tonality (How are we?) and Brand image (How do we appear?). Similar to the model of Aaker²⁵¹, in the center part of the brand steering wheel, brand competency (Who are we?) are located as the extract of the brand identity. Figure 2.6. shows the brand steering wheel by Esch.

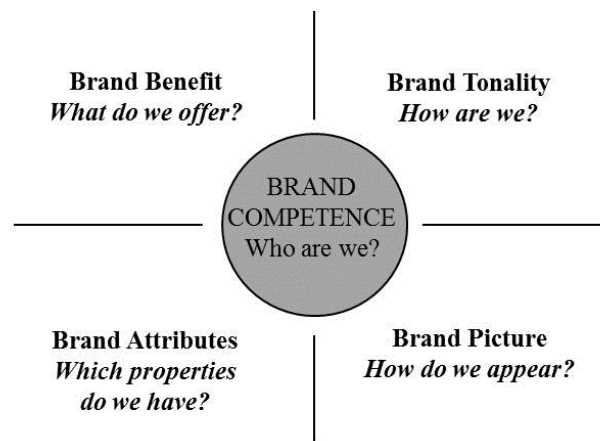


Figure 2.6. Esch’s brand steering wheel

Source: Author’s own construction based on Esch, 2008, p. 102.

²⁴⁸ Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, p. 99.

²⁴⁹ Cf. Esch, F.-R. (2008). *Strategie und Technik der Markenführung* (5., vollst. überarb. und erw. Aufl.). München: Vahlen, pp. 99 ff.

²⁵⁰ Cf. Esch, F.-R. (2008). *Strategie und Technik der Markenführung* (5., vollst. überarb. und erw. Aufl.). München: Vahlen, pp. 100-106.

²⁵¹ Aaker refers to the center of his model as *brand essence* or *brand core*.

Brand diamond

The Brand Diamond by McKinsey&Company is one of the most comprehensive models to dimensionalize brands by structuring their brand images. According to Casper et al., brand image consists of a series of associations which can be classified into tangible and intangible as well as rational and emotional benefits.²⁵²

Generally, tangible attributes describe all associations related to the physical and functional qualities such as design, packaging, logo but also the way in which the brand is presented in advertising etc. and therefore anything that is sensually perceivable. Intangible attributes are rather connotative attributes such as brand personality, reputation and origin.

The left side of the model displays benefits which are both rational and emotional (what does the brand stand for?). The right side displays brand identity (what is the brand?), which includes both what is done in the market and the reputation which is being built. The tangibles on the bottom right represent clearly observable, physical qualities of a brand whereas intangibles are of connotative nature displays brand benefits, which are both rational and emotional. The brand diamond is depicted in figure 2.7.

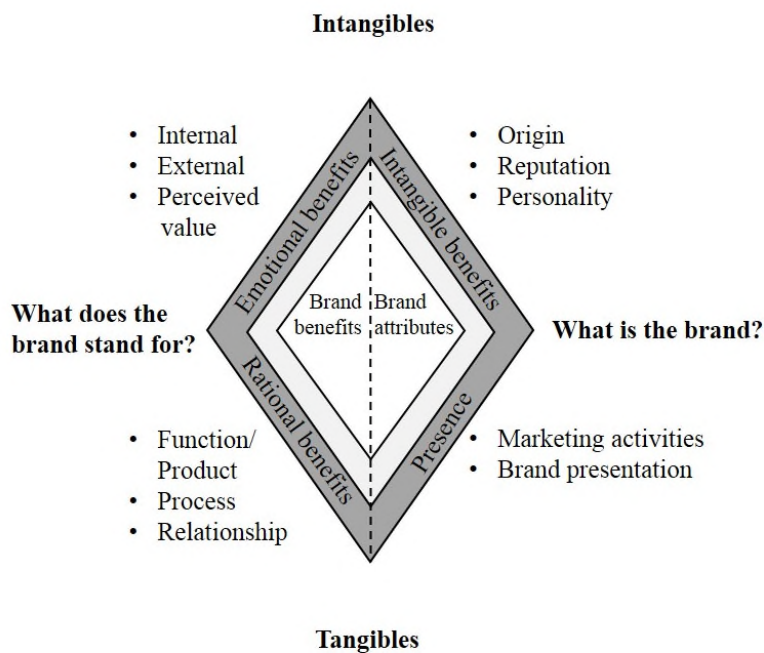


Figure 2.7. Mc Kinsey's brand diamond

Source: Author's own construction adapted from Caspar & Metzler, 2002, p. 9.

²⁵² Caspar, M., & Metzler, P. (2002). *Entscheidungsorientierte Markenführung: Aufbau und Führung starker Marken. Arbeitspapier: Vol. 3.* Münster: MCM, pp. 8-10.

Keller's brand equity model and the revised model by Kuhn et al.

Keller's brand equity model adopts a customer focused perspective. It identifies four steps for building a strong brand, whereby successful completion of each step is paramount for reaching the next, going from brand identity over brand meaning, brand responses and finally brand relationships. These four major steps comprise six building blocks; salience, performance, imagery judgments, feelings and resonance.²⁵³

Figure 2.8. displays the CBBE model.

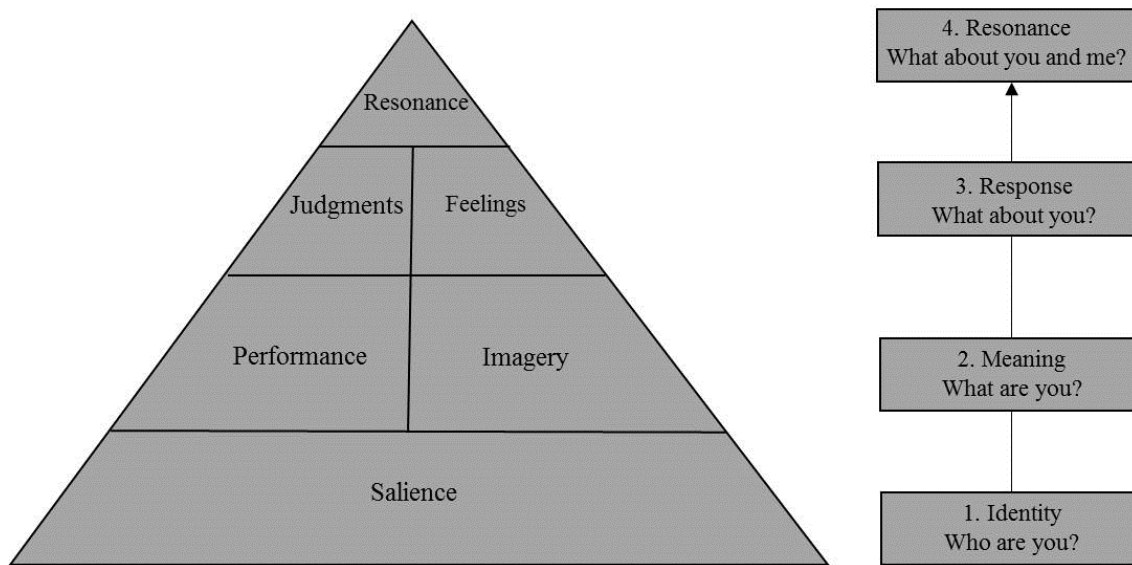


Figure 2.8. Keller's Customer-based brand equity model (CBBE)

Source: Author's own construction based on Keller et al., 2008, p. 57.

Keller proposes to identify the brand with customers and associate the brand in customer's minds with a specific product class or need (Who are you?). Secondly, Keller advises to establish the totality of brand meanings in the minds of customers by linking a host of tangible and intangible brand associations with certain properties (What are you?). Thirdly, elicit the proper customer responses to this brand identification and meaning (What about you?) Lastly, Keller mentions conversion of brand response to create an intensive active loyalty relationship between customers and the brand (What about you and me?).²⁵⁴ The model's building blocks are described in the following way: Salience relates to the awareness of the brand, i.e. to what extent the brand is easily recognized and recalled and what cues may be necessary. Brand performance is concerned with the product itself and its functional attributes as this is

²⁵³ Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 56-71.

²⁵⁴ Ibid.

the primary influence on what consumers experience and hear from others about the brand. It comprises quality, reliability, price etc. Imagery refers to how customers think about a brand abstractly such as typical user profiles, purchase and usage situations, history and heritage or personality and values. Imagery is therefore a rather intangible concept. Brand feelings describes customer's emotional response in regard to a brand. Such emotions can be strong or weak, positive or negative. With reference to Kahle et al.²⁵⁵, Keller establishes six brand feelings to be important: Warmth, Fun, Excitement, Security, Social Approval and Self-Respect. The first set of feelings are said to be experiential and immediate, whereas Security, Social Approval and Self-Respect are more private and time-stable. Judgments is described to represent a customer's opinion and evaluations about a brand. Keller highlights quality, credibility and consideration and superiority as particularly relevant forms of judgment. The pinnacle of Keller's CBBE is resonance which comprises behavioral loyalty, attitudinal attachment, sense of community and active engagement.

The analysis further of Keller's model, but also the models by McKinsey and Esch, finds that the most comprehensive model to date in the literature is Keller's CBBE. Keller claims the CBBE model can be applied to B2B context but so far, empirical evidence is scarce. Kuhn et al.²⁵⁶ therefore introduced an empirical application of Keller's model to B2B context. Their research showed that amongst organizational buyers there is a much greater emphasis on the selling organization, including its corporate brand, credibility and staff, than on individual brands and their associated dimensions. They replace "imagery" as one of Keller's building blocks by "reputation", meaning the reputation of the company behind the brand.

Kuhn et al. criticize that Keller's model, due to its focus on B2C markets, ignores the customer relationship with the sales team of the seller²⁵⁷. They therefore include "Partnership solutions" as the top of their revised brand equity pyramid. Figure 2.9. depicts the revised B2B brand equity model.

²⁵⁵ Kahle, L. R., & Sukhdial, A. (1988). Changes in social values in the United States during the past decade. *Journal of Advertising Research*, February/March, 35–41.

²⁵⁶ Kuhn, K.-A. L., Alpert, F., & Pope, N. K. L. (2008). An application of Keller's brand equity model in a B2B context. *Qualitative market research : an international journal*, 11(1), 40–58

²⁵⁷ Ibid.

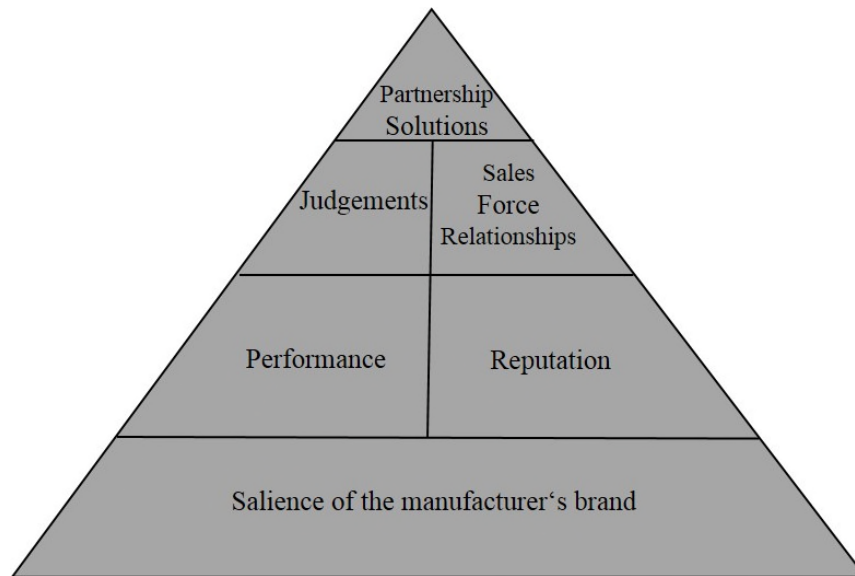


Figure 2.9. B2B brand equity model

Source: Author's own construction based on Kuhn et al., 2008, p. 42.

In their conceptual article on branding in the B2B sector, which was published after Keller introduced his CBBE model, Webster and Keller confirm that “corporate brands hold a strong position and dominate the branding landscape” and advise marketers to “build the corporate brand around brand intangibles such as expertise, trustworthiness, ease of doing business and likeability”.²⁵⁸ Empirical research by Kuhn et al. confirms applicability of their revised CBBE model to B2B contexts and recommend research in further B2B industries. Aspects Keller’s and Kuhn et al.’s frameworks and their operationalization are therefore mainly considered in the further course of this research.

Transfer to B2B brand conceptualization for the present research

Based on psychological theory which has influenced contemporary brand image theory, any specific information associated with a brand which exists in the mind of a customer can be relevant as an image element, regardless of its nature and origin. The author faced the challenge to dissolve this latent construct into meaningful dimensions in order to be able to empirically analyze how each dimension contributes to the formation of other image dimensions and the intervening variables. In preparation of the empirical part of this dissertation it was therefore necessary to dissolve brand image into several latent factors, which on the one hand objects the notion of image as a holistic mental concept. For the purpose

²⁵⁸ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth, p.398.

of empirical testing, on the other hand, this approach adds to research applicability and knowledge gain as it allows to investigate the effect of individual dimensions. Considering Henson's statement that "the meaningfulness of latent factors is ultimately dependent on researcher definition"²⁵⁹, the author was aware that any labeling of the latent brand dimensions resulting from the attempt at deconstructing the overall image of a certain brand, would be somewhat arbitrary, subjective and ultimately dependent on his definition. As a starting point of inquiry for meaningful dimensions, the review of the explained models shows that the models by Esch, McKinsey and Keller/Kuhn et al. comprise both functional / tangible / rational dimensions as well as emotive / intangible ones. Therefore in order to label the image dimensions in a transparent and generalizable manner, Keller's customer-based brand equity model as the most comprehensive framework of brand equity with a customer focus served as the guiding conceptual structure for the multi-dimensional measurement of brand image. This is in line with a number of researchers who support the notion that that consumers' subjective perception, i.e. the image of a brand, is key to the formation of brand equity.²⁶⁰ Using a brand equity model for the dimensioning appears sound as brand equity is known as a guideline for managerial decision making, describing a psychological concept explicitly focusing on the differential effect of brand knowledge on consumer response to the marketing of the brand.²⁶¹ Specifically this means that a selection of dimensions of Keller's model, which were adapted by Kuhn et al. for B2B settings and discussed with industry experts for content validity, were used to classify the image dimensions into the following:

- **Brand performance**, is concerned with the product itself and its functional attributes as this is the primary influence on what consumers experience and hear from others about the brand.²⁶²
- **Brand credibility** in a sense of building long term relationships between brand representatives and their customers. The interaction and relationship with brand representatives described as "nature of the working relationship" by Mudambi²⁶³ is backed by other authors. Keller, for

²⁵⁹ Henson, R. K. (2006). Use of Exploratory Factor Analysis in Published Research: Common Errors and Some Comment on Improved Practice. *Educational and Psychological Measurement*, 66(3), 393–416.

²⁶⁰ Zhang, Y. (2015). The Impact of Brand Image on Consumer Behavior: A Literature Review. *Open Journal of Business and Management*, 03(01), 58–62, p. 58.

²⁶¹ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22, p. 2.

²⁶² Keller, K. L., Apéria, T., & Georgson, M. (2008). *Strategic brand management: A European perspective* (1. publ). Harlow: FT Prentice Hall, p. 57.

²⁶³ Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533.

instance, points out that “every touch point between the company and customers becomes an input to brand image”.²⁶⁴

- **Brand trust** due to the perspective of B2B products as “trust goods” where a buyer’s commitment takes place before a product has physically been produced.²⁶⁵ This image dimension appears to be of particular importance for the context of the railway industry where most projects are conducted over a long period of time, but where customers often have to commit to certain brands in an early stage of the purchase process.
- **Brand feelings** as the ultimately emotional proposition indicating how brand stimuli are emotionally perceived and processed for the formation of brand attachment. Keller uses the term *feelings* in his framework and not *emotions*. Feelings is a wider term including emotions which can be directed to an object, e.g. a brand, and have a behavioral component²⁶⁶ which suits the notion of brand images as sustained propositions in customer’s minds.
- **Company reputation** as a major building block of B2B brand image repeatedly mentioned by several authors, especially concerning the superior role of corporate images compared to product images.²⁶⁷

These five image dimensions were then further classified into two main dimensions referred to as emotional and rational image dimensions. One issue, however, is that there is no clear-cut distinction between rationality and emotionality, neither is there one between tangibility and intangibility as far as image dimensions are concerned. In this regard, Mudambi et al. describe tangibility as a continuum, whereby at the extremes the differences in the terms are clear. They mention the example of tangible aspects of an offer as those which are physically present, or can be seen, experienced, or measured in some way”.²⁶⁸ Intangible aspects are described to be more “elusive or visionary”.²⁶⁹ They are understood using cognitive processes and also often contain an emotional dimension. Mudambi et al. then further

²⁶⁴ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH, p. 390.

²⁶⁵ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, p. 328.

²⁶⁶ Cf. Werth, L. (2010). *Psychologie für die Wirtschaft: Grundlagen und Anwendungen* (Unveränd. Nachdr). Heidelberg: Spektrum Akad. Verl., pp. 158-160.

²⁶⁷ Cf. for instance Cretu, A. E., & Brodie, R. J. (2007). The impact of brand images and company reputation where manufacturers market to small firms: A customer value perspective. *Industrial Marketing Management*, 36(2), 230–240..

²⁶⁸ Mudambi, S. M., Doyle, P., & Wong, V. (1997). An exploration of branding in industrial markets. *Industrial Marketing Management*, 26(5), 433–446, p. 438.

²⁶⁹ Ibid.

argue that even evaluations of physical quality can be elusive or difficult to define, even these tangibles can contain intangible aspects. This argumentation shows that there are often overlaps between tangibility, intangibility, rationality and emotionality. That rationality is not always congruent with tangibility can be seen by the example that Keller and also Kuhn et al. use credibility as a rational, yet intangible dimension in the CBBE model. Since the distinction between rationality and tangibility as opposed to emotionality and intangibility appears to be unclear, henceforth in this dissertation, rationality is being used as one dimension including all tangible, measurable and observable aspects of a brand and its resulting image. Conversely, emotionality comprises all intangible, non-directly measurable and non-observable aspects of brands and their images. Even if this differentiation remains somewhat fuzzy, it provides a comprehensible guidance for the empirical modelling and subsequent investigation. In conclusion this means that brand performance is conceptualized as the research's rational image dimension, whereas brand credibility, brand trust, brand feelings and company reputation are conceptualized as the research's emotional dimensions.

After the principal differentiation between rational and emotional brand image dimensions was performed, these dimensions are subject to further specification as far as specific brand attributes filling the dimensions with meaningful contents are concerned. The body of literature within the field of B2B branding was reviewed and relevant brand attributes were extracted and further classified into the main subgroups of emotional and rational image dimensions. Due to the vast differences between product categories, the rational aspects are expected to vary between different markets. Freundt, who conducted a study on rational and emotional brand images in the B2C sector, notes that emotional brand image dimensions appear to be more general whereas there seems to exist a greater variance between relevant rational image dimensions, depending on the product markets and their relevant product functionalities.²⁷⁰ Despite a wide spread of relevant attributes, often mentioned rational attributes are price and financial terms, service, quality, after-sales support or logistic-related aspects such as ordering services or delivery reliability. Emotional attributes revolve around feelings, company reputation, the relationship between seller and buyer or likeability of the brand. Reviewing, the rational and emotional brand associations which were found valid by previous research, the image dimensions appear very homogenous, even if the terminology varies slightly between authors and industry contexts. Therefore, while the above review provides a starting point, selection of operational measures must take place specifically for the railway

²⁷⁰ Freundt, T. C. (2006). *Emotionalisierung von Marken: Inter-industrieller Vergleich der Relevanz emotionaler Markenimages für das Konsumentenverhalten*. Handelshochsch., Diss.--Leipzig, 2006 (1. Aufl.). Gabler Edition Wissenschaft *Innovatives Markenmanagement*. Wiesbaden: Deutscher Universitäts-Verlag | GWV Fachverlage GmbH Wiesbaden, p. 202.

industry in the following chapter. Appendix II features the major articles, whereby the image attributes are divided into rational and emotional attributes according to the author's above explained differentiation.

The review of conceptual frameworks as well as brand attributes serves as a transition from this dissertation's theoretical part to the empirical part in chapter 3, where the above brand image attributes were discussed with industry experts²⁷¹ in regard to their appropriateness for the railway industry. This is in line with Esch, who points out that brand associations must be relevant for target groups so as to address their wishes and needs.²⁷² In a subsequent step, existing scales were searched and, where needed adapted to suit the purpose of the following empirical survey.

Chapter 2 summary

Summarizing the analytical and empirical findings of chapter 2 it is found that:

- There has been a clear increase in academic interest in the topicality of B2B branding. The first journal article was published in 1970. Since the 1990s the number of scientific publications has been increasing steadily.
- Parallel to the increased academic interest, the selected examples of managerial practice show that despite high cost, industrial marketers such as Caterpillar deliberately direct communication efforts which were previously common to B2C companies at increasing awareness of their brand. They attempt at shaping distinctive and positive images in the minds of buying center members by targeting them as private individuals.
- While a number of the world's strongest brands (e.g. Caterpillar, John Deere and General Electric) are either partly or fully B2B brands, there is a lack of empirical research in some of the key industries in which these brands operate.
- Due to the uniqueness and particularities of the different business markets, it is deemed expedient to empirically test the impact of brand images on the purchasing behavior of B2B market participants in one specific B2B industry. Due to its ongoing relevance, the author selected the railway industry for his research. This single-industry approach yields the opportunity of gaining more richness and depth while also increasing the number of respondents.

²⁷¹ Refer to Appendix III: List of Experts

²⁷² Cf. Esch, F.-R. (2008). *Strategie und Technik der Markenführung* (5., vollst. überarb. und erw. Aufl.). München: Vahlen, p. 73.

- Existing research largely treats the brand image construct on a very generic level without capturing the full depth of this complex psychological concept.
- In line with brand equity theory and considering salient elements from models by Keller and Kuhn et al., the brand image construct was conceptualized into five image dimensions being brand performance, brand credibility, brand trust, brand feelings and company reputation. Literature review as well as expert feedback assure content validity of these image dimensions which are utilized in the further course of the research.

3. MODEL DEVELOPMENT AND RESEARCH METHODOLOGY FOR THE EVALUATION OF THE IMPACT OF BRAND IMAGES ON THE PURCHASING BEHAVIOR OF B2B MARKET PARTICIPANTS

In this chapter the author provides deeper probation by addressing literature gaps which have been identified through the extensive literature review conducted in the previous chapter. Then research questions are formulated and hypotheses derived in 3.1. In order to be able to empirically test the postulated hypotheses, a causal model is constructed in 3.2. After choosing a methodology of measuring brand image, the operationalization of the variables is discussed (3.3.). The third chapter is concluded with sampling considerations as a final step before the causal model is submitted to empirical testing (3.4.).

3.1. Formulation of the research questions and derivation of the hypotheses

The comprehensive literature review has shown that, despite a long-standing negligence of branding for B2B settings and the subfield of B2B branding as an absolute academic niche, the importance of branding to B2B marketing has meanwhile been established. Literature emerged in roughly the last two decades generally acknowledges the importance of branding in the B2B context. At the same time, however, while interest in B2B branding continues to grow, studies within this field have been slower to emerge than those examining the role of brands in consumer markets²⁷³, which makes B2B branding still a relatively under-researched subfield in marketing research. Particularly, the following research gaps have been identified through the literature review:

1. **Sectorial gaps:** Lack of research in the heavy equipment sector and particularly in the railway industry, where there is so far no existing research. Kapferer²⁷⁴ points out that “it is important to clarify that brands do not necessarily exist in all markets”. And further that “even if brands exist in the legal sense they do not always play a role in the decision process...” In this sense, other authors repeatedly pointed out the necessity for further B2B sectors to be investigated. For

²⁷³ Brown, B. P., Zablah, A. R., Bellenger, D. N., & Donthu, N. (2012). What factors influence buying center brand sensitivity? *Industrial Marketing Management*, 41(3), 508–520.

²⁷⁴ Kapferer, J.-N. (2003). *Strategic brand management: Creating and sustaining brand equity long term* (2. ed., reprint). London: Kogan Page, p. 26.

instance, Backhaus et al., who conducted a survey on brand relevance in various B2B areas in 2011, as yet the most comprehensive research, including industrial automation, auditing, office furniture systems and business travel, recommended that further studies should be tested for brand relevance.²⁷⁵

2. **Conceptual gaps:** The constructs of brand and brand image was often conceptualized and measured in very generic and limited terms and separate from product, price and service dimensions. This stands in opposition to this research's understanding of brand images as a holistic mental construct comprising all impressions and perceptions an individual can hold about a brand. Moreover, the distinction of rational and emotional brand images was often not clearly made. Lynch and de Chernatony found in 2003 "There is a clear need for further research into the way in which brands are used, communicated and perceived in B2B markets"²⁷⁶, Kuhn et al. in 2008 noted that their research "begins the assessment and adaptation of a major brand equity model for the B2B context, but this is by no means the end".²⁷⁷ Regarding the impact of intervening variables, Research by Pedeliento et al. requires further validation.²⁷⁸ Lam et al.²⁷⁹ included switching costs and customer satisfaction in their model, but there is no research including all three constructs, switching costs, customer satisfaction and brand attachment as yet. Kumar et al. in 2013 advise that further research should encompass not just the relationship between satisfaction and loyalty but also other relevant variables as moderators, mediators, antecedent variables or all three.²⁸⁰
3. **Methodological gaps:** Most research models comprising brand image measure this construct with few and rather generic indicators which is associated with a lack of depth and richness of the image construct and hence requires adaptation and/or extension. Moreover, the distinction of rational and emotional brand images was often not made. Conceptual work on dimensioning brand

²⁷⁵ Backhaus, K., Steiner, M., & Lügger, K. (2011). To invest, or not to invest, in brands?: Drivers of brand relevance in B2B markets. *Industrial Marketing Management*, 40(7), 1082–1092, p. 1090.

²⁷⁶ Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets. Working paper series / Birmingham Business School: 2003-28*. Birmingham: University of Birmingham, Birmingham Business School.

²⁷⁷ Kuhn, K.-A. L., Alpert, F., & Pope, N. K. L. (2008). An application of Keller's brand equity model in a B2B context. *Qualitative market research : an international journal*, 11(1), 40–58, p. 51.

²⁷⁸ Pedeliento, G., Andreini, D., Bergamaschi, M., & Salo, J. (2015). Brand and product attachment in an industrial context: The effects on brand loyalty. *Industrial Marketing Management*.

²⁷⁹ Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.

²⁸⁰ Kumar, V., Pozza, I. D., & Ganesh, J. (2013). Revisiting the Satisfaction–Loyalty Relationship: Empirical Generalizations and Directions for Future Research. *Journal of Retailing*, 89(3), 246–262.

images has so far not been backed by empirical evidence on how image elements can be grouped, how important individual dimensions are and if overlaps exist.²⁸¹

Driven by the identified research gaps, the present dissertation is guided by the following research questions:

RQ₁: How do different dimensions of brand image impact the purchasing behavior of B2B market participants?

RQ₂: Which image dimensions influence the purchasing behavior of B2B market participants most strongly?

Since the chosen framework for dimensioning brand image postulates brand attachment as an intervening variable, it is of interest how strongly brand attachment as an emotive construct impacts purchasing behavior compared to switching costs as a rational construct. Further, customer satisfaction is included as a comparative intervening variable.

Therefore, similarly to the different dimensions of brand image, the different intervening variables will be investigated for their comparative impact on purchasing behavior which leads to the third research question:

RQ₃: Which are the intervening variables impacting the degree of influence of brand images on the purchasing behavior of B2B market participants most significantly?

The transference of consumer concepts to B2B contexts constitutes a hindrance to effective theoretical conceptualization²⁸² and measurement of branding impacts in business markets. Therefore the following supporting research question has been defined:

RQ₄: How can a valid and reliable measuring instrument for brand images in B2B context be developed and operationalized?

²⁸¹ Persson, N. (2010). An exploratory investigation of the elements of B2B brand image and its relationship to price premium. *Industrial Marketing Management*, 39(8), 1269–1277.

²⁸² Guzmán, F., Keränen, J., Piirainen, K. A., & Salminen, R. T. (2012). Systematic review on B2B branding: Research issues and avenues for future research. *Journal of Product & Brand Management*, 21(6), 404–417.

Hypotheses

As conceptualized in previous steps, brand image constructs, dissolved into one rational and four emotional brand image dimensions. The rational image dimension is crucial in providing the level of security to buying center members and meeting the essential task of purchasing a functioning product or service. Therefore, the rational image dimension is the exogenous starting point of influence. As buying center members are assumed to make their buying decisions not only on a rational basis but tend to be influenced by emotional brand stimuli, these are hypothesized to be determining the degree of attachment that exists with a brand. Attachment is a relevant concept as the research is associated with re-buy situations where the formation of attachment to predominantly purchased brands per se has a role to play. The attachment is then hypothesized to directly impact purchasing behavior. Based on this logic, the basic hypothesis to defend is:

The rational brand image dimension impacts the purchasing behavior of B2B market participants through the intervening effects of both the emotional image dimensions and the intervening variables of switching costs, customer satisfaction and brand attachment.

In line with Kanfer et al.²⁸³, due to the high number of variables and the complex relationship of interest for this research, the author summarized individual relationships between variables into meaningful higher order aggregations, as overarching sub-hypotheses, in order to be able to structure the constructs when building the causal model in a subsequent step. This means that each sub-hypothesis is constructed by further sub-hypotheses which will be assigned to a certain section of the causal model.

Construction of sub-hypothesis 1

Brand image is dissolved into brand performance as the rational brand image dimension and brand credibility, brand trust, brand feelings and corporate reputation as the emotional dimensions. The importance of performance is highlighted in various academic publications and best captured by Roberts who stated:

²⁸³ Kanfer, F. H., Reinecker, H., & Schmelzer, D. (2012). Zusammenfassen vorläufiger Hypothesen zu einem funktionalen Bedingungsmodell. In F. H. Kanfer, H. Reinecker, & D. Schmelzer (Eds.), *Selbstmanagement-Therapie* (pp. 225–227). Berlin, Heidelberg: Springer Berlin Heidelberg.

“Perform, perform, perform. Respect grows only out of performance. Performance at each and every point of interaction”.²⁸⁴

Based on the prominent role of performance as a rational and measurable image component, the author hypothesizes that performance constitutes the basis for the formation of the emotional dimensions. This consideration is in line with other authors who understand branding as a multi-layered pyramid with basic physical and rational attributes forming the base and upon which rest the emotional benefits (SH1a-1d).²⁸⁵ It therefore positively impacts the emotional image dimensions as listed in Table 3.1. Apart from influencing the emotional image dimension, brand performance is hypothesized to positively impact customer satisfaction as meeting customer’s expectations results in a confirmation of expectations as per customer satisfaction theory (SH1e).²⁸⁶ Brand performance is also postulated to have a positive impact on switching costs, as a positive fulfillment of performance criteria might well create a sense that switching brands may go along with time, money and effort associated with the establishment of an alternative source of supply. The positive relationship between credibility and trust is formed in SH1g. Likewise trust in a brand and positive feelings appear to be a logical connection as expressed in SH1h. In line with Keller²⁸⁷, in the scope of modified re-buy situations, simply confirming customer expectations is not expected to create an emotional attachment between purchasers and the brand, as attachment constitutes a much deeper level of satisfaction (SH1i). Table 3.1. summarizes all hypothesized relationships emanated through brand performance.

²⁸⁴ Roberts, K. (2005). *Lovemarks: The future beyond brands* (2. ed.). New York, NY: PowerHouse Books.

²⁸⁵ Cf. Mudambi, S. M., Doyle, P., & Wong, V. (1997). An exploration of branding in industrial markets. *Industrial Marketing Management*, 26(5), 433–446, p. 434.

²⁸⁶ Cf. Homburg, C., Schäfer, H., & Schneider, J. (2012). *Sales Excellence: Systematic Sales Management. Management for Professionals*. Berlin, Heidelberg: Springer.

²⁸⁷ Cf. Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 72.

Table 3.1. Construction of sub-hypothesis 1

1st stage of the causal model	Sub-Hypothesis 1: The rational image dimension positively impacts the emotional image dimensions.
SH1a	Brand performance is positively related to brand credibility.
SH1b	Brand performance is positively related to brand trust.
SH1c	Brand performance is positively related to brand feelings.
SH1d	Brand performance is positively related to company reputation.
SH1e	Brand performance is positively related to customer satisfaction.
SH1f	Brand performance is positively related to switching costs.
SH1g	Brand credibility is positively related to brand trust.
SH1h	Brand trust is positively related to brand feelings.
SH1i	Brand performance is not related to brand attachment.

Source: Author's own construction

The argument for the hypothesized relationship between brand performance and switching costs as well as customer satisfaction (SH1e and SH1f) is that the latter two concepts address rather rational customer perceptions as opposed to brand attachment which is associated with emotional responses (SH1i). Derived from this consideration, the brand performance as the rational image dimension is assumed to relate to the rather rational intervening variables.

Construction of Sub-hypothesis 2

Attachment as a psychological concept going beyond having a positive attitude and image about a brand²⁸⁸ is expected to intervene the impact of brand images on purchasing behavior. As the second stage of the causal model, emotional brand image dimensions are hypothesized to be positively related to brand attachment as shown in table 3.2. Particularly brand feelings are expected to be a main driver to attachment since strong pronunciation of feelings are essential to the formation of attachment.²⁸⁹

²⁸⁸ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 72.

²⁸⁹ Grisaffe, D. B. (2014). Feeling the Brand Love. Retrieved from https://www.ama.org/publications/MarketingNews/Pages/Feeling-the-Brand-Love.aspx*.

Table 3.2. Construction of sub-hypothesis 2

2nd stage of the causal model	Sub-Hypothesis 2: The emotional brand image dimensions positively impact brand attachment.
SH2a	Brand credibility is positively related to brand attachment.
SH2b	Brand trust is positively related to brand attachment.
SH2c	Brand feelings is positively related to brand attachment.
SH2d	Company reputation is positively related to brand attachment.

Source: Author's own construction

Construction of sub-hypothesis 3

Apart from attachment, the literature review suggests that switching costs as well as customer satisfaction are drivers of purchasing behavior, too. Therefore, in the third stage of the causal model, brand attachment, customer satisfaction and switching costs are hypothesized to be positively related to purchasing behavior as literature suggests for all three concepts (table 3.3.).²⁹⁰

Table 3.3. Construction of sub-hypothesis 3

3rd stage of the causal model	Sub-Hypothesis 3: Brand attachment, customer satisfaction and switching costs positively impact purchasing behavior.
SH3a	Brand attachment is positively related to purchasing behavior.
SH3b	Customer satisfaction is positively related to purchasing behavior.
SH3c	Switching costs is positively related to purchasing behavior.

Source: Author's own construction

Construction of sub-hypothesis 4

As the comparison of the literature on all three concepts has shown, brand attachment is viewed as an influencer superior to mere customer satisfaction. Switching costs is a diversified concept with some literature focusing on the relational aspect which is considered to be of rather emotional nature. For this research, however, in order to facilitate a clearer distinction between rationality and emotionality between

²⁹⁰ Cf. Pedeliento, G., Andreini, D., Bergamaschi, M., & Salo, J. (2015). Brand and product attachment in an industrial context: The effects on brand loyalty. *Industrial Marketing Management*. And: Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.

the intervening variables, switching costs was modelled only in its rational form including time, money and effort necessary to switch from one brand to another.²⁹¹ The fourth sub-hypothesis (table 3.4.) is therefore postulated as:

Table 3.4. Construction of sub-hypothesis 4

3rd stage of the causal model	Sub-Hypothesis 4: Brand attachment impacts purchasing behavior more strongly than both customer satisfaction and switching costs.
SH4a	SH3a > SH3b
SH4b	SH3a > SH3c

Source: Author's own construction

Construction of sub-hypothesis 5

An extensive body of literature exists emphasizing the role of complexity and risk in B2B purchasing as a main differentiator to B2C context and amongst different areas of the B2B spectrum. Therefore these two contextual variables were included in the research model. The degree of complexity and risk involved in a purchase makes it strategically more difficult to switch brands, even in case of dissatisfaction. Thereby, a great deal of the purchasing risk is expected to be caused by various forms of complexity (Sh5a). The propensity to stay with a brand, even one which may not create a positive image, but involves still less complexity and risk than switching to another brand, is reflected by SH5b and SH5c. Based on this consideration, sub-hypothesis five was constructed (table 3.5.).

Table 3.5. Construction of sub-hypothesis 5

Contextual relationships	Sub-Hypothesis 5: Purchase complexity and purchase risk are positively related to switching costs.
SH5a	Purchase complexity is positively related to purchase risk.
SH5b	Purchase complexity is positively related to switching costs.
SH5c	Purchase risk is positively related to switching costs.

Source: Author's own construction

²⁹¹ Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.

3.2. Construction of a causal model for the empirical testing of the impact of brand images on the purchasing behavior of B2B market participants

After brand image and purchasing behavior have been conceptualized, this section is dedicated to the construction of a causal model which allows for subsequent empirical testing. Path models are used to display the relationships between variables, which have been expressed through the hypotheses, and which are investigated when the causal model is applied.²⁹² Therefore, following structural theory²⁹³, the causal model was developed from left to right in three stages along the S-O-R paradigm introduced in chapter 1.

1st stage of the causal model - the stimulus level:

The model consists of the five conceptualized brand image-related constructs elaborated in chapter 2, three intervening variables providing the causal link between the brand image-related variables and purchasing behavior as the research's dependent variable. Further, the two contextual variables purchase risk and purchase complexity are included in the model. Generally speaking, the brand-related variables have the nature of independent variables, whereas the purchasing-related variables represents the dependent variable. The contextual variables assist in the classification of this specific research in a wider context, which in regard to the research's limitations points out for which other cases and contextual settings the research can be considered indicative. More precisely, brand performance exclusively serves as an independent variable, as no other variable is directed at it, and therefore represents the exogenous latent variable.

2nd stage of the causal model - the organism level:

In a next stage, brand credibility, brand trust, brand feelings and company reputation serve both as independent and dependent variables as they all are hypothesized to be impacted by brand performance, but also influence other variables to the right of the model. That is, they are hypothesized to have a positive relationship with brand attachment. Variables serving as both independent and dependent

²⁹² Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ, p. 12.

²⁹³ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ, p. 13.

variables are called endogenous latent variables.²⁹⁴ The other two intervening variables switching costs and customer satisfaction hypothesized to be impacted by brand performance. The reason for these propositions is that the rational form of switching costs which comprises mainly time, money and effort of switching brands is logically connected with rational, performance related characteristics of the brand and its physical qualities. Likewise, mere customer satisfaction in the form of zero confirmation which ensues when a priori specified performance is given and the product performance matches expectations, is postulated to emerge on the basis of rational performance characteristics which constitutes a distinction from emotional brand attachment going beyond satisfaction.²⁹⁵

3rd stage of the causal model - the response level:

As per Keller's theory²⁹⁶, brand attachment is an integral part of a customer's resonance and thus hypothesized to be the major directly impacting variable of purchasing behavior as the model's dependent variable. Likewise, customer satisfaction and switching costs are directly related to purchasing behavior in the causal model so as to provide a basis for comparison of their relative impact on purchasing behavior.

Figure 3.1. shows the causal model with all its hypothesized relationships. Dotted lines group the variables by their nature and function in the causal model.

²⁹⁴ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 14.

²⁹⁵ Refer to 1.3.

²⁹⁶ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22.

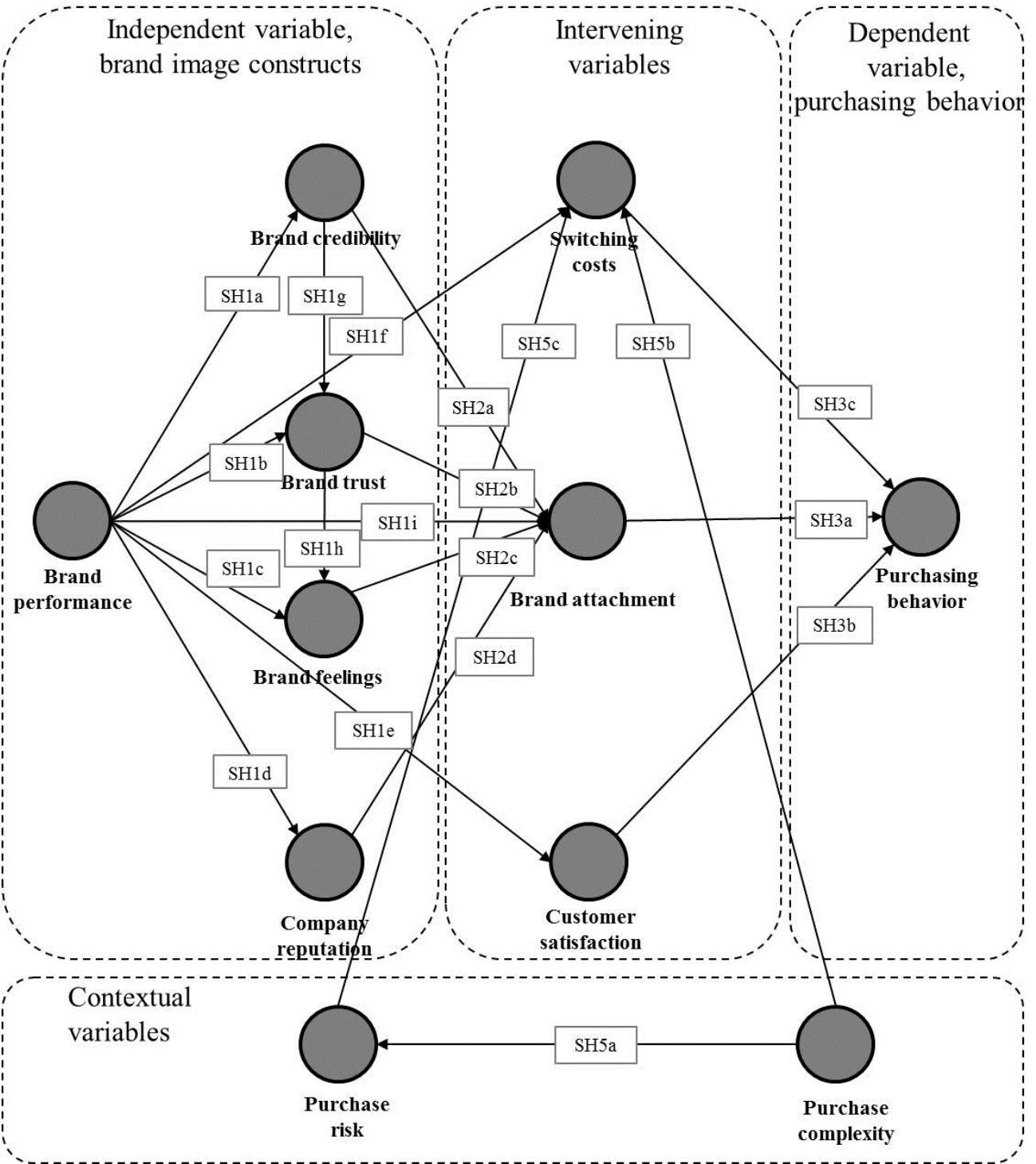


Figure 3.1. The postulated causal model

Source: Author's own construction

Methodology of measuring brand image

After a conceptual framework was identified and the structural paths established, the next task was to identify and, where necessary, develop measures for the research resulting in a fully operational structural equation model. Dobny and Zinkhan find that not only the definition but also the operationalization of brand image have been “fairly irregular, although not without some patterns and commonalties”.²⁹⁷ Therefore a critical review and selection process was important, particularly so because:

1. Keller’s framework lacks full operationalization for B2B contexts²⁹⁸ and
2. In line with Low and Lamb, measurement of image must be individualized depending on the concrete industry context. The reason is that brand image consists of functional and symbolic brand beliefs and brand image associations are largely product or service category specific. Therefore, measures must be customized for the unique characteristics of specific brand categories.²⁹⁹

To take the complexity of brand image as the determination variable into account, the author decided to opt for a multi-dimensional measuring approach which aims at capturing several dimensions of this latent construct. Methodologies and procedures of measuring brand image as a complex latent construct are not limited to measuring emotive, intangible dimensions, but rather allow integrating verbalized emotive items along with other indicators for a holistic measurement of both rational and emotive dimensions.³⁰⁰ The selection and/or further development of measures for the present research was an important task of this dissertation. In order to assure reliability, existing measures were utilized when available and, where necessary, adapted to suit the context of this dissertation. All measures, existing ones, newly developed and adapted ones were pretested three times within a group of industry experts, consisting of a professor who has vast experience in the railway industry as well as industry professionals so as to assure content

²⁹⁷ Dobny, D., & Zinkhan, G. M. (1990). In Search of Brand Image: a Foundation Analysis. *NA - Advances in Consumer Research*, (17), 110–119. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=7005*

²⁹⁸ Kuhn, K.-A. L., Alpert, F., & Pope, N. K. L. (2008). An application of Keller's brand equity model in a B2B context. *Qualitative market research : an international journal*, 11(1), 40–58

²⁹⁹ Low, G. S., & Lamb, C. W. (2000). The measurement and dimensionality of brand associations. *Journal of Product & Brand Management*, 9(6), 350–370, p. 352.

³⁰⁰ Freundt, T. C. (2006). *Emotionalisierung von Marken: Inter-industrieller Vergleich der Relevanz emotionaler Markenimages für das Konsumentenverhalten*. Handelshochsch., Diss.--Leipzig, 2006 (1. Aufl.). Gabler Edition Wissenschaft *Innovatives Markenmanagement*. Wiesbaden: Deutscher Universitäts-Verlag | GWV Fachverlage GmbH, Wiesbaden, pp. 87-88.

validity of the measuring instrument. In line with Trommsdorff and Teichert³⁰¹, the author constructed the measuring model in accordance with the following steps:

- 1. Determination of the objects, i.e. stimulus brands, of the image measurement:** Comparable brands in the industry making up the consideration set were considered as stimuli. According to Keller, brand name recognition is important in establishing trust.³⁰² Therefore, dominant brands as well as niche players were selected as stimuli in order to be able to verify which of the brands are considered.
- 2. Collection of relevant items for the image measurement:** A pool of tested and proven items and scales was collected and concentrated from marketing literature. This approach assures a higher likeliness of content validity and reliability. At the same time, though, these scales' applicability had to be verified based on industry expert's feedback. It was taken care that representatives from diverse functional backgrounds such as purchasing, product management and sales within the chosen industry were part of the expert panel. In order to assure content validity, existing measures were adapted or extended based on industry expert feedback.³⁰³
- 3. Determination of the scale design:** Except for the complexity scale, which has the form of a polarity profile, all scales used were formulated as 7-point Likert-type scales, as they can be considered equivalent to 5-point scales which are both quite common in behavioral research.³⁰⁴ The consistent form of rating scales were also meant to make respondent feedback more convenient.
- 4. Concentration of items into the defined image dimensions.** As the author used existing scales along defined image dimensions, this step of the procedure consisted of adaptation and augmentation of the scales.

Consecutive to these considerations, the actual operationalization of the variables of the causal model's measurement model is required to complete the structural equation model.

³⁰¹ Trommsdorff, V., & Teichert, T. (2011). *Konsumentenverhalten* (8., vollst. überarb. und erw. Aufl.). Kohlhammer Edition Marketing. Stuttgart: Kohlhammer, p. 148.

³⁰² Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). Tuck School of Business working paper: 2004-06. Hanover, NH, p. 394.

³⁰³ Refer to Appendix V: List of experts.

³⁰⁴ Colman, A. M., Norris, C. E., & Preston, C. C. (1997). *Comparing Rating Scales of Different Lengths: Equivalence of Scores From 5-Point and 7-Point Scales*: Ammons Scientific Ltd.

3.3. Operationalization of variables: brand image constructs, intervening variables, purchasing behavior and the contextual variables

This section describes the operationalization of variables, beginning with the image constructs which were conceptualized into the five sub-dimensions brand performance, brand credibility, brand trust, brand feelings and company reputation. As earlier research in the consumer industry shows, emotional items appears to be rather similar across different industries whereas items operationalizing the rational dimension can be quite different between industries.³⁰⁵ With this in mind, assurance of content validity through expert feedback on the items relevant for the railway industry was an important task.³⁰⁶ A detailing of measuring scales with the individual items denoted with codes can be found in Appendix II.

Brand performance

Brand performance as the rational image dimension comprises all tangible and/or measurable factors from the initial acquisition phase prior to the actual purchase, further capturing the product usage until defect removal during post-purchase field operation of the equipment. For the operationalization of this construct, Keller's brand performance scale³⁰⁷ served as a basis as it already contained all of these dimensions to some extent, if not fully. Three items could be retained as they were (A023_03, A023_09 and A030_08). Three more items of Keller's measure only had to be very slightly adapted in terms of wording (A30_03, A30_05 and A30_06). Finally, the existing and tested scale, had to be adapted and augmented based on expert input so as to represent the context of the railway industry more precisely. The additional items covered compliance with technical specification forming the legal basis of the specifically developed product subject to purchase (A023_15). Moreover, life-cycle costs were required to be included in the scale due to the long-term usage nature of capital equipment causing a great proportion of incurred costs after the actual purchase and therefore have to be considered at an early stage in the purchasing process when evaluating different alternatives (A023_10). As the equipment subject to purchase is not only unique from a technical perspective but also the legal frameworks often deviate from

³⁰⁵ Freundt, T. C. (2006). *Emotionalisierung von Marken: Inter-industrieller Vergleich der Relevanz emotionaler Markenimages für das Konsumentenverhalten*. Handelshochsch., Diss.--Leipzig, 2006 (1. Aufl.). *Gabler Edition Wissenschaft Innovatives Markenmanagement*. Wiesbaden: Deutscher Universitäts-Verlag | GWV Fachverlage GmbH Wiesbaden, p. 202.

³⁰⁶ Refer to Appendix III: List of experts.

³⁰⁷ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, pp. 75-76.

standard terms and conditions, the experts further mentioned the importance of contractual conditions as part of the performance dimension (A023_11). This aspect adds to risk reduction as favorable legal conditions secure customers from undesired consequences in case the equipment fails to perform as specified. Further, lead times and delivery reliability were added to the scale due to the fact that favorable lead times are perceived to be important to offering important project schedules to end customers. Meeting these lead times in practice is meant by delivery reliability and is crucial as any delay in deliveries may cause severe financial and legal consequences on the customer's side (A23_16). Ease of installation of a complex technical product was further mentioned as worthy of inclusion in the scale as this factor helps reduce effort and risk for potential purchasers (A30_07).

Brand credibility

Again, Keller's measures³⁰⁸ served as a basis for the operationalization of credibility. Keller's original scale does not mention brand representatives, i.e. those persons representing a supplier in customer interaction. However, Keller himself points out, "Every touch point between the company and customers becomes an input to brand image".³⁰⁹ Therefore the author adapted and extended Keller's original scale by including brand representatives explicitly in the items concerned with having one's customers interests in mind, being competent and being flexible towards specific needs.

Brand trust

As hypothesized, brand credibility is positively related to brand trust. The basis for measuring brand trust was Keller's scale.³¹⁰ As with brand credibility, trust measures were adapted so as to explicitly mention brand representatives. While a number of authors refer to the brand as a promise³¹¹, the trust measure used in this research captures how well the brand representatives live up to that promise from a customer's point of view. Keller's trust scale was therefore adapted so as to include brand representatives.

³⁰⁸ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, pp. 75-76.

³⁰⁹ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH, p. 390

³¹⁰ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, pp. 75-76.

³¹¹ Cf. for instance Davis, S. M., & Dunn, M. (2002). *Building the brand-driven business: Operationalize your brand to drive profitable growth* (1. ed.). *Jossey-Bass business & management series*. Jossey-Bass: San Francisco CA.

Bendixen et al. also includes a company's willingness to respond in an emergency as a highly relevant feature³¹², which reinforces content validity of the adapted trust scale.

Brand feelings

With one exception, Keller's measures were used for measuring brand feelings.³¹³ The original scale contains an item related to social approval being worded as "Does this brand give you a feeling of social approval?". To better meet the context in which B2B customers operate, the item was rephrased to "Does this brand give you a feeling of management or peer group approval?" (A028_05). Adding the context of a buying center constellation where lower-level members have to make a recommendation and higher-ranked members have to express their consent or approval, was deemed more suitable for the present research than the unspecified social approval of the original scale.

Company reputation

Company reputation was operationalized using three measures of Walsh and Beatty³¹⁴ and two of Keller.³¹⁵ Ease of doing business is generally considered an important attribute. Without addressing specific attributes of quality, the general perception of a company as being able to offer high quality products and service was considered relevant (A22_01). Strength and reliability of the company was perceived as important image attributes, especially in light of the long-term nature of the relationships customers and suppliers engage in (A022_02). Developing innovative products and services is of further relevance in the technology sector and was therefore included (A022_03). As a particularly customer-centered attributes, the ease of doing business and the degree to which the company is concerned with its customers completed the scale (A022_05 and A022_06, respectively).

³¹² Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380, p. 372.

³¹³ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, p. 75-76.

³¹⁴ Walsh, G., & Beatty, S. E. (2007). Customer-based corporate reputation of a service firm: Scale development and validation. *Journal of the Academy of Marketing Science*, 35(1), 127–143.

³¹⁵ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH, p. 398

Operationalization of the intervening variables switching costs, customer satisfaction and brand attachment

In order to be able to empirically test the postulated hypotheses, this part is dedicated to the operationalization of switching costs, customer satisfaction and brand attachment.

Operationalization of switching costs

Three items of the measures of Lam et al.³¹⁶ were used for the operationalization of switching costs as these items address the rational aspects of money (A015_01), time (A015_02) and effort (A015_03) of this construct and therefore allow for a clear distinction to the other intervening variables which are of rather emotional nature.

Operationalization of customer satisfaction

Since the evaluation of particular product attributes is made in the scope of the performance scale, the customer satisfaction measures had to be of rather generic nature in order to avoid issues of discriminant validity. Keller provides two such measures for customer satisfaction.³¹⁷ They were only marginally adapted in terms of wording. One expresses general full satisfaction (A029_05) whereas the other refers to customer's recent experience (A29_04), the latter was deemed helpful as it stimulates respondents to recall an actual experience and thus lead to a more authentic response.

Operationalization of brand attachment

Keller's attachment scale³¹⁸ was used for the operationalization of brand attachment. Since brand attachment as a purely psychological construct is not specific to a certain product category or market segment, therefore no adaptations were deemed to be necessary. As indicators of attachment, the items reflect if respondents would miss the brand if it went away, if it is special and even more than a product.

³¹⁶ Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.

³¹⁷ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, pp. 75-76.

³¹⁸ Keller, K. L. (2008). *Strategic brand management: Building, measuring, and managing brand equity* (3. ed., internat. ed.). Upper Saddle River, NJ: Pearson/Prentice Hall, pp. 75-76.

The effect variable: Operationalization of purchasing behavior

Purchasing behavior was operationalized firstly through surveying respondents on their consideration set. As well as their purchasing history, and as a narrative, the predominantly purchased. Finally, a Likert-type scale was used to gain detailed insights into the predominantly purchased brand. In line with Ajzen & Fishbein's research³¹⁹ it is suggested that (re-)purchase intentions are most likely to predict actual behavior when the contextual circumstances are precisely specified according to the following dimensions:

- Action
- Target
- Context
- Time

Respondents were asked to consider rebuy purchase scenarios, answering questions about the brand of rail drive system which is predominantly purchased by their company. As purchasing behavior in the railway industry is associated with specific projects with per se have a character of novelty, it can be assumed that purchasing takes place in at least partially modified manner. The reason for selecting this type of purchase is that modified rebuy situations are connected with a certain degree of risk provide as well as the opportunity to compare the influence of brand attachment to that of customer satisfaction as well as switching costs. Neither would have been possible when selecting straight rebuys or new buying tasks as stimulus contexts.

In line with research previously conducted in the field of B2B branding³²⁰, survey participants were asked to envision themselves in a past purchase situation, recall their behavior and make predictions of their likely future behavior related to the brand which is predominantly purchased by their company. Derived from purchasing theories of Choffray & Lilien as well as Kotler & Bliemel, purchasing behavior was operationalized in several stages.

Therefore, the following question was formulated to set the context and indicate participant's feasible set of alternatives:

³¹⁹ Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior* (Pbk. ed.). Englewood Cliffs, N.J: Prentice-Hall.

³²⁰ Cf. for instance: Brown, B. P., Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2011). When do B2B brands influence the decision making of organizational buyers?: An examination of the relationship between purchase risk and brand sensitivity. *International Journal of Research in Marketing*, 28(3), 194–204.

“In a purchasing situation for rail drive systems, which of the following brands do you generally consider purchasing?” (Please chose all applicable).

The question was succeeded with a list of 13 of the most relevant brands in the chosen industry as well as the option to specify another brand, formulated as:

“The following statements refer to your general opinion about the brands of rail drive system of which you are aware.”

Narrowing down to the actual purchase experience, the following question was included in the survey instrument:

“From how many different brands has your company purchased rail drive systems in the last 5 years?”

In order to prepare respondents mentally to the following questions about their purchasing behavior, an item formulated as:

“Which of the following brands of rail drive system is predominantly purchased by your company?”

completed the first set of questions.

While the previous items in the questionnaire served to mentally prepare participants for a most accurate indication and set the context, 6 items were used to measure purchasing behavior.

When operationalizing purchasing behavior, the author used Keller’s measure as a basis. Loyalty (A016_01) was retrieved from the original scale developed for B2C markets. Minor adaptations were made to the other items. For instance item A016_04 was formulated as “I would recommend the brand to other firms in the industry”. Logically, the mention of the *industry* was not part of Keller’s original B2C scale. Otherwise the scale was found to represent B2B purchasing behavior well. Especially since it comprises dimensions which have previously been conceptualized for B2B settings by Homburg et al., namely, actual purchasing behavior, recommendation in the industry and likelihood of re-buy.³²¹ Similarly, other authors emphasized a purchaser’s willingness to recommend a brand as a highly relevant

³²¹ Cf. Homburg C., Becker, A., & Hentschel, F. (2010). Der Zusammenhang zwischen Kundenzufriedenheit und Kundenbindung. In M. Bruhn (Ed.), *Handbuch Kundenbindungsmanagement* (7th ed., pp. 111–144). Wiesbaden: Gabler, pp. 11-144.

dimension in the B2B market for industrial products.³²² The scale was augmented with an item (A16_07) adapted from Yoo & Donthu.³²³ With its design to detect if a customer prefers a certain brand to any other despite the fact that they all have the same features, this item extracts brand equity as an added value beyond functional attributes.

Operationalization of the context variables purchase complexity and purchase risk

In management terms, contextual variables are elements which are not controlled by the organization, but form its macro environment. They affect its performance, its strategy and its decision process.³²⁴ The inclusion of contextual variables in the present research aims at understanding under which wider context the purchase of rail drive systems falls and allows comparing this research's results to other research in the B2B sphere in future research.

Operationalization of purchase complexity

For the measurement of purchase complexity the scale of McGabe³²⁵ was utilized without any modifications. The scale was found to be most relevant to the present research as it includes a variety of complexity dimensions. That is, it comprises product-related complexity dimensions such as standardization (A014_01), technical complexity (A014_02), the investment-related dimension (A014_05), but also intangible aspects such as commitment (A014_07) and qualitative aspects as the potential effect on the customer's profitability. Since the scale consists of as many as ten items, which is quite a high number for a contextual variable, its form of a polarity profile was deemed favorable. Compared to Likert-type of scales, polarity profiles have the advantage that they are easier to process for participants and therefore they can respond quickly and efficiently to a higher number of items in a given time.³²⁶ On the other hand, it is important that the items used in such a scale are self-explanatory as they only consist of few word pairs.

³²² Cf. for instance Bendixen et al. (2004), Hutton (1997), van Riel et al. (2005).

³²³ Yoo, B., & Donthu, N. (2001). *Developing and validating a multidimensional consumer-based brand equity scale*. [S.l.]: [s.n.].

³²⁴ Management Dictionary. Contextual Variables. Retrieved from http://old.knoow.net/en/sceconent/management/contextual_variables.htm*

³²⁵ McCabe, D. L. (1987). Buying Group Structure: Constriction at the Top. *Journal of Marketing*, 51(4), 89–98.

³²⁶ Cf. Mindak, W. A. (1961). Fitting the semantic differential to the marketing problem. *Journal of Marketing*, 28–33, p. 28.

Operationalization of purchase risk

For the operationalization of purchase risk the author selected the scale by Mudambi³²⁷, which has found plentiful application in B2B marketing research. The scale is very comprehensive as it comprises functional risk (A002_6), financial risk (A002_7) as well as the risk of management or peer group acceptance (A002_8). The latter is associated with the individual risk a buying center member takes if they decide to purchase or recommend a product or service which does not meet respective approvals. Item A002_009 evaluates the overall purchase risk.

3.4. Sampling considerations, planning, pre- and post-survey preparation and organization of the empirical survey

This research adopts a customer focused view, as real B2B customers are surveyed on their perception of brands and their purchasing behavior. This constitutes an important improvement to earlier studies which often included only seller's responses. As per the industry value chain³²⁸, the sample is drawn from various customers groups within the railway industry such as OEM manufacturers, operators, distributors, leasing firms, remanufacturers or system suppliers, who can be regarded as potential purchasers of rail drive systems depending on the buying task at hand. B2B marketers usually have far fewer customers than B2B companies³²⁹, which may give rise to the assumption that the population can easily be determined by identifying the respective purchasing companies. However, since not only the number of customers, i.e. business organizations are to be considered but also the number of purchase transactions, there is a non-probability sample underlying the research. The fact that identifying all buying center members is virtually impossible due to lack of formal organization of buying centers adds to the conclusion of facing a non-probability sample. Schonlau et al. point out that also forms of non-probability sampling can be "extremely valuable for hard-to-reach (although electronically connected) populations" and for making "model-based inference".³³⁰ Therefore emphasis is given to selecting bigger number of companies with multiple respondents per company as well as collecting a sufficient number of individual

³²⁷ Cf. Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533.

³²⁸ Refer to 2.2.

³²⁹ Kotler, P., & Pfoertsch, W. (2006). *B2B Brand Management* (1. Aufl.). s.l.: Springer-Verlag, p. 21.

³³⁰ Schonlau, M., Elliott, M. N., & Fricker, R. D. (2002). *Conducting research surveys via e-mail and the web*. Santa Monica, CA: Rand, p. 34.

responses to meet the minimum requirements for subsequent model testing based on the PLS algorithm, which was selected in light of these considerations.

Planning, pre-survey preparation and organization of the empirical survey

The empirical survey was designed so as to comprise marketing stimuli in the form of brand names and, as per the customer focus of the research, buying center member's response to the stimuli along the dimensions of consideration, preference, past purchasing behavior, intended future purchasing behavior and willingness to recommend the brand to other firms in the industry. In line with the S-O-R paradigm that guides the empirical part of this research, identifying both the relevant sender information, i.e. the brand stimuli, identifying the relevant recipients, i.e. B2B customers, their buying centers and members, is described in detail in this section.

Identification of the stimulus brands

Rail drive systems are the integral part of a vehicle necessary for its performance. As the major subsystem of the vehicle, it comprises supply stages down the supply chain.³³¹ Therefore, brands of rail drive systems shall serve as stimuli for the empirical part of this research to investigate the impact of brand images on the purchasing behavior of B2B market participants. This product category was chosen for the following reasons:

- Purchasing decisions related to products as opposed to services are likely to be more generalizable.³³²
- Rail drive systems cannot be purchased by consumers, but only by organizational purchasers which allows a clear-cut distinction to consumer purchasing behavior.
- This type of equipment is of a capital nature and because of its value and complexity will require intensive pre-purchase consideration.
- Within the railway industry, many sub-branches such as OEM manufacturers, operators, leasing companies and service providers are concerned with rail drive systems as they make up a great

³³¹ Ibid.

³³² Cf. Brown, B. P., Zablah, A. R., Bellenger, D. N., & Donthu, N. (2012). What factors influence buying center brand sensitivity? *Industrial Marketing Management*, 41(3), 508–520.

deal of a rail vehicles performance and operating cost which broadens the stakeholder base for this product category. Therefore, it is possible to capture a variety of stakeholders within one industry.

- There is a high number of competing brands in the market which constitutes a large consideration set and adds to the complexity of decision making for purchasing organizations.

Industry studies were analyzed to determine the stimulus brands of rail drive system which were to be used in the empirical survey. While all brands deliver to other market segments, as an exclusion criterion, all brands had to be active in the railway industry in a sense that they had references in this market. The identified number of 13 brands, ranging from leading brands to niche brands were included as stimulus brands for the empirical survey. All brands belong to companies which are headquartered in different parts of the world, ranging from Belgium (ABC), Germany (Deutz, MAN, MTU & Voith), over Russia (Kolomna), the United Kingdom (Cummins) to the United States of America (Caterpillar, EMD, GE & John Deere). All brands were found to be dominant domestic suppliers while also exporting their products to other countries which makes them part of a global competition on the one hand while providing railway customers with an extended consideration set on the other.

Identification of relevant B2B market participants

In order to achieve the highest degree of representativity, major OEM manufacturers and a great share of major railway operators worldwide were identified by reviewing industry studies and company directories. In the same way, companies specializing in the remanufacture and service of rail vehicles were identified as they also in similar ways as OEMs since they purchase products of this category in the scope of their business activities.

Identification of buying center members

B2B purchasing behavior is multi-personal. Wilson and Lilien found that despite this multi-personality, often single purchasing agents are employed as individual informants in studies of organizational purchasing for reasons of feasibility. The authors further state that the benefit of using multiple informants within an organization in research practice is in the greater reliability that comes from more information rather than less.³³³ The result of their analysis of 104 group decisions is that the data from multiple informants significantly outperform single informant data. With this in mind, identifying the buying center within each of the companies was an important step to capture the multi-personal

³³³ Cf. Wilson, E. J., & Lilien, G. L. (1992). Using Single Informants to Study Group Choice: An Examination of Research Practice in Organizational Buying. *Marketing Letters*, 3(3), 297–305, p. 302.

purchasing organization which was to be targeted for the survey. For this purpose, the author performed a function analysis as one of the recognized and most effective methods of identifying buying centers and their members suggested by Backhaus and Voeth.³³⁴ This concept is based on the idea that by analyzing the functions a certain product is supposed to perform, it is possible to determine which of a company's functional areas and responsible individuals are affected by the purchase decision and consequently have to be involved. Various empirical studies confirm that there is a relationship between functional membership of individuals within an organization and their influence on the purchasing decision in the purchasing process.³³⁵ Brinkmann and Voeth provided empirical evidence that prediction of group buying decisions derived from the sales force outperform those predictions gained through customer surveys.³³⁶ Based on these considerations, the author interviewed sales managers of a market leading supplier of rail drive systems, Rolls Royce Power Systems AG, who supplied to a majority of customers in the railway industry and features more potential purchasers of this product category in their customer directory, in order to identify the buying center members of the respective firms. The sales managers provided information based on the following selection criteria, so as to later make an inference from the sample to the buying center roles explained in part 1.3.:

- Who were the persons who actually conducted the purchase (e.g. send out requests for quotation, issue purchase orders)?
- Who was involved in the negotiations? What are their names, functions and titles?
- Who seems to have the final say when the purchase decision is made?
- Regardless of hierarchical positions, who were perceived to be the most influential persons in the purchasing process?

These efforts resulted in a list of over 104 target companies and 1.022 suspected buying center members. While it was not possible to determine the exact number of B2B companies in the relevant area due to the high level of fragmentation in the market, as a narrative this number presumably constitutes a vast majority of this B2B market segment. The buying center members in a next step received an electronic

³³⁴ Cf. Backhaus, K., & Voeth, M. (2011). *Industriegütermarketing* (9th ed.). *Vahlens Handbücher*. s.l.: Franz Vahlen, p. 46.

³³⁵ Cf. for instance Johnston, W. J., & Bonoma, T. V. (1981). The Buying Center: Structure and Interaction Patterns. *Journal of Marketing*, 45(3), 143–156., Lilien, G. L., & Wong, M. A. (1984). An Exploratory Investigation of the Structure of the Buying Center in the Metalworking Industry. *Journal of Marketing Research*, 21(1), 1–11., Naumann, E., Lincoln, D. J., & McWilliams, R. D. (1984). The purchase of components: Functional areas of influence. *Industrial Marketing Management*, 13(2), 113–122. and José Garrido-Samaniego, M., & Gutiérrez-Cillán, J. (2004). Determinants of influence and participation in the buying center. An analysis of Spanish industrial companies. *Journal of Business & Industrial Marketing*, 19(5), 320–336.

³³⁶ Cf. Brinkmann, J., & Voeth, M. (2007). An analysis of buying center decisions through the salesforce. *Industrial marketing management : the international journal for industrial and high-tech firms*, 36(7), 998–1009

invitation to participate in a survey on the impact of brand images on B2B purchasing behavior. In line with Diamantopoulous and Schlegelmilch, the invitation to participate in the survey, which was sent through an email link through which the survey could be accessed, was personalized as this according to the authors increases the response rates.³³⁷ At the beginning of the questionnaire, a screening question was placed to verify a respondent’s eligibility for participation in the survey, determining whether or not they belong to the research population.³³⁸ Therefore, in order to verify their buying center membership, the following screening question was included in the survey questionnaire (table 3.6.):

Table 3.6. Screening question to identify buying center membership

To what extent are you involved in purchasing rail drive systems for your company? (Please select the most relevant option)						
Never involved	Almost never involved	Seldom involved	Sometimes involved	Frequently involved	Almost always involved	Always involved
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Source: Author’s own construction

In addition to verification of an addressee’s participation in the purchase, a set of questions was included to not only find out if a respondent was involved in the purchasing process, but also to measure the level of personal influence on the purchase decision. The author used Kohli’s scale for measuring the self-perceived influence³³⁹, which has found plentiful applications in the field of organizational purchasing behavior research (table 3.7.). Participants were instructed to think about a recent and typical work situation as this according to Ajzen and Fishbein assures most accurate statements.

³³⁷ Diamantopoulos, A., & Schlegelmilch, B. B. (1996). Determinants of industrial mail survey response: A survey-on-surveys analysis of researchers' and managers' views. *Journal of Marketing Management*, 12(6), 505–531, pp. 505 ff.

³³⁸ Brace, I. (2013). *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research* (3rd ed.). *Market Research in Practice*. London: Kogan Page, p. 31.

³³⁹ Kohli, A. (1989). Determinants of Influence in Organizational Buying: A Contingency Approach. *Journal of Marketing*, 53(3), 50–65.

Table 3.7. Screening question to evaluate purchasing influence

<p>Please think about a recent and typical work situation where you were a member of a purchasing team or committee responsible for selecting or recommending a particular rail drive system for your company.</p> <p>Please indicate the extent to which you agree with the following statements regarding your influence on the purchase decision.</p>
How much weight did the committee members give your opinions?
To what extent did you influence the criteria used for making the final decision?
How much effect did your involvement in the purchase committee have on how the various options were rated?
To what extent did your participation influence the decision eventually reached?
To what extent did the final decision reflect your views?
7-point Likert-scale: 1 = Very little, 2 = Little, 3 = Somewhat little, 4 = Neither large nor little, 5 = Somewhat large, 6 = Large, 7= Very large.

Source: Author's own construction

Answer possibilities ranged from very little to very large along a 7-point Likert-type rating scale. The response to this question was, however, not part of the research's causal model as it, by the question's content, could not be expected to relate to the latent variables in the model. As another, more finely graded screening question, its function was to determine respondent's decision influence and provision of justification for inclusion of the collected responses in the subsequent data analysis. Buying center members moreover were asked in the questionnaire which functional area in their organization they belonged to in order to also cover their buying center roles which had been introduced in chapter 1.3. In order to later establish, at least roughly, how many buying center members within one company exist and hence being able to, again roughly, determine the response rate per buying center captured by the survey, the following question was included in the survey:

“How many persons at your company are involved in the purchase of rail drive systems? (Including all relevant departments). Please indicate the number of persons. If you are not sure, please estimate”.

The author is aware that answers to this question can only be understood as a heuristic and may even vary between respondents within the same buying center. Especially so since influencers not belonging to the group of people formally assigned with the purchase recommendation may not be known to all buying center members or, if they are, there may be different opinions about their buying center membership. Yet this heuristic may serve as a feasible narrative towards an understanding of buying center sizes and the proportion of members covered by the survey. Additionally, the vagueness due to the above problems of

determining buying center membership may even out comparing responses between buying centers of the different companies in the sample.

Perceptive pretesting of stimulus brands

Keller points out that “Building customer-based brand equity requires the creation of a familiar brand that has favorable, strong, and unique brand associations”.³⁴⁰ Kotler and Bliemel add, that the nature of the purchasing task depends on how different the various brands subject to a decision are.³⁴¹ Prior to the investigation of the impact of brand images on the purchasing behavior in the chosen industry, it was deemed useful to obtain an understanding of how existing brand images are generally perceived by B2B professionals in the railway industry. Of particular interest was the subjective psychological perception of each brand relative to the other brands. Gaining this insight supports the research since B2B customers only have a limited number of feasible brands to choose from when making a purchasing decision, the so called relevance set.³⁴² The nature of the subsequent purchasing behavior depends strongly on whether or not purchasers perceive the alternatives they can choose from as very similar or very different. If alternatives are perceived to be very different from each other and the level of involvement is high, Assael categorizes the corresponding purchasing behavior as complex.³⁴³ Complex behavior is characterized by a higher degree of risk which is associated with the purchase, which, in turn, impacts the behavior of the involved buying center members. Methodologically, there are two ways of determining the positions of objects (i.e. brands) in a person’s perceptive space, factor analysis and multidimensional scaling (MDS). While factor analysis requires prior definition of relevant attributes which are then to be assessed per brand by the survey participants. When applying MDS, on the other hand, participants merely have to assess perceived similarities or dissimilarities between brands. For this research, this constitutes an advantage of MDS over factor analysis since participants are not biased by predefined attributes and their verbalization.³⁴⁴ Instead it utilizes judgment of similarity between the stimuli³⁴⁵. A number of 13 stimulus brands of rail drive system, which had been identified beforehand, was chosen. A

³⁴⁰ Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22.

³⁴¹ Cf. Kotler, P., Bliemel, F., & Kotler-Bliemel. (2001). *Marketing-Management: Analyse, Planung und Verwirklichung* (10., überarb. und aktualisierte Aufl.). Stuttgart: Schäffer-Poeschel.

³⁴² Cf. Assael, H. (1992). *Consumer behavior and marketing action* (4. ed.). Boston: PWS-KENT Publ.

³⁴³ Kotler, P., Bliemel, F., & Kotler-Bliemel. (2001). *Marketing-Management: Analyse, Planung und Verwirklichung* (10., überarb. und aktualisierte Aufl.). Stuttgart: Schäffer-Poeschel.

³⁴⁴ Backhaus, K., Erichson, B., & Weiber, R. (2013). *Fortgeschrittene multivariate Analysemethoden: Eine anwendungsorientierte Einführung ; [mit Extras im Web]* (2., überarb. und erw. Aufl.). Springer-Lehrbuch. Berlin: Springer Gabler, pp. 342-343.

³⁴⁵ Torgerson, W. S. (1952). Multidimensional Scaling: I. Theory and Method. *Psychometrika*, 7(4), 401–419, p. 402.

sufficiently large sub-sample of the sample drawn for the main survey served as a focus for the MDS survey. The main aim of this exploratory pre-survey, in which eventually 40 industry professionals participated, was to gain an insight into whether the chosen stimulus brands show any perceptible differences in the participant's minds as different perceptions hint at different brand images held by respondents. For the survey each brand was to be rated for similarity or dissimilarity with 12 other brands of the category. The instruction given was the following, exemplified to one set of the stimulus brands used (table 3.8.):

Table 3.8. Instruction of MDS pre-survey

Please rate the following brands for their likeness to each other:									
Caterpillar / John Deere	Absolutely alike 1	2	3	4	5	6	7	8	Absolutely unlike 9

Source: Author's own construction

The measuring instrument for the empirical survey of the impact of brand images on the purchasing behavior of B2B market participants

Based on the above considerations, a measuring instrument was created for the empirical testing of the influence of brand images on the purchasing behavior of B2B market participants. A schematic overview of the content areas as well as the full questionnaire can be found in Appendix III. The survey instrument was prepared in English and German. As explained in the operationalization section, all scales and questions were selected from a pool of scales from English authors. Since based on expert feedback³⁴⁶ the existing scales had to be modified and/or adapted, the resulting scales were independently reviewed by two native speakers of English, one Canadian who has lived in the United States of America for many years and one Englishman, who in addition to their language prowess have experience in the railway industry. The latter was helpful to evaluate whether not only the language aspects but also the tonality of the questions and instructions fitted the industry context. In a next step, the English version of the survey instrument was translated into German. Then the German version was back-translated to English, in order to verify the essential similarity of both versions. The back-translation was completed by a professional translation agency specializing in business translations. It was then compared to the original English

³⁴⁶ Refer to Appendix III: "List of experts".

version in order to identify which/if any corrections were needed and appropriate in the German version. Upon identifying various needs for change, a meeting was then held with the original translators and the author to discuss the changes, and to ensure that the German version captured the contextuality and richness of the original questions.

Post-survey evaluation

In order to complete the triangulation of the research, in addition to the literature review as well as the quantitative pre- and main surveys, the author decided to add a qualitative focus group research as a third method to his work. Nowadays, focus group research is the probably most common qualitative research method³⁴⁷ and often applied as a supplement to provide rich anecdotal illustration for generalizations made on a statistical basis³⁴⁸ so as to ultimately better understand results of quantitative research.³⁴⁹ Koschel and Kuehn note that so-called qualitative *Whydives* involving experts in focus group discussions are helpful in Business-to-Business marketing as a post-survey method of quantitative research results, and more effective than interviews involving single respondents.³⁵⁰

Focus group membership and format

Focus group research involves experts who can, through their experience and prowess in a certain field, add to the understanding of research phenomena. Focus group membership should be based on attributes of the research population to assure that participants have sound opinions with regard to the subject of focus group study.³⁵¹ For this reason, and to maintain consistency in the research process, the 12 experts involved in the content validation of the image dimensions and measurement items were included in the focus group research.

In order to maintain anonymity of the experts as well as keep their logistic efforts at a minimum, the author decided to deliver the focus group setting in an online format using a conferencing system with picture, sound and written recording options. According to Garson, online focus group research avoids problems of conventional focus grouping which use videotaping of the session as it is often perceived as

³⁴⁷ Cf. Kuss, A., Eisend, M. (2010). *Marktforschung: Grundlagen der Datenerhebung und Datenanalyse* (3rd ed.). Wiesbaden: Gabler, p. 129.

³⁴⁸ Garson, G. D. (2014). *Focus Group Research*. Asheboro: Statistical Publishing Associates, p. 12

³⁴⁹ Cf. Burns, A., Bush, R. (2006). *Marketing Research* (5th ed.). NJ: Upper Saddle River, pp. 214 ff.

³⁵⁰ Cf. Koschel, K., Kuehn, T. (2013). Don't kill the focus groups: Gruppendiskussionen als Teil von Mixed-Methods-Ansätzen in der Marketingforschung. *transfer Werbeforschung & Praxis* (59) 2, 72-77, p.76.

³⁵¹ Garson, G. D. (2014). *Focus Group Research*. Asheboro: Statistical Publishing Associates, p. 23

too obtrusive by participants and may hence hamper valuable inputs or participation altogether. In addition, typed inputs given in the online session are already transcribed.³⁵² As the recommended group size is said to be between 6 and 10,³⁵³ the 12 experts were divided into two groups.

Focus group script

The focus group script describes the nature and order of questions around which the focus group discussion revolves. After some “ice-breaking” at the opening of the session, most focus group scripts usually include only few key questions which are discussed for approximately 15 minutes each in order to gain enough depth and perspective, while also avoiding participant fatigue. The questions have an open-ended and non-directive format, as opposed to structured, yes-no propositions, so as to stimulate rich and detailed input from focus group participants.³⁵⁴

The aim of the questions used in this focus group research was, on the basis of existing empirical survey results, to collect expert opinions and managerial interpretations in order to obtain more contextuality and richness. Firstly, the questions focused on how images are determined (Question 1) and what the experts believed to be main rational and emotional image dimensions (Question 2) in order to obtain a qualitative elaboration on brand image as the research’s main independent variable. Questions 3 to 5 included purchasing decisions being a major component of purchasing behavior as the research’s dependent variable. After the survey had revealed emotional dimensions to be of importance for the formation of brand attachment as a major intervening construct, situational aspects were prompted to continue the discussion to obtain a better understanding of the critical situations when emotional dimensions particularly come into effect (Question 3). Customer satisfaction is agreed to be an important concept in B2B purchasing with a particular focus on predicting re-buy behavior, which was also reflected by the empirical research. This proposition was considered in Question 4, but formulated in a “how” format in order to stimulate an open discussion leaving experts room for interpretation. Since the prominent role of brand attachment arose through the quantitative survey, a question for interpretation of this concept in a buying center context was included to round up the discussion (Question 5).

When the focus group questions were formulated, it was taken care to describe their content in a precise but also customary manner to avoid ambiguity and/or intimidation on the expert’s side. For instance instead of *brand image*, the wording “*how a brand is viewed / perceived*” was chosen, or as another

³⁵² Garson, G. D. (2014). *Focus Group Research*. Asheboro: Statistical Publishing Associates, p. 184

³⁵³ Cf. Burns, A., Bush, R. (2006). *Marketing Research* (5th ed.). NJ: Upper Saddle River, p. 216.

³⁵⁴ Garson, G. D. (2014). *Focus Group Research*. Asheboro: Statistical Publishing Associates, p. 85

example, instead of *dimensions*, the more common word “*aspects*” was used. After showing and explaining the research results in the online conferencing system, the following questions were posed by the author for the focus group session:

Brand image questions (independent variable)

- **Question 1: “In your opinion, what aspects determine how customers in your industry view and perceive certain brands?”**
- **Question 2: “What are the main rational, economic cues of how a brand is perceived / what are the main emotional cues?”**

Situational questions (intervening variables) in regard to purchasing behavior (dependent variable)

- **Question 3: “In which situations do you believe are emotional aspects of particular importance for making a purchasing decision?”**
- **Question 4: “How important is customer satisfaction in your experience when it comes to predicting future purchasing decisions in business practice?”**
- **Question 5: “In your experience, why and how, do you think, can emotional attachment to a brand play a superior role to more rational, economic considerations within the purchasing group when deciding or recommending on a specific purchase?”**

Reporting of the focus group research results

The end result of the focus group research is a written summary. Some summaries are qualitative, in other cases these reporting forms may as well be coded and evaluated in a more quantitative manner.³⁵⁵ For the purpose of the present research, the report is of a qualitative nature as the focus group is meant to augment and help interpret the quantitative results and gain a deeper understanding rather than the focus group being a stand-alone research method. Then, in a subsequent step to the discussion itself, the written transcript from the focus group session is to be exchanged, reviewed and critiqued by the author and the participants to assure that it reflects the common understanding of the discussion’s nature and the individual inputs. It is subsequently consolidated into a final summary.

³⁵⁵ Cf. Garson, G. D. (2014). *Focus Group Research*. Asheboro: Statistical Publishing Associates, p. 226

Chapter 3 summary

The third chapter was concerned with model development, conceptualizing and development of appropriate measures for the research as well as the pre- and post-preparation of the empirical survey.

- A causal model with three stages was constructed along the S-O-R paradigm. The stimulus level is related to a brand stimulus which is presented to the individual buying center members in the empirical survey in which the causal model is tested. Further, since the research will take place in a modified re-buy setting, respondents will indicate their perception based in experience made with the stimulus brands. The organism level represents an internal and non-observable processes which occur when subject retrieve their knowledge and associations with the respective brands. Three intervening variables being switching cost, brand attachment and customer satisfaction were included in the model in order to be able to compare the impact of each of these three variables. The response level as the model's third stage constitutes purchasing behavior.
- Prior to the empirical investigation, it was deemed useful to obtain an understanding of how existing brands are generally perceived by B2B professionals in the railway industry. Gaining this insight supports the research since B2B customers only have a limited number of feasible brands to choose from when making a purchasing decision. The nature of the subsequent purchasing behavior depends strongly on whether or not purchasers perceive the alternatives they can choose from as very similar or very different. The used methodology was multidimensional scaling.
- After the empirical survey a qualitative evaluation of the results is added to complete the triangulation and provide a deeper understanding und interpretation of the empirical survey results. The methodology of focus group research was selected to be conducted with the experts who previously assisted in the content validation of the image dimensions and measurement items. The focus groups are delivered an online format so as to assure participant anonymity and facilitate sincere input as well as to keep logistic and time-wise effort for the participants at acceptable levels.

4. EMPIRICAL RESULTS, CONCLUSIONS AND SUGGESTIONS DERIVED FROM THE RESEARCH FINDINGS

This last chapter begins with the presentation of the results of the exploratory pre-survey, followed explanation of the statistical analysis of the collected data of the main survey (4.1.), succeeded by the descriptive results about the underlying sample in 4.2.. The aim of the demographic analysis was to verify if the drawn sample represents the general population. In a next step, the location parameters of the results of the survey for all variables used in the causal model are described. Following a stringent procedure, the measurement model is tested (4.3.) for appropriateness to represent validly and reliably the variables of the causal model. In 4.4. the structural model and hence the hypotheses are tested. Finally, the topic of dissertation is answered so as to provide a basis for conclusions and recommendation.

Results of the MDS pre-survey

Analyzed with SPSS, the result of this exploratory MDS pre-survey provided a graphic depiction of the relative brand images in the respondent's perceptive space (figure 4.1.):

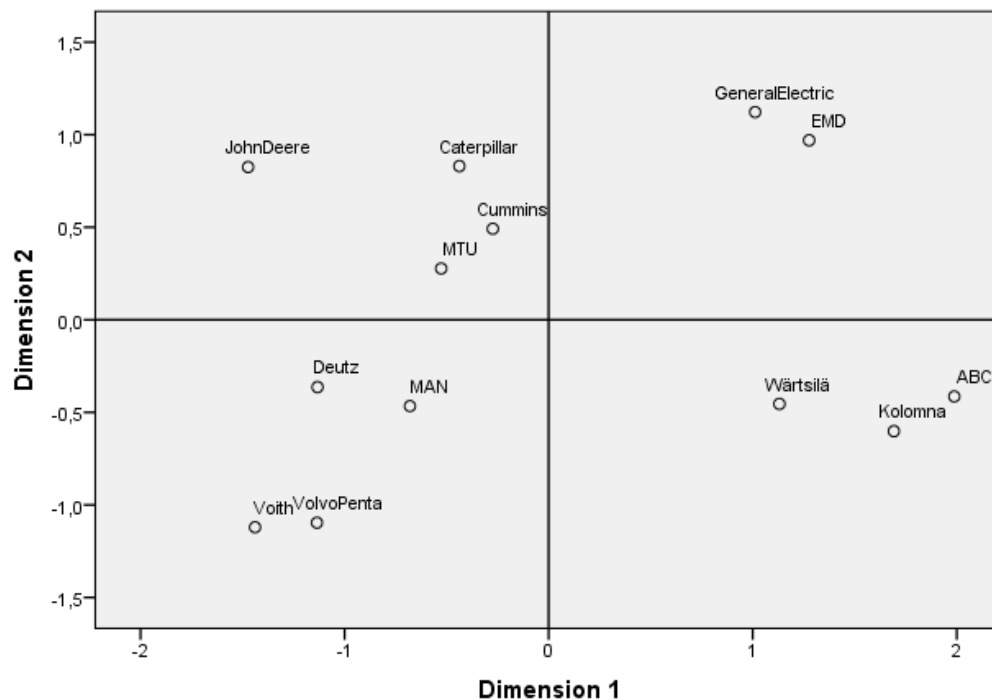


Figure 4.1. Configuration of stimulus brands in the perceptive space

Source: SPSS plot based on based on author's input of research results

Torgerson³⁵⁶ finds that in many stimulus domains the dimensions themselves or their number are not known. This is where MDS provides an advantage over factor analysis, especially so since the aim of this exploratory pre-survey was to identify if great differences exist in general which also allows conclusions about the nature of purchasing behavior in the railway industry. Without determination of the dimensions, it can be observed that the market leading brands in Europe (Caterpillar, Cummins and MTU) as well as North America (General Electric and Electromotive Diesel) were perceived as rather similar and therefore form a cluster. Another main difference seems to be product-related as brands closer to each other in the perceptive space utilize similar technology and have similar physical appearance and performance characteristics (Caterpillar, Cummins, MTU as one cluster, EMD and GE as another, ABC, Kolomna and Wärtsilä as a third cluster, Deutz, MAN and Voith and Volvo Penta in one, wider cluster and John Deere as a niche brand in this market slightly separated) despite belonging to the same category and competing in the same market. Generally, the wide spread over the perceptive space, indicates complex purchasing behavior, as the value of these capital products is high, there are a high number of brands to decide between, which additionally appear to be perceived as quite different from each other. Within the clusters in the perceptive space, with the exception of John Deere, each brand has a competitor brand which is perceived similar.

Evaluation the goodness of fit of the configuration, the result can be considered as acceptable which is expressed by the stress and squared correlation (RSQ) with values of 0,16 and 0,85 which are in the range of a *fair* fit.³⁵⁷ In other words, the stimulus brands show a consistent image among the participants of the pre-survey. Based on these empirical findings, the brands were accepted as stimuli for the main survey in which the postulated causal model was empirically tested.

4.1. Explanation of the statistical analysis of the empirical survey and descriptive results

The causal model with its eclectic relationships was analyzed using the technique of structural equation modeling (SEM). SEM with latent variables has become a popular research tool in the social and behavioral sciences³⁵⁸. After the monograph by Bagozzi³⁵⁹ on causal modeling published in 1980, the

³⁵⁶ Torgerson, W. S. (1952). Multidimensional Scaling: I. Theory and Method. *Psychometrika*, 7(4), 401–419, p. 401.

³⁵⁷ Kruskal, J. B. (1964). *Nonmetric multidimensional scaling*. *Bell telephone system technical publications: Vol. 4821*. New York, NY: Bell Telephone Laboratories, p. 3.

³⁵⁸ Baumgartner, H., & Homburg, C. (2009). Applications of structural equation modeling in marketing and consumer research: A review. *Quantitative marketing techniques and analyses*, 506–540

SEM technique was applied by an increasing number of marketing and consumer behavior researchers. There are two types of SEM, covariance-based (LISREL) and PLS-SEM.³⁶⁰ Depending on the research problem, the data subject to analysis and the understanding of the latent variables, researchers have to make a deliberate choice on which type of SEM to utilize.³⁶¹ The author chose to employ structural equation modelling using PLS, as it has particular advantages over LISREL in conditions where models have a high number of measurement variables and a high degree of complexity and, as it typically is the case in B2B contexts³⁶², samples are rather small. Secondly, PLS is considered a conservative estimator compared to LISREL and is suitable when analyzing novel research issues.³⁶³ This is a particularly important decision criterion as with new constructs and measures, PLS rather under- than overestimates the relationships between the indicators which helps prevent invalid conclusions.³⁶⁴ The statistical analysis starts with the evaluation of the descriptive data, followed by the evaluation of the measurement model and the structural model.

Descriptive results of the empirical study

Following Creswell's recommendation, the survey instrument was pilot-tested to make sure that questions, scales and general format are clear and content valid.³⁶⁵ The experts who also helped review existing scales and gave their input for alternative image attributes received the online questionnaire for review. The online platform which was used for the survey offers the possibility for reviewers to make comments or mark unclear items. Upon receipt of all comments, the author conducted individual interviews on the suggested changes and then incorporated them in the questionnaire. After three rounds, neither the experts nor the author found any more need for changes. After pilot-testing, the final online survey was active between 12th June 2015 and 24th August 2015. An online survey was deemed most

³⁵⁹ Bagozzi, R. P. (1980). *Causal models in marketing. Theories in marketing series*. New York, NY, Chichester: Wiley.

³⁶⁰ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 4.

³⁶¹ Weiber, R., & Mühlhaus, D. (2010). *Strukturgleichungsmodellierung: Eine anwendungsorientierte Einführung in die Kausalanalyse mit Hilfe von AMOS, SmartPLS und SPSS ; [Extras im Web]*. Springer-Lehrbuch. Heidelberg: Springer, pp. 66-69.

³⁶² Cf. Caspar, M. (2002). Markenrelevanz in der Unternehmensführung: Messung, Erklärung und empirische Befunde für B2B-Märkte. Arbeitspapier / McKinsey&Company: Nr. 4. Münster: Marketing Centrum. p. 21

³⁶³ Chin & Newsted in Hoyle, R. H. (1999). *Statistical strategies for small sample research*. Thousand Oaks, Calif.: Sage Publications.

³⁶⁴ Reinartz, W. J., Haenlein, M., & Henseler, J. (2009). *An empirical comparison of the efficacy of covariance-based and variance-based SEM. Faculty & Research / INSEAD MKT: Vol. 2009,44*. Fontainebleau: INSEAD.

³⁶⁵ Cf. Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Los Angeles: Sage, p. 150.

effective since buying center members are, as the demographic data confirmed later on, educated professionals who are used to processing electronic information. Another reason was that an anonymous survey without interviewer bias was deemed effective in gaining honest responses to sensitive questions.³⁶⁶ Further, respondents were able to complete the questionnaire in their own time, going away from it when being interrupted and returning to it for completion at their convenience.³⁶⁷

A number of 173 valid responses from buying center members within the railway industry of 41 companies from 21 countries was received. Participant countries were spread over the following different continents: Africa (South Africa, Namibia) Asia (Singapore, Japan), North America (USA), Oceania (Australia and New Zealand) as well as Europe (Austria, Croatia, Czech Republic, Denmark, Finland, Germany, France, Latvia, Poland, Spain, Switzerland, Romania, United Kingdom). As a heuristic toward determining the share of buying center members relative to the wholeness of their buying center it was found that on average 4 persons (mean value 4,29) per company responded to the survey. Average buying center size as per each respondents individual assessment was 19 persons (mean value 18,53), which is a high number but typical for complex and risky purchasing assignments. With all the vagueness of the approach in mind, it can be said that the determination of buying center members through the sales force of a leading supplier as well as they readiness of respondents to participate are quite satisfactory.

Minimum sample size

The numerical size of the sample of 173 equals a response rate of 16,9% which represents a very acceptable value.³⁶⁸ Since the present research is based on a non-probability sample, other approaches of determining the minimum sample size have to be considered. As an initial guideline the author considered that, when using PLS-SEM, sample sizes should be ten times the largest number of structural paths directed at a particular construct in the structural model.³⁶⁹ The largest number of structural paths is 5, directed at the construct of brand attachment. Ten times that would equal a minimum sample size of 50. A more differentiated guideline was coined by Cohen who proposed a table indicating minimum sample sizes along the different levels of R² values of 0,10, 0,25, 0,50 and 0,75 in any of the endogenous constructs in the model for significance levels of 1%, 5% and 10%, assuming a level of statistical power

³⁶⁶ Cf. Brace, I. (2013). *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research* (3rd ed.). *Market Research in Practice*. London: Kogan Page, p. 26.

³⁶⁷ Brace, I. (2013). *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research* (3rd ed.). *Market Research in Practice*. London: Kogan Page, p. 25.

³⁶⁸ Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159.

³⁶⁹ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 23.

of 80%. Applying this guideline, the minimum sample size at 5% significance to detect R² values of 25%, given 5 structural paths, would be 70. At 1% significance it would be 91. The most stringent requirement in Cohen’s sample size table, assuming an R² value of 0,10 at 1% significance, would result in a minimum sample size of 205.³⁷⁰ Based on these considerations, a sample size of 173 at a response rate of 16,9% can be considered acceptable assuming a 5% significance level.

Screening questions

Descriptive evaluation was conducted on a construct level, and not on an item level as this approach was deemed to better capture the full scope of the complex variables in the causal model. Evaluation of the first screening question (table 4.1.) resulted in a mean value of 4,72, meaning that survey participants on average stated to be “frequently involved” in the purchasing of rail drive systems. The data are highly consistent as the median at 5,00 is almost congruent with the mean value. Most respondents reported to be “always involved” in the purchase (modal value of 7,00).

Table 4.1. Location parameters of purchase involvement

	Mean	Median	Modal value	SD	Sample
Purchase involvement	4,72	5,00	7,00	3,08	n = 173
7-point polarity profile: 1 = Never involved, 2= Almost never involved, 3 = seldom involved 4 = Sometimes involved, 5 = Frequently involved, 6 = Almost always involved, 7 = Always involved					

Source: Author’s own construction based on research results

These results show that the prior identification of buying center members as relevant individuals involved in the purchasing process were validly sampled based in their replies in the survey.

As a further screening question on self-perceived influence, the mean, median and modal values were evaluated for the five items of the self-perceived influence scale. The results show that all three statistical tests are nearly fully congruent (table 4.2.) suggesting a “somewhat large” influence of the survey participants on the purchase decision which, again, hints at valid sampling as respondents reported to be influential for the purchase decision for rail drive systems in their respective organizations.

³⁷⁰ Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159, p. 158.

Table 4.2. Location parameters of self-perceived influence on the purchase decision

	Mean	Median	Modal value	SD	Sample
Self-perceived influence	4,99	5,00	5,00	1,67	n = 173
7-point Likert scale: 1 = Very little, 2= Little, 3 = Somewhat little, 4 = Neither little nor large, 5 = Somewhat large, 6 = Large, 7 = Very large					

Source: Author's own construction based on research results

Analyzing the brand image-related constructs, the mean values of the five variable range from 4,41 to 5,35 which generally hints at a somewhat high or strong agreement or fulfillment, respectively of the surveyed criteria related to the predominantly purchased brand. The location parameters show a high level of consistency at standard deviations ranging from 1,20 to 1,38 (table 4.3.).

Table 4.3. Location parameters of brand image-related constructs

	Mean	Median	Modal value	SD	Sample
Brand performance	4,90	5,00	6,00	1,38	n = 173
Brand credibility	5,31	6,00	6,00	1,21	n = 173
Brand trust	5,05	5,00	5,00	1,26	n = 173
Brand feelings	4,41	4,00	4,00	1,43	n = 173
Company reputation	5,35	6,00	6,00	1,20	n = 173
7-point Likert scales were used for all constructs, refer to Appendix II.					

Source: Author's own construction based on research results

Similarly, the location parameters of the intervening variables range from 4,50 to 4,81 on their mean values, again with consistent median values as listed in table 4.4. Most respondents (modal values) indicated switching brands to be difficult (modal value of 6,00), they agreed to be satisfied with the predominantly purchased brand (modal value of 5,00 on a scale of 1 to 7) and moderately attached (model

value of 4,00). The respondent’s evaluation for all constructs are very similar comparing mean and median values, if slightly higher on customer satisfaction.

Table 4.4. Location parameters of the intervening variables

	Mean	Median	Modal value	SD	Sample
Switching costs	4,73	5,00	6,00	1,55	n = 173
Brand attachment	4,50	4,00	4,00	1,49	n = 173
Customer satisfaction	4,81	5,00	5,00	1,29	n = 173
7-point Likert scales were used for all constructs, refer Appendix II..					

Source: Author’s own construction based on research results

The mean values of the purchasing behavior construct was 4,46, with both median and modal value of 4,00. Table 4.5. illustrates the location parameters and standard deviation of the purchasing behavior construct.

Table 4.5. Location parameters of purchasing behavior

	Mean	Median	Modal value	SD	Sample
Purchasing behavior	4,46	4,00	4,00	1,41	n = 173
A 7-point Likert scale was used, refer to Appendix II.					

Source: Author’s own construction based on research results

As illustrated in table 4.6., the location parameters of the two contextual variables revolved around 5 with the mean values of 4,93 and 5,11, respectively for purchase risk and purchase complexity. In combination with median and modal values of 5,00, respondents perceive a somewhat high degree of risk and complexity in the context of the purchase of rail drive systems.

Table 4.6. Location parameters of the contextual variables

	Mean	Median	Modal value	SD	Sample
Purchase risk	4,93	5,00	5,00	1,46	n = 173
Purchase complexity	5,11	5,00	5,00	1,50	n = 173
A 7-point Likert scale was used for the purchase risk construct, refer to A 10-point polarity profile was used for the purchase complexity construct, refer to Appendix II.					

Source: Author's own construction based on research results

Generally, the values of the location parameters on all constructs show a high degree of consistency. However, what also became apparent through the analysis is that standard deviations are generally rather high, driven by the fact that on almost all scales both extreme points were selected by some respondents. This points out that despite this homogeneity of the location parameters, there is a wide range of perceptions among the surveyed buying center member's individual experience in various projects and purchasing situations.

Explanation of descriptive data used in the causal model

While all questions regarding brand perception and purchasing behavior in the survey were mandatory, the demographic and company-related questions were voluntary, i.e. participants had the option not to answer the questions about their personal data as well as those related to their company. While this constitutes a certain loss of information on the one hand, it supposedly increased the number of completed interviews on the other as individual perceptions and feelings and information about how purchasing is conducted within the organization is indeed very intimate information. Furthermore, with particular consideration of participants from the Anglo-American world, personal questions as well as those related to company-internal information e.g. number of persons involved in the purchasing process, were advised to be optional by the North American reviewer of the questionnaire.

Hierarchical distribution of the research sample

The high educational level corresponds with the hierarchical distribution. Most respondents (27%) hierarchically belong to middle management, presumably because of the high importance of the purchase of rail drive systems to the purchasing organization as well as the high levels of risk and complexity associated with the purchase indicated by the analysis of the contextual variables. 14% belong to upper management with 17% of professionals and nearly the same number of lower management representatives, such as team leaders, who are preparing and supporting the decision making and executing the decision. This distribution corresponds with contingency theory which says that in light of the increasing complexity of purchase transactions and customer – supplier relationships, decision making has to be effected with the involvement of lower hierarchical levels. Figure 4.2. displays the hierarchical distribution of the sample.

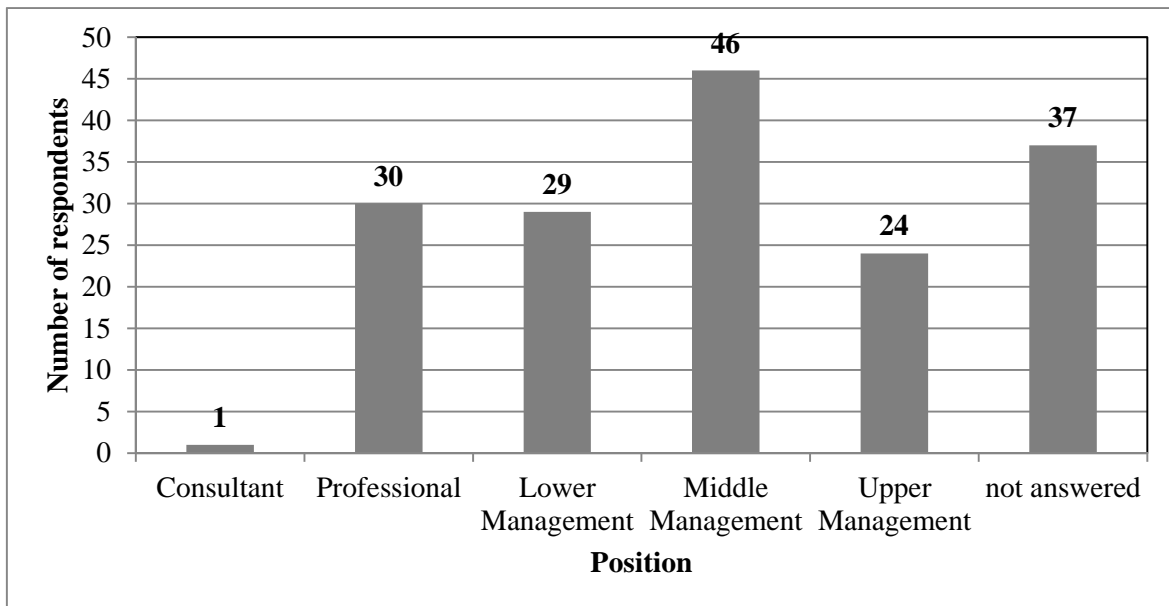


Figure 4.2. Hierarchical distribution of survey respondents

Source: Author’s own construction

Functional distribution of the research sample

The data of the functional distribution are in line with other studies in the context of complex B2B settings. The numerical lead of purchasing as a corporate function with the formal authority to conduct

the purchases is hardly surprising. The results also show that project management and engineering is strongly represented in the purchasing decision making. The former is due to the fact that capital good purchases is often organized in the form of projects, the latter reflects the high technical complexity which requires engineering experts to evaluate the different offers. Buying center theory with purchasing as but one relevant organizational function seems to be clearly reflected in these results displayed in figure 4.3.

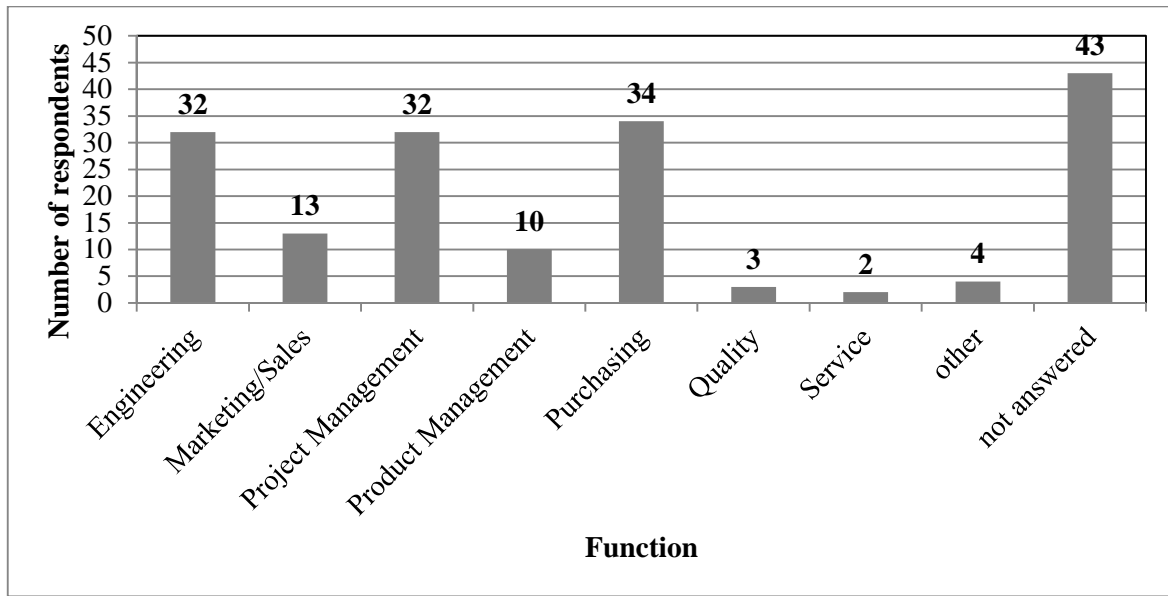


Figure 4.3. Functional distribution of survey respondents

Source: Author's own construction

Distribution of industry branches included in the research sample

In terms of industries, the two main purchasers of rail drive systems are OEMs and operators which make up 69% of the respondents. The remaining 31% are spread over distributors, remanufacturers, leasing firms, service providers and suppliers are clearly underrepresented in the industry which is reflected in the results (figure 4.4.).

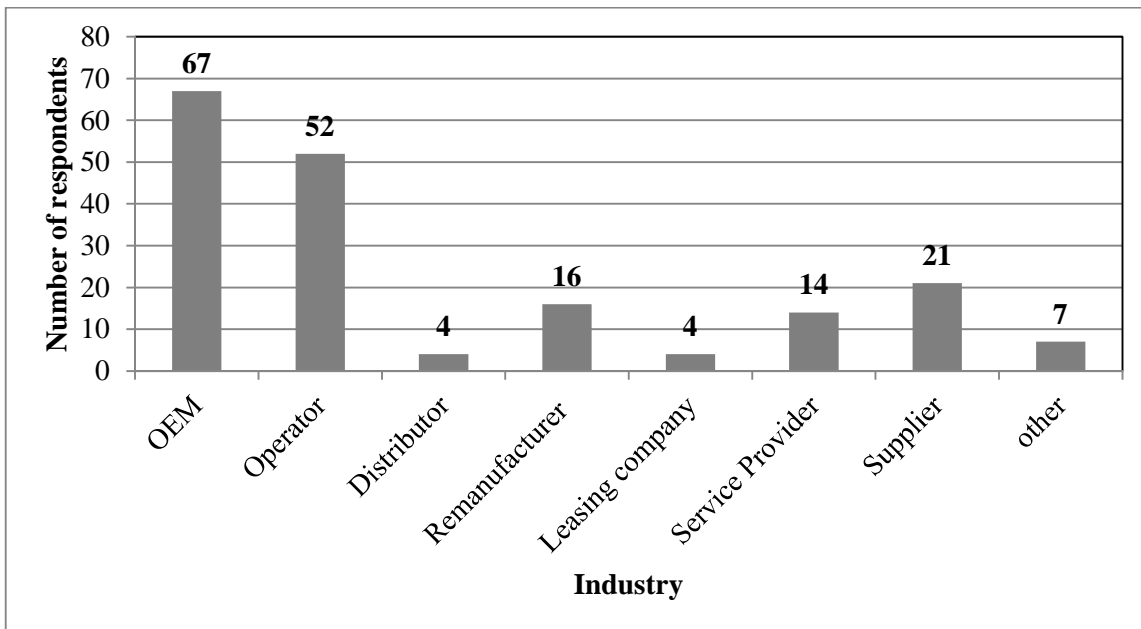


Figure 4.4. Participant industries of survey respondents

Source: Author’s own construction

Overall, the descriptive results of the survey appear to be representative of the railway industry as a technical, complex branch of the B2B sector which is largely dominated by big globally operating organizations and, demographically speaking, men. Finally, the evaluation of the question from how many different brands respondents’ company purchased in the last 5 years, the most frequently given answer was 3 (modal value, mean = 3,38, median = 3). In combination with the wide perceptible spread of brands revealed through the MDS pre-survey, the importance of favorable brand images can be seen since customer’s appear to purchase from different brands and presumably can to a certain extent switch brands if the experience and resulting image with a brand should be unfavorable.

4.2. Evaluation of the research’s causal model

This section begins with the evaluation of the measurement model. Creswell notes that when instruments are modified or combined, as it was the case for this research, the original validity and reliability may not hold for the new instrument. He emphasizes to reestablish validity and reliability during data analysis.³⁷¹

³⁷¹ Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Los Angeles: Sage, p. 150.

In line with this advice, as a first step internal consistency reliability is evaluated for each measurement variable in the causal model. An established criterion for this purpose is Cronbach's alpha. This measure generally increases as the inter-correlations among the items used in a scale increase and is therefore regarded as an internal consistency criterion of reliability of scores.³⁷² Recommended threshold values for Cronbach's Alpha are 0,70 or higher. In this context analyzing individual indicator reliability is of importance as items with low factor loadings deteriorate the overall scale's internal consistency. In line with other authors, Hair, Ringle and Sarstedt recommend removal of indicators with very low outer loadings of 0,40 and lower from the model.³⁷³ In contrast, loadings of 0,708, or 0,70 as a convenient approximation, and above are considered adequate.³⁷⁴ As researchers in social science, and particularly when developing new scales, often observe outer loadings lower than 0,70, Ringle et al. recommend removal of indicators between 0,40 and 0,70 from reflective constructs only when it leads to an increase of composite reliability and average variance extracted (AVE) values.³⁷⁵ The author removed the following items to increase the quality of the final model (table 4.7.).

Table 4.7. Items removed from the final model

Code	Construct: Item	Criterion of removal
A30_07	Brand performance: How easily installed is this brand in your company's product (e.g. locomotive, railcar or system)?	Improvement of quality criteria
A025_06	Brand trust: I feel that the representatives of this brand do not show me enough consideration.	Factor loading < 0,40
A014_01	Complexity: Standardized product / Differentiated product	Factor loading < 0,40
A014_02	Complexity: Technically simple / Technically complex	Improvement of quality criteria
A014_04	Complexity: No after sales service / Technical after sales service	Improvement of quality
A014_06	Complexity: Small order / Larger order	Improvement of quality criteria
A014_07	Complexity: Short-term commitment / Long-term commitment	Improvement of quality criteria
A016_06	Purchasing behavior: If this brand were not available, it would make little difference to me if my company had to utilize another brand.	Factor loading < 0,40

Source: Author's own construction based on research results

³⁷² Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334.

³⁷³ Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139–152.

³⁷⁴ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 104.

³⁷⁵ Ibid.

After removing items from the measurement model, the factor loadings of the final measurement model on all brand image-related constructs are analyzed.³⁷⁶ It was found that the values on brand performance as the rational image dimension range from 0,620 to 0,789. The strongest indicators of brand performance were found to be: the extent to which a brand fully satisfies customer's product needs (A30_08; factor loading: 0,789), the brand's sales and service network (A30_06; factor loading: 0,777) and efficiency of the brand's after-sales service in terms of speed, responsiveness and problem-solving capability (A30_04; factor loading: 0,772). The factor loadings of the four emotional image dimensions were more homogenous. Values on credibility range from 0,853 to 0,892 with the strongest indicator of brand credibility being the extent to which a brand is respected (A24_03). Factor loadings on brand trust range from 0,896 to 0,933 with the strongest indicator being item A25_02: "The representatives of this brand are truly sincere in their promises" with a loading of 0,933. Also a high degree of homogeneity was detected on brand feelings with values from 0,838 to 0,877. Interestingly, the feeling of fun turns out to be the strongest indicator of brand feelings (A28_02). In the final analysis of internal consistency, all latent variables in the research model exceed the threshold for Cronbach's Alpha of 0,70. The lowest value is observed in purchase complexity (0,74), all other variables clearly exceed 0,80. The highest Cronbach's Alpha value was observed on the variable switching cost (0,959). The results hence confirm a high degree of internal consistency. For the assessment of construct reliability PLS research routinely additionally focuses on composite reliability as an estimate of a construct's internal consistency. Unlike Cronbach's alpha, composite reliability does not assume that all indicators are equally reliable, making it more suitable for PLS-based research as it prioritizes indicators according to their reliability during model estimation.³⁷⁷ The recommended threshold value here is 0,70³⁷⁸ which was exceeded on all variables as values range from 0,819 (purchase complexity) to 0,973 (switching costs).

A common measure to evaluate convergent validity on the construct level is the Average Variance Extracted (AVE) as the grand mean of the squared loadings of the indicators of a particular construct. A common threshold for AVE is 0,50, indicating that a construct on average explains half of the variance of its indicators.³⁷⁹ The research results show one violation of the AVE threshold on purchase complexity with a value of 0,478. The author decided to retain this variable in the model as on the one hand the

³⁷⁶ All factor loadings can be found in Appendix II.

³⁷⁷ Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139–152, p. 145.

³⁷⁸ Nunnally, J. C., & Bernstein, I. H. (2008). *Psychometric theory* (3. ed., [Nachdr.]). *McGraw-Hill series in psychology*. New York, NY: McGraw-Hill.

³⁷⁹ *Ibid*, p. 103

construct falls only slightly below 0,50 and on the other hand it shows a satisfactory composite reliability of 0,819. The coherent evaluation of AVE and composite reliability is also advocated by Fornell and Larcker.³⁸⁰ These authors coined an established criterion for discriminant validity, which describes the extent to which a construct is truly distinct from other constructs in the same model. The Fornell / Larcker criterion compares the square root of the model's AVE values with the latent variable correlations whereby the AVE should be greater than its correlation with any other construct as a confirmation that all constructs in the model are distinct from each other.³⁸¹ Table 4.8. summarizes the research's values on all quality criteria explained before.

Table 4.8. Quality criteria of the measurement model

Quality measure	Cronbach's Alpha	AVE	Composite reliability	Discriminant validity
Threshold value	0,70 Hair et al. (2006) ³⁸²	0,50 Hair et al. (2006) ³⁸³	0,70 Nunnally & Bernstein (2008) ³⁸⁴	Fornell-Larcker Criterion (1981) ³⁸⁵
Variable				
Brand Attachment	0,849	0,771	0,909	
Brand Credibility	0,849	0,768	0,908	
Brand Feelings	0,928	0,735	0,943	
Brand Performance	0,898	0,515	0,914	Square-root of AVE > correlations of the latent variables
Customer Satisfaction	0,886	0,898	0,946	
Brand Trust	0,905	0,841	0,941	
Company Reputation	0,908	0,686	0,929	
Purchase Complexity	0,740	0,478	0,819	
Purchasing Behavior	0,882	0,679	0,914	
Purchase Risk	0,848	0,691	0,899	
Switching Cost	0,959	0,924	0,973	

Source: Author's own construction based on research results

³⁸⁰ Cf. Ahmad, M. & Roni, M. (2014). *PLS analysis – Guidelines to evaluate measures*.

³⁸¹ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 105.

³⁸² Hair, J. F. (2006). *Multivariate data analysis* (6. ed., internat. ed.). *Pearson international edition*. Upper Saddle River, NJ: Pearson/Prentice Hall.

³⁸³ Ibid. Hair, J. F. (2006). *Multivariate data analysis* (6. ed., internat. ed.). *Pearson international edition*. Upper Saddle River, NJ: Pearson/Prentice Hall.

³⁸⁴ Nunnally, J. C., & Bernstein, I. H. (2008). *Psychometric theory* (3. ed., [Nachdr.]). *McGraw-Hill series in psychology*. New York, NY: McGraw-Hill.

³⁸⁵ Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, 18(3), 382–388.

Evaluation of the research's structural model

After the analysis of the measurement model found sufficient quality, this part is dedicated to the evaluation of the research's structural model. The author follows a stringent process as proposed by Hair³⁸⁶ for the assessment. The structural model was assessed for collinearity issues. Then, very importantly, the statistical significance of the structural model relationships between the variables was assessed which includes the testing of the hypotheses. Subsequently the explanatory power of the latent variables was analyzed assessing R^2 values. Finally, predictive relevance and effect sizes were assessed.

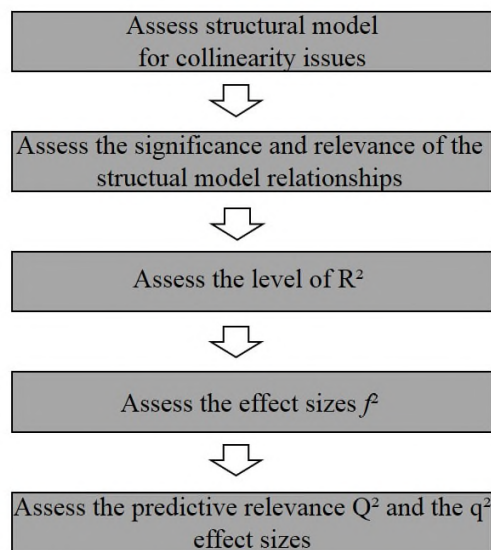


Figure 4.5. Structural model assessment procedure

Source: Author's own construction based on Hair, 2014, p. 168.

In the assessment of collinearity, which arises when two constructs are highly correlated³⁸⁷, the Variance Inflation Factors (VIF) were analyzed for each construct. In accordance with Hair³⁸⁸ the applied not-to-exceed threshold VIF value was 5,00. Each set of predictor constructs was separately examined for each subpart of the structural model. With the highest VIF of 4,511 (Company reputation -> Brand attachment) and logically all other values below, this analysis found no critical level of collinearity.

³⁸⁶ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ, p. 168.

³⁸⁷ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 201.

³⁸⁸ Hair, J. F. (2006). *Multivariate data analysis* (6. ed., internat. ed.). *Pearson international edition*. Upper Saddle River, NJ: Pearson/Prentice Hall.

4.3. Assessment of the structural relationships: Hypotheses testing of the impact of brand images on the purchasing behavior of B2B market participants

Subsequent to the assessment of the measurement model's quality criteria, this part is dedicated to hypotheses testing. The criteria applied for acceptance or rejection of a hypothesis are:

1. For each hypothesized relationship there must be a meaningful path coefficient between variables of $> 0,1$.³⁸⁹
2. T-values of $\geq 1,96$ and p-values of $\leq 0,05$ as a threshold for each hypothesized relationship, indicating statistically significant results with a low probability to have occurred as a result of statistical coincidence (5% significance level).³⁹⁰
3. Where several relationships contribute to one of the five overarching sub-hypotheses, there must be a total effect of $> 0,5$ through addition of individual path coefficients, indicating a sufficiently strong overall effect.³⁹¹

Testing of the base hypothesis: The rational brand image dimension impacts the purchasing behavior of B2B market participants through the intervening effects of both emotional image dimensions and brand attachment.

The base hypothesis is accepted as brand performance is significantly positively related to all emotional brand image dimensions, however, not directly to brand attachment. The two emotional image dimensions brand feelings and brand trust are, in turn, positively related to brand attachment at ($\beta = .565$, $t = 8,736$ and $.243$, $t = 2,249$) respectively and a high level of statistical significance ($p = 0,000$ for brand feelings, and $0,025$ for brand trust). Likewise there is a strong ($\beta = .462$, $t = 6,362$) and significant ($p = 0,000$) relationship between brand attachment and purchasing behavior. This constitutes empirical evidence for the hypothesized relationship between brand images and purchasing behavior, being intervened by brand attachment.

Testing of Sub-Hypothesis 1: The rational image dimension positively impacts the emotional image dimensions.

³⁸⁹ Lohmöller, J.-B. (1989). *Latent variable path modeling with partial least squares*. Freie Univ., Diss--Berlin. Heidelberg: Physica-Verl, p. 60.

³⁹⁰ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 171.

³⁹¹ Bühl, A. (2012). *SPSS 20: Einführung in die moderne Datenanalyse* (13., aktualisierte Aufl.). *Always learning*. München: Pearson.

Based on the above findings, **sub-hypothesis 1 is accepted** as well, as brand credibility, brand trust, brand feelings and company reputation are significantly positively influenced by brand performance (table 4.9.).

Table 4.9. Testing of sub-hypothesis 1

1 st stage of the causal model	Sub-Hypothesis 1	Path coefficient (β), t-value, p-value	Accepted (✓) Rejected (✗)
Sh1*	The rational image dimension positively impacts the emotional image dimensions.	n.a.	✓
SH1a	Brand performance is positively related to brand credibility.	$\beta = .663$ $t = 10,968$ $p = 0,000$	✓
SH1b	Brand performance is positively related to brand trust.	$\beta = .253$ $t = 3,480$ $p = 0,001$	✓
SH1c	Brand performance is positively related to brand feelings.	$\beta = .232$ $t = 3,420$ $p = 0,001$	✓
SH1d	Brand performance is positively related to company reputation.	$\beta = .752$ $t = 16,972$ $p = 0,000$	✓
SH1e	Brand performance is positively related to customer satisfaction.	$\beta = .640$ $t = 10,634$ $p = 0,000$	✓
SH1f	Brand performance is positively related to switching costs.	$\beta = .263$ $t = 3,449$ $p = 0,001$	✓
SH1g	Brand credibility is positively related to brand trust.	$\beta = .600$ $t = 9,982$ $p = 0,000$	✓
SH1h	Brand trust is positively related to brand feelings.	$\beta = .560$ $t = 8,625$ $p = 0,000$	✓
SH1i	Brand performance is not related to brand attachment.	$\beta = -.129$ $t = 1,844$ $p = 0,066$	✓
Thresholds for hypothesis acceptance: $\beta > 0,10$, t-value $\geq 1,96$, p-value of $\leq 0,05$, * total effect $> 0,50$			

Source: Author's own construction based on research results

Testing of Sub-Hypothesis 2: The emotional image dimensions positively impact brand attachment. As described above, two of four image dimensions turned out to be positively related to brand attachment, brand feelings ($\beta = .565$) and brand trust ($\beta = .243$). Addition of the two path coefficients results in a total causal effect of 0,830. **Sub-hypothesis 2 is therefore accepted** on an aggregate level even if brand credibility and company reputation have no significant impact on brand attachment (table 4.10.).

Table 4.10. Testing of sub-hypothesis 2

2 nd stage of the causal model	Sub-Hypothesis 2	Path coefficient (β), t-value, p-value	Accepted (✓) Rejected (✗)
Sh2*	The emotional image dimensions positively impact brand attachment.	n.a.	✓
SH2a	Brand credibility is positively related to brand attachment.	$\beta = .092$ $t = 0,758$ $p = 0,449$	✗
SH2b	Brand trust is positively related to brand attachment.	$\beta = .243$ $t = 2,249$ $p = 0,025$	✓
SH2c	Brand feelings is positively related to brand attachment.	$\beta = .565$ $t = 8,736$ $p = 0,000$	✓
SH2d	Company reputation is positively related to brand attachment.	$\beta = .057$ $t = 0,47$ $p = 0,639$	✗
Thresholds for hypothesis acceptance: $\beta > 0,10$, t-value $\geq 1,96$, p-value of $\leq 0,05$, *total effect $> 0,50$			

Source: Author's own construction based on research results

Testing of sub-hypothesis 3: Brand attachment, customer satisfaction and switching cost positively impact purchasing behavior.

Statistical analysis found all three constructs, brand attachment, customer satisfaction and switching cost to be significantly positively related to purchasing behavior ($p = \leq 0,01$). Hence **sub-hypothesis 3 is accepted** as shown in table 4.11.

Table 4.11. Testing of sub-hypothesis 3

3 rd stage of the causal model	Sub-Hypothesis 3	Path coefficient (β), t-value, p-value	Accepted (✓) Rejected (✗)
Sh3	Brand attachment, customer satisfaction and switching cost positively impact purchasing behavior.	n.a.	✓
SH3a	Brand attachment is positively related to purchasing behavior.	β = .462 t = 6,362 p = 0,000	✓
SH3b	Customer satisfaction is positively related to purchasing behavior.	β = .313 t = 4,747 p = 0,000	✓
SH3c	Switching cost is positively related to purchasing behavior.	β = .200 t = 2,778 p = 0,006	✓
Thresholds for hypothesis acceptance: β > 0,10, t-value ≥ 1,96, p-value of ≤ 0,05			

Source: Author's own construction based on research results

Testing of sub-hypothesis 4: Brand attachment impacts purchasing behavior more strongly than both customer satisfaction and switching cost.

Comparing the significant path coefficients between brand attachment, customer satisfaction and switching cost it becomes apparent that while all three constructs are significantly positively related to purchasing behavior, brand attachment clearly has the strongest impact with β = .462 compared to β = .243 (customer satisfaction) and β = .200 (switching cost). **Sub-hypothesis 4 is therefore accepted**, the individual criteria are displayed in table 4.12.

Table 4.12. Testing of sub-hypothesis 4

3 rd stage of the causal model	Sub-Hypothesis 4	Path coefficient (β), t-value, p-value	Accepted (✓) Rejected (✗)
Sh4	Brand attachment impacts purchasing behavior more strongly than both customer satisfaction and switching cost.	n.a.	✓
SH4a	SH3a > SH3b	n.a.	✓
SH4b	SH3a > SH3c	n.a.	✓
Thresholds for hypothesis acceptance: SH3a > SH3b ; SH3a > SH3c			

Source: Author's own construction based on research results

Testing of sub-hypothesis 5: Purchase complexity and purchasing risk are positively related to switching cost.

Purchasing complexity shows no significant relationship with switching cost. Purchase risk, on the other hand, does ($\beta = .212$) at a substantial statistical significance ($p \leq 0,05$). However, it was established purchase complexity is positively related to purchasing risk ($\beta = .505$, $t = 8,443$, $p \leq 0,01$). As the total effect of significant relationships is .212, explaining only a minor part of the variance, the overall **hypothesis 5 is rejected**. The results are listed in table 4.13.

Table 4.13. Testing of sub-hypothesis 5

Contextual relationships	Sub-Hypothesis 5	Path coefficient (β), t-value, p-value	Accepted (✓) Rejected (✗)
SH5*	Purchase complexity and purchase risk are positively related to switching costs.	n.a.	✗
SH5a	Purchase complexity is positively related to purchase risk.	$\beta = .505$, $t = 8,443$, $p = 0,000$	✓
SH5b	Purchase complexity is positively related to switching costs.	$\beta = -.026$ $t = 0,326$ $p = 0,744$	✗
SH5c	Purchase risk is positively related to switching cost.	$\beta = .212$ $t = 2,500$ $p = 0,013$	✓
Thresholds for hypothesis acceptance: $\beta > 0,10$, t-value $\geq 1,96$, p-value of $\leq 0,05$, * total effect $> 0,50$			

Source: Author's own construction based on research results

After path coefficients have been identified and their statistical significance verified, an evaluation of R^2 , f^2 and Q^2 is applied. As Hulland noted “No proper goodness of fit measures exist for models estimated using PLS”³⁹², therefore these non-parametric tests are used to assess the structural model.

The coefficient of determination, called R^2 value is a measure of the model's predictive accuracy and explains how well the latent endogenous variables are explained by the exogenous variables.³⁹³ Chin proposes the following classifications for R^2 values: 0,67 is substantial, 0,33 is average and 0,19 is weak.³⁹⁴ The research results show that approximately 55% of purchasing behavior as the main dependent variable are explained ($R^2 = 55,4$, R^2 adjusted = 54,6), which is considered a very satisfactory value. With

³⁹² Hulland, J. (1999). Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies. *Strategic Management Journal*, 20(2), 195–204, p. 202.

³⁹³ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 174.

³⁹⁴ Chin, W. W. (1998). Commentary: Issues and Opinion on Structural Equation Modeling. *MIS Quarterly*, 22(1), vii–xvi.

a value of 0,627 (adjusted = 0,616), brand attachment shows a high amount of variance explained by the five exogenous construct linked to it; brand credibility, brand trust, brand feelings and company reputation. When evaluating the intangible brand image constructs, the high degree of explanatory power of brand performance becomes apparent. Nearly than half ($R^2 = 0,439$, R^2 adjusted = 0,436) of the variance of brand credibility is explained by brand performance. Brand trust, in the present research influenced by brand credibility and brand performance, shows a high R^2 value of 0,625 (adjusted = 0,620). Brand feelings are also more than halfway explained by brand performance and brand trust ($R^2 = 0,536$, adjusted = 0,531), whereas brand performance alone contributes almost 40% of explanatory power which is remarkable as it suggests an important linkage between rational and emotional brand image dimensions. Another very interesting value appears with company reputation. In combination with a substantial and statistically significant path coefficient ($\beta = 0,752$), an R^2 value of 0,565 (adjusted = 0,563) highlights the importance of brand performance for the formation of company reputation. Similarly, with a R^2 value of 0,410 (adjusted = 0,406), customer satisfaction is explained by brand performance. As for the context variables purchase risk, a value is of $R^2 = 0,255$ (adjusted 0,251) observed which is explained by complexity. Brand performance, purchasing risk and purchase complexity have an explanatory effect on switching cost of $R^2 = 0,112$, R^2 adjusted = 0,096.

In addition to evaluating R^2 values, the change in R^2 when a certain exogenous construct is omitted from the model is used to evaluate whether the omitted construct has a significant impact on the endogenous construct. This measure is referred to as effect size f^2 .³⁹⁵ According to Cohen, effect sizes of 0,02, 0,15 and 0,35 respectively, constitute small, medium and large effects.³⁹⁶ Analyzing the effect sizes for the relationships between variables which have been identified as significant in the previous procedures, the effect size of brand attachment on purchasing behavior is strongly pronounced at $f^2 = 0,384$. The effect of brand trust on brand attachment is smaller at $f^2 = 0,048$ whereas brand feelings have a large effect ($f^2 = 0,346$) on brand attachment. The effect of brand performance on credibility was found to be high at $f^2 = 0,783$ and even more so on company reputation at $f^2 = 1,300$. Moreover, the effect of brand performance on customer satisfaction is high ($f^2 = 0,694$).

³⁹⁵ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ, pp. 177-178.

³⁹⁶ Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2. ed.). Hillsdale, NJ: Erlbaum.

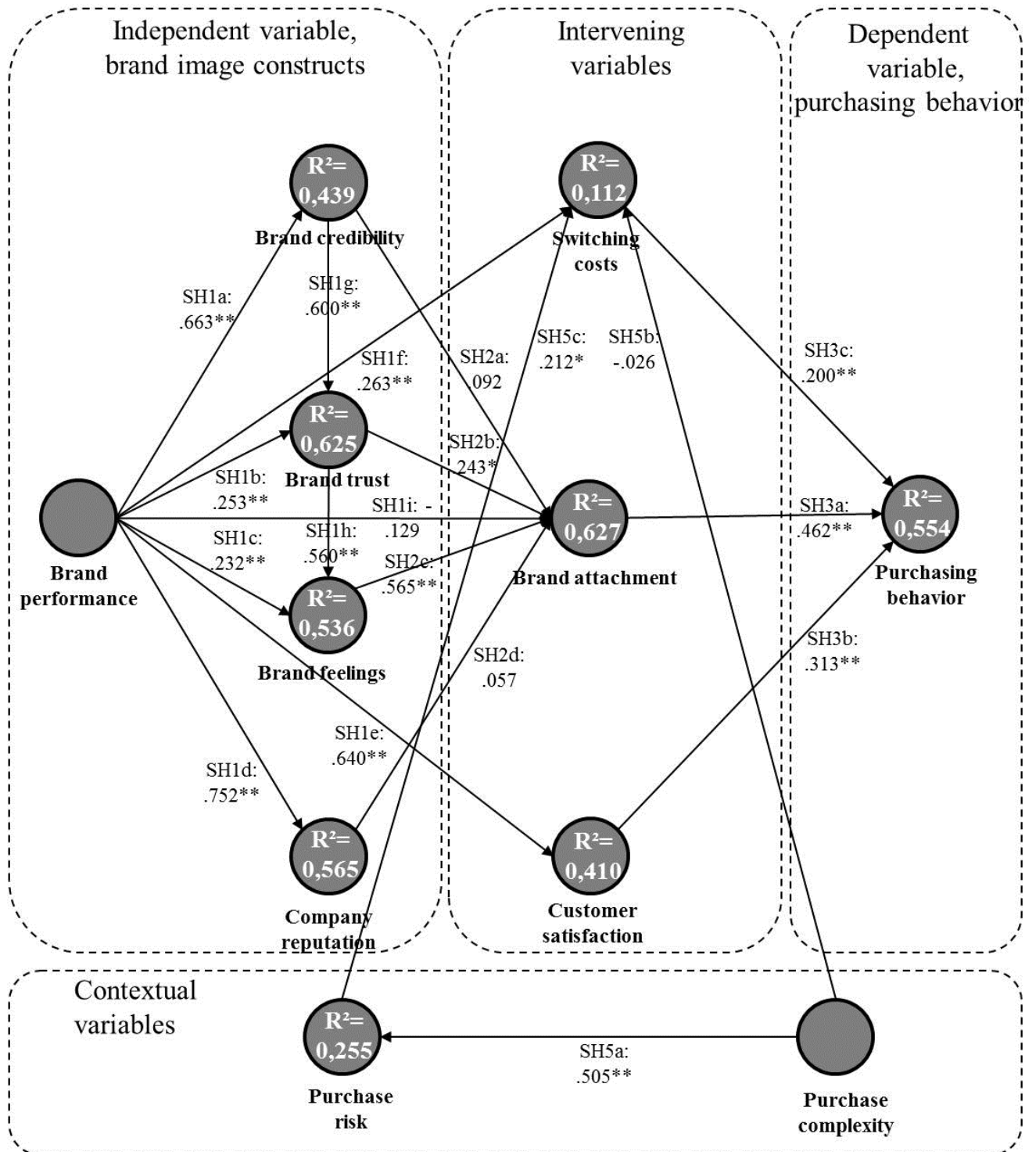
As a final analysis of the structural model, and in addition to evaluating the R^2 values for predictive relevance, Stone Geisser's Q^2 value is analyzed as an indicator for the model's predictive relevance.³⁹⁷ Whereas there is no commonly accepted threshold for Q^2 values, it can be said that a positive value has predictive relevance³⁹⁸. As for the brand image-related variables, strong positive values were observed on brand credibility ($Q^2 = 0,330$), brand trust ($Q^2 = 0,519$), brand feelings ($Q^2 = 0,389$), company reputation ($Q^2 = 0,383$). The tests further revealed that purchasing behavior as the main dependent variable has a clearly pronounced predictive relevance ($Q^2 = 0,360$). The intervening variable brand attachment shows a high relevance ($Q^2 = 0,462$). Secondly, customer satisfaction has a positive value of $Q^2 = 0,366$, the third intervening variable switching cost has a lower, but still positive value ($Q^2 = 0,096$). Finally, the contextual variables were tested for their predictive relevance. Purchase risk, was found to be at $Q^2 = 0,170$ whereas with a value of $Q = 0$, no predictive relevance was detected on purchase complexity.

While there is no global goodness of fit measure for PLS models, the evaluation of this part, it can be said that the analysis of the non-parametric procedures of the research results shows very high quality of the postulated causal model, both for the measurement model as well as for the structural model.

Figure 4.6. depicts the causal model with path coefficients for all relationships and denotation of statistical significance. Also featured in this exhibit are R^2 values to highlight the explanatory power of the latent endogenous variables.

³⁹⁷ Hair, J. F. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE Publ., p. 178.

³⁹⁸ Ibid.



Notes: *p < 0.05; **p < 0.01

Figure 4.6. The final causal model with R² values, path coefficients and indication of significance

Source: Author's own construction

Main results of the post-survey Focus Group research

This section is dedicated to the summary of main focus group research findings. Two focus group sessions were held on February 22nd and 24th, 2016 with a total of twelve industry experts. The purpose was to gain a deeper understanding and better interpretation of the empirical survey results previously obtained. After each of the five main focus group questions, the essence of the group member's input is summarized. In addition, exemplary statements adding particular emphasis to the points made throughout the discussions are provided as well as notable emphasis or omissions in the discussion as far as applicable. Besides the below summary, notable findings are used to reinforce the conclusions section.

- **Question 1: “In your opinion, what aspects determine how customers in your industry view and perceive certain brands?”**

The aspects which were found most relevant throughout the discussions and which were shared by all participants were: *Product quality, response times in case of problems, trustworthiness of brand representatives, reliability related to commitments made to the customer* as well as *professionalism of representatives*. Interestingly, the discussion revolved only briefly around the tangible and rational features of quality and response times and instead mainly focused on the personal interaction between brand representatives such as sales managers, service personnel and engineers and how they are allocated by their organization to take care of customers and their individual concerns. Summarizing the strong emphasis on the individuals representing B2B brands, one expert found it important “*How a company is organized in terms of clearly allocated contact persons responsible for the customer and professional handling of all customer-related issues*”. The other participants in focus group 1 particularly strongly resonated with this statement. Finally, the experts steered in the direction that the economic and technical features of the product are important but also that these propositions must be a given as the basis of a potential purchase transaction. The real differentiation between different brands was found to lie in how brand representatives interact with their customers on a personal level. Notably, none of the experts put emphasis on advertising, trade exhibitions or any kind of advertising or public relations measures as important image forming elements. This can be seen as a clear difference between B2B and B2C branding.

- **Question 2: “What are the main rational, economic cues of how a brand is perceived / what are the main emotional cues?”**

After question 1 generally referred to relevant image aspects, question 2 specifically introduced the notion of rationality versus emotionality of attributes to the discourse. As rational attributes, the following were conceded to by focus group participants: *Product quality, response time, reliability* both product-related as well as personal traits in regard to brand representatives, *competence of brand representatives, personnel’s ability to answer questions*. As emotional attributes, the following were agreed to be of most importance by focus group participants: *Sincerity, honesty, likeability and indulgence*, again in relation with brand representatives. The following statement found particularly strong agreement in group 2: “*Do representatives of the brand strictly adhere to what is written in the contract and try to take advantage of the customer when they can, or do they show flexibility in the customer’s benefit? – that’s what makes a big difference in how the brand is perceived*”. This statement sparked a sub-discussion in which experts found that with increasing complexity of B2B transactions and products, customers often feel vulnerable due to the interdependency between buyer and seller, leaving the customer having to trust that seller’s will not exploit their dependency in certain situations. Discussant’s concluded that seller’s sensitivity towards their customer’s dependence on them emotionally strengthens the brand’ image when customers feel that they are treated respectfully and fairly when they are at a seeming disadvantage.

- **Question 3: “In which situations do you believe are emotional aspects of particular importance for making a purchasing decision?”**

The situations where focus group participants found that emotional aspects could serve as tipping points in a purchasing situation toward a certain brand were the following:

High-risk situations, as one expert put it “*For instance when customers are forced to make a supplier brand selection and it is not yet totally clear what the end-product will look like*”. Further, the experts pointed out that customers need to rely on the brand to deliver a product that works.

In **recurring situations** where customers have previous experience with a brand, experts stated that customers will recall if brand representatives adhered to their promises in the past. They agreed that positive past experience helps decide on that positively recalled brand in future purchasing situations. Also when there are **two or more product options which are comparable** in main functional

aspects, experts elaborated that customers will make a decision based on their gut feeling in terms of “*Which one do I like and trust more*” as one participant pointed out.

Moreover, in situations where there is a **strong personal sympathy between representatives** of the seller and key persons on the buyer’s side, emotional aspects could result in a positive decision in regard to that brand, even despite slight functional disadvantages on a rational level.

- **Question 4: “How important is customer satisfaction in your experience when it comes to predicting future purchasing decisions in business practice?”**

In the first instance, all experts unanimously emphasized customer satisfaction to be absolutely essential to future purchasing behavior. Satisfaction was found to be a major indicator for re-buy behavior. On the other hand they pointed out that in managerial practice satisfaction was often measured in an insufficient manner, only focusing on tangible and/or economic attributes i.e. satisfaction with product quality, pricing or service performance, and thereby not capturing the concept of satisfaction broadly enough. One expert said “*even if these product-related performance criteria are not met, customers may still be satisfied if they feel that the problems are taken seriously and concrete action to remedy is taken by brand representatives*”.

Another main aspect mentioned in the discussion was that dissatisfied customers may even continue purchasing from a certain brand if switching brands was associated with high cost or efforts which is why often there is no immediate behavioral effect arising from dissatisfaction since as one expert put it “*sometimes you just cannot afford to change brands, even if you would like to*”. But apart from these rational considerations, one expert mentioned that “*even if quality is poor, giving up on a personal relationship that was shaped between buyer’s and seller’s representatives over many years, is very difficult for many deciders in our industry*”. This statement was backed by other experts in the discussion who stated that both the personal relationship and processes between buying and selling organizations are valued in the context of complex B2B goods and relevant to satisfaction.

- **Question 5: “In your experience, why and how, do you think, can emotional attachment to a brand play a superior role to more rational, economic considerations within the purchasing group when deciding or recommending on a specific purchase?”**

When asked about the role of emotional attachment as an influencer in group settings, experts found that purchasers will advocate a brand to which they are emotionally attached more strongly within the

buying center, even if other members on the committee are against that particular brand. Experts found that in a group decision when there is a strong attachment, decision can be influenced toward the brand that they feel more comfortable with on an emotional level.

A further aspect revealed by participants was that rational factors would be interpreted differently depending on the levels of emotional attachment. As an example, one participant mentioned that a delivery delay would be seen as less severe and critical by purchasing managers if they are emotionally attached to a brand. On the other hand, the expert mused, the exact same delay will be perceived as more critical if there is no brand attachment. This was an example of how brands can provide a framing for rational criteria on a personal level. The discussion then focused on differences between satisfaction and emotional attachment. As an important differentiation between satisfaction and attachment, the group found that attached customers will attribute under-performance to reasons beyond the brand's influence whereas satisfied but unattached customers will attribute potential shortcomings to the brand. One focus group member mentioned that "*Satisfaction is vulnerable and can quickly deteriorate if performance worsens. An emotionally attached customer will always be inclined to forgive or justify poor performance*", which was found to be the decisive differentiation between satisfaction and attachment by discussants.

Chapter 4 summary

The dissertation's fourth and final chapter was dedicated to data analysis and the evaluation and discussion of the research findings. And the subsequent answering of the dissertation's topic along the four research questions. It was found that:

- A sample of 173 valid responses to the online survey were collected in various sub-branches of the railway industry. To the author's knowledge, this represents the highest number of interviews in a single industry as far as B2B brand research is concerned. The sample was found to be of sufficient size based on the common heuristic indicating that sample sizes should be ten times the largest number of structural paths directed at a particular construct in the structural model on the one hand and Cohen's table as a more differentiated guideline for statistical power on the other.
- The sample was found to be representative of the railway industry as a male-dominant branch of the B2B sector in which a blend of mostly well-educated professionals and management representatives of different levels are involved in the purchasing decision making.

- Assessment of the research's measurement model resulted in sufficient quality criteria of the causal model's variables along the criteria Cronbach's Alpha, Average Variance Extracted (AVE), the Fornell-Larcker Criterion for the assessment of Discriminant Validity, and Composite Reliability.
- The results of the Focus Group research revealed that rational as well as emotional attributes are of relevance, both for the formation of brand image as well as for actual (re-)purchasing behavior. The group sessions clearly highlighted the role of brand representatives as well as the organization behind the brand as image forming, unlike in B2C settings where individual representatives are usually unknown and consumers do often not know which companies stand behind particular brands. Also, emotional cues were identified to influence how seemingly rational attributes such as price or quality are framed, interpreted and evaluated by B2B customers.

4.4. Interpretation of the research results and answering of the research questions

Interpretation of the model's 1st stage results:

The results of the present research confirm the notion placed by other authors who understand branding as a multi-layered pyramid with basic physical and rational attributes forming the base and upon which rest the emotional benefits. This is clearly expressed by the fact that the rational image dimension "brand performance" is significantly ($p \leq 0,01$) related to all four emotional image components.

A very strong and significant relationship was found between brand performance and company reputation ($\beta = .752$, $t = 16,972$, $p = 0,000$). Albeit company reputation, despite repeatedly being classified as an important image dimension in B2B context, is not significantly related to brand attachment. The results hence suggest that reputation is of lesser emotional relevance than the other emotional image dimensions.

The research moreover revealed a partial mediation³⁹⁹ between brand performance, brand credibility and brand trust. This can be seen by the relationship between brand performance as independent variable and brand credibility as the mediator variable ($\beta = .663$, $t = 10,968$, $p = 0,000$) which, in turn, has a clearly stronger relationship with brand trust ($\beta = .600$, $t = 9,982$, $p = 0,000$) as the dependent variable in this isolated constellation, compared with the direct relationship between brand performance and brand trust (β

³⁹⁹ Cf. Nitzl, C. (2010). *Eine Anwendungsorientierte Einführung in die Partial Least Squares Methode*. Hamburg, p. 49.

= .253, $t = 3,480$, $p = 0,001$). Credibility is thereby strongly influenced and explained by brand performance ($R^2 = 0,439$). An interesting revelation is that credibility is not significantly related to brand attachment, but instead brand trust is. This means that the major role of brand credibility is the formation of brand trust, where, in line with previous research, the role of the brand's employees interacting with the customer play an important role.

Similarly, the relationship between brand trust and brand feelings is quite strong and significant ($\beta = .565$, $t = 8,625$, $p = 0,000$) on nearly the same level as the relationship between brand feelings and brand attachment ($\beta = .560$, $t = 8,736$, $p = 0,000$), whereas the direct relationship between brand trust and brand attachment is not as strongly pronounced ($\beta = .243$, $t = 2,249$, $p = 0,025$). The predominant role of trust therefore appears to contribute to the formation of positive feelings towards a brand.

Interpretation of the model's 2nd stage results:

Brand credibility supports the formation of brand trust and brand trust, in turn, fosters the formation of brand feelings. Brand feelings are a strong influencer of brand attachment. Brand trust also has a direct relationship with brand attachment. Company reputation as the only of four emotional brand dimensions appears to be of a rather rational nature and with a lack of emotional appeal. The fact that customers regard a company e.g. to be strong and reliable and concerned with its customers does apparently not lead to an emotional connection with the brand.

Interpretation of the model's 3rd stage results:

In line with Keller's brand equity theory, brand attachment is clearly the strongest influencer of purchasing behavior ($\beta = .462$, $t = 6,362$, $p = 0,000$). Customer satisfaction is also significantly related to purchasing behavior ($\beta = .313$, $t = 4,747$, $p = 0,000$), however, being satisfied alone still seems to leave room for customers to look out for alternative brands which may offer a similar or better level of satisfaction. This finding is also in line with previous research featured in the literature review. As hypothesized, switching costs ($\beta = .200$, $t = 2,778$, $p = 0,006$) as well show a positive relationship with purchasing behavior but to the least extent compared to satisfaction and attachment. The author argues that time, money and effort to switch brands as rational ties to and existing brand can prevent customers from switching, but not from looking out for alternatives so they can switch as soon as it is economically feasible. The conclusion from this comparison would therefore be, the higher the emotional relationship a

customer has with a brand, the stronger this emotion will lead to that customer being both intentionally as well as behaviorally loyal in modified re-buy situations.

As far as the contextual variables are concerned, it was expectedly found that complexity is a strong driver of purchase risk ($\beta = .505$, $t = 8,443$, $p = 0,000$). In particular, high investments with high impact on profitability, specialized usage and high degrees of consequential adjustments with effects which are hard to forecast turn out to influence the perceived risk of the purchase. The latter comprises the risk of potential financial loss, risk of performance / functionality, risk that the product subject to purchase would not meet management or peer group approval as well as the perceived total risk of the purchase.

Overall the research's findings suggest that the distinction between B2C and B2B marketing seems to be smaller than long held assumptions suggested. The results are therefore in line with the contemporary stream of knowledge which goes in the direction of assimilation between B2C and B2B when it comes to the role and importance of branding. The prominent role of brand performance as well as the importance of purchase complexity, purchase risk and switching costs appear to be unique to B2B settings, presumably only approximated by very high involvement purchases in B2C context.

RQ₁: How do different dimensions of brand image impact the purchasing behavior of B2B market participants?

The research suggest contribute to better understanding of the role of rational and emotional brand image dimensions and their impact on B2B purchasing behavior. Both have an important role to play. While the rational attributes are the foundation driving the formation of emotional brand image dimensions, it is brand feelings and brand trust leading to brand attachment which, in turn, is the strongest influencer of purchasing behavior compared to customer satisfaction and switching costs as intervening variables. The rational brand dimension itself, however, does not significantly directly influence brand attachment.

Brand image dimensions only impact B2B purchasing behavior through the intervening effect of brand attachment. Feelings and trust evoked by business brands appear to lead to an emotional attachment which, as the major intervening variable in the causal model, impacts purchasing behavior. Following the most strongly pronounced structural paths in the causal model, it was found that brand performance leads to brand credibility which, in turn, leads to brand trust. Brand trust is strongly positively related to brand feelings and brand feelings are a strong driver of brand attachment which, in the final instance, is

positively related to purchasing behavior. In comparison, the pathway leading from the rational dimension brand performance to customer satisfaction ($\beta = .640$, $t = 10,634$, $p \leq 0,01$) and from satisfaction to purchasing behavior is significant ($\beta = .313$, $t = 4,747$, $p = 0,000$) as well, but the final impact on purchasing behavior is weaker than the “emotional path” via the emotional brand image dimensions and brand attachment. The same applies to the other rational path from brand performance via switching costs.

RQ₂: Which image dimensions influence the purchasing behavior of B2B market participants most strongly?

None of the brand image constructs has a significant direct influence on purchasing behavior. However, brand feelings have the strongest impact on brand attachment ($\beta = .565$, $t = 8,736$, $p \leq 0,01$) which, in turn, impacts B2B purchasing behavior. Brand feelings therefore appear to be the most relevant image dimension and the main antecedent of brand attachment. However, other image dimensions are important as well. Particularly so as brand performance as rational image dimension seems to be the foundation, necessary for the formation of the emotional image dimensions. Brand credibility is a strong influencer of trust ($\beta = .600$, $t = 9,982$, $p \leq 0,01$) which, in turn, is strongly related to brand feelings ($\beta = .560$, $t = 8,625$, $p \leq 0,01$).

RQ₃: Which are the intervening variables impacting the degree of influence of brand images on the purchasing behavior of B2B market participants most significantly?

Of all three analyzed variables, brand attachment impacts B2B purchasing behavior most strongly ($\beta = .462$, $t = 6,362$, $p \leq 0,01$), compared to customer satisfaction ($\beta = .313$, $t = 4,747$, $p \leq 0,01$) and switching costs ($\beta = .200$, $t = 2,778$, $p \leq 0,01$). These results show that the higher the emotionality of the construct is, the higher its respective impact on purchasing behavior. This is a highly interesting result since emotionality was long believed to play a subordinate role in B2B purchasing. Due to often high switching costs, an immediate change of brands may not always be immediately possible, but this result suggests that once the opportunity presents itself, e.g. due to change of legislation, obsolescence of certain products, B2B customers will switch to a brand with a higher emotional value.

RQ4: How can a valid and reliable measuring instrument for brand images in B2B context be developed and operationalized?

Development of measuring instruments should be based on existing, tested and reliable measures. However, most, mainly image-related, measures were developed for B2C settings. Therefore, in order to appropriately address industry specifics of the respective B2B sector and assure content validity, industry experts should be involved in the scale development. Piloting of the measuring instrument helps assure a high response rate and high quality responses. The research moreover showed that qualitative interpretation of empirically gained data deepens the understanding of the results.

CONCLUSIONS

Based on an intensive review of the existing stream of literature on branding, in both general terms and particularly in B2B, a comprehensive and fine-graded model for measuring brand image in a B2B context was developed. The literature review as well as the subsequent empirical testing of the model in the railway industry allows to draw the following conclusions:

1. Major differences exist in the way in which purchasing is conducted in B2B markets compared to B2C settings. Particularly, multi-personality, complexity and process-orientation distinguish B2B purchasing from consumer-oriented purchasing. This led to a long-standing notion that branding due to its largely emotional and self-expressive nature would not be applicable to B2B markets. Review of pertinent literature shows that the differences between B2B and B2C are blurring in both science and managerial practice, emphasizing the human factor behind every purchasing situation and crediting the individual buying center member as a focal point of decision making.
2. Involvement is generally higher in B2B purchasing behavior, however, degrees of involvement vary depending on the impact of a purchase on organizational profitability and productivity. Complexity and novelty of a specific purchase matter as well in regard to involvement.
3. A research framework was derived from theory, it comprises brand stimuli to which the individual buying center member is exposed, which are processed over the internal organism-related processes and intervened by switching costs, customer satisfaction and brand attachment. The framework showed to be empirically applicable in the chosen industry context, where purchase complexity and risk are high.
4. The research is anchored in capital items as subject to marketing in OEM and project business constellations in the railway industry. It is characterized by products of a capital nature and high complexity, therefore levels of involvement in buying centers are high.
5. After review of original brand frameworks and expert feedback, the brand image construct was conceptualized into five image dimensions being brand performance, brand credibility, brand trust, brand feelings and company reputation. Literature review as well as expert feedback assure content validity of these image dimensions.

6. Derived from the theoretical background and review of existing empirical literature, a causal model with three stages was constructed along the S-O-R paradigm. Prior to the empirical investigation, it was deemed useful to obtain an understanding of how existing brands are generally perceived by B2B professionals in the railway industry. The chosen methodology was multidimensional scaling. After the subsequent empirical survey, a qualitative evaluation of the results completed the triangulation so as to provide a deeper understanding and interpretation of the empirical survey results. The methodology of focus group research was selected to be conducted with the experts who had previously assisted in the content validation of the image dimensions and measurement items.
7. Evaluation of the contextual variables confirmed the classification of the present research in the railway industry in a relatively high-risk and high complexity category of the B2B sphere, where purchase decisions are made under high customer involvement. This is confirmed by mean values of 5,11 (median: 5,00) and 4,93 (median: 5,00) on purchase complexity and purchase risk, respectively on scales from 1 to 7. The significant relationship between these two constructs identifies complexity as a strong driver of purchase risk in B2B purchasing. These findings fall into place with the conception proposed by Levin et al. who advocate to replace the homo economicus with the homo efficens as the “efficient complexity manager” previously introduced in the theoretical part of this research.
8. As expressed by the R^2 value of purchasing behavior as the research’s dependent variable, its variance is explained to a degree of 55,4% by the other variables in the model. By established conventions, this value constitutes a very satisfactory explanatory power of the model.
9. When analyzing the factor loadings of the final measurement model on all brand image-related constructs, in line with previous research, it can be concluded that the variance of rational attributes is higher than on emotional ones. It was found that the values on brand performance as the research’s rational image dimension range from 0,620 to 0,789. The strongest indicators of brand performance were found to be: the extent to which a brand fully satisfies customer’s product needs (A30_08; factor loading: 0,789), the brand's sales and service network (A30_06; factor loading: 0,777) and efficiency of the brand's after-sales service in terms of speed, responsiveness and problem-solving capability (A30_04; factor loading: 0,772). The factor loadings of the four emotional image dimensions were more homogenous. Values on credibility range from 0,853 to

0,892 with the strongest indicator of brand credibility being the extent to which a brand is respected (A24_03). Factor loadings on brand trust range from 0,896 to 0,933 with the strongest indicator being item A25_02: “The representatives of this brand are truly sincere in their promises” with a loading of 0,933. Also a high degree of homogeneity was detected on brand feelings with values from 0,838 to 0,877. Interestingly, the feeling of fun turns out to be the strongest indicator of brand feelings (A28_02) in the present research.

10. High performance by itself does not lead to brand attachment. Brand performance as a rational image dimension significantly ($p \leq 0,01$) impacts the emotional dimensions brand credibility, brand trust, brand feelings and company reputation. However, performance is not significantly related to brand attachment. In conclusion, high performance seems to be the groundwork for the formation of favorable emotional image dimensions. These findings are in line with previous research placing rational dimensions as the foundation on which the emotional dimensions are built. Results of focus group discussants confirmed these findings. Experts found that the rational dimensions such as quality are taken as a given, whereas the real differential effect is determined on an emotional level by how customers are treated by brand representatives.
11. The research identified two main pathways emanating from the rational brand image dimension forming the foundation of the image construct – a rather rational path with two manifestations and a rather emotional path.
12. The pathway leading from the rational dimension brand performance to customer satisfaction and from satisfaction to purchasing behavior is significant, but the final impact on purchasing behavior is weaker than the “emotional path” via the emotional brand image dimensions and brand attachment. The same applies to the other rational path from brand performance via switching costs to purchasing behavior.
13. While brand feelings and trust appear to be antecedent brand attachment, switching cost is driven by the perceived purchase risk and brand performance.
14. It can be concluded that brand attachment impacts purchasing behavior more strongly than customer satisfaction and switching cost. These research findings emphasize the notion that emotion is paramount to purchasing decision making, also when it is related to B2B purchasing behavior. Emotional attachment to a brand has a stronger impact on purchasing behavior than any rational hurdles to being disloyal (switching cost) or mere customer satisfaction.

15. Comparing the impact of the three intervening variables on purchasing behavior, it is found that switching cost are expectedly driven by the rational constructs of performance and risk whereas brand attachment is driven by the emotional constructs of trust and feelings. Customer satisfaction is only driven by the rational dimension of brand performance and in its own impact strength it ranges between switching cost and brand attachment. In terms of rationality vs. emotionality, this circumstance makes customer satisfaction a hybrid between rationality and emotionality. Industry experts confirmed this finding emphasizing satisfaction to be vulnerable, it can quickly deteriorate if performance worsens. An emotionally attached customer, in turn, will always be inclined to forgive or justify poor performance.
16. These results provide empirical evidence to the discussed novel managerial conceptions of Business-to-People (B2P) and Human-to-Human (H2H) as augmentations, if not replacements, of the classic Business-to-Business (B2B) term.

The importance of B2P is manifested in the strong impact of brand attachment as a sustainable emotional relationship between the business brand as an attachment figure and the organizational purchasers. Through this attachment business brands can capitalize on an intimate personal bond with their customers as highly meaningful antecedents of purchasing behavior ($\beta = .462$, $t = 6,362$, $p = 0,000$). Industry experts confirmed this proposition, finding that the real differentiation between different brands lies in how brand representatives such as sales personnel and engineers interact with their customers on a personal level.

The H2H concept finds its justification in the importance of brand credibility and brand trust which in this research comprise competence (item A24_06), flexibility (item A24_07) and having customer's interests in mind (item A24_04) as well as keeping promises (item A25_02) made prior to the sale of a trust good. These results underline the importance of brand representatives in their human interaction with their customers. Experts highlighted that when there is a strong personal sympathy between representatives of the seller and key persons on the buyer's side, this can have a positive impact on purchasing decisions. A business brand's image is therefore shaped based on human interaction with brand representatives acting as brand ambassadors.

17. As a general and summarizing conclusion, the research contributes to management science as a broad interdisciplinary field of problem solving and decision making in organizations in the following ways:

It identifies both differences and communalities between B2C marketing and B2B marketing. It further reviews scientific and managerial developments in regard to the concepts of rationality and emotionality. Also, it adds to the stream of knowledge by empirically investigating individuals in organizations the railway industry as an industrial branch which has never been subject to similar study on branding before. It provides deeper understanding of organizational purchasing behavior through inclusion of multi-respondent input per buying center. Finally, it applies the concepts of customer satisfaction and brand attachments, which are both relevant to marketing management, to B2B context where thus far empirical evidence was scarce.

SUGGESTIONS

Suggestions to B2B companies:

1. B2B vendors should analyze the buying centers of their customers and determine individual buying center member's needs and priorities through function analysis. As a result, they would gain a much more effective and customer-centric marketing approach.
2. B2B vendors should analyze levels of customer involvement in their respective industry and for their specific products and services in terms of their impact on organizational profitability and productivity. This would help to better understand their customer's underlying evaluation and decision process.
3. B2B marketers have to understand that every touch point between them and their customers becomes an input to brand image, both on a rational and on an emotional level. They should acknowledge that ultimately individual relationships and interactions decisively shape their brand's image. This acknowledgement will help marketers manage their customer relationships more consciously.
4. Management of B2B marketers have to appreciate the role of performance in building trust and positive feelings, which are significantly related to the attachment to the B2B brand. Doing so will assist in creating an emotional value proposition leading to attachment, which ultimately impacts purchasing behavior.
5. In terms of performance dimensions, B2B companies should particularly keep in mind to completely fulfil their customer's product needs, offer favorable contractual conditions and provide fast, responsive after sales service with a high degree of problem solving capability. Consequently, B2B companies would improve in areas which are of particular importance to the formation of positive emotional image dimensions.
6. The present research suggests that the performance dimension significantly influences the formation of the emotional image dimensions. Hence B2B marketers should strive for performance on every level of interaction, uncompromising product and service quality and meaningful personal communication supporting their value proposition in order to obtain credibility and customer trust.

7. As important as a good product or service is in the B2B sector, representatives of B2B companies e.g. sales people and engineers, should always have their customer's interests in mind, as that is the strongest factor in building credibility, which is related to trust in the brand. Therefore all representatives of business brands should be aware of their role as brand ambassadors as their behavior in the interaction with customers shapes brand image. Considering this would strengthen customer trust and elicit positive feelings in regard to the brand.
8. B2B companies need to understand that they are selling trust goods. The trust they build, or fail to build, strongly impacts the feelings their customers have towards their brand and determines whether customers become attached to the brand, which is the strongest indicator of purchasing behavior. With this level of trust, positive brand feelings can be formed, as the causal relationship between the dimensions of trust and feelings shows.
9. B2B companies should provide a consumer-like experience to their customers as likeability of the brand is an important factor. Therefore, B2B companies should embrace a positive, open and welcoming communication in each interaction as opposed to technocratic and sterile behavior which is still commonplace to many industrial companies. This behavioral shift would frame their performance more positively in their customer's view and hence lead to a more positive image.
10. After having won new customers, B2B companies should never rely on the effect of switching costs making it difficult for customers to be disloyal. Stronger ties to their customers can be obtained through customer satisfaction and, even stronger ones still, through brand attachment. It may be due to switching cost such as contractual ties, great effort associated with switching the brand, which prevents B2B customers from switching brands instantly. However, as soon as the opportunity presents itself, e.g. when a new product platform is to be developed, unattached and dissatisfied customers are likely to switch and they will be hard to win back. Conversely, building emotional attachment leads to more robust and lasting customer relationships.
11. Due to the prominent role of brand attachment, B2B companies should introduce processes to measure the level of attachment when surveying their customers instead of merely measuring satisfaction. In this way, B2B companies would gain a better overview of which customers will remain loyal over a long time and which ones are more likely to defect. These insights would support companies to understand and identify areas of improvement more clearly.

12. B2B companies should also be aware that customer satisfaction alone is only slightly stronger related to purchasing behavior as switching cost. This means that a satisfied customer could be almost as likely to change brands as a dissatisfied customer, who is only temporarily retained through rational barriers. The ultimate goal for any B2B marketer must therefore be to achieve brand attachment instead of mere satisfaction. This will be the way to instill loyalty beyond reason into their customer's purchasing behavior.

Suggestions to the scientific community and especially researchers in the field of industrial marketing:

1. Researchers should use the model developed in this dissertation and gather more empirical evidence in other areas of the B2B sector. The contextual variables employed in this model will assist in the classification and comparison of the respective industry context to related research and eventually help broaden the stream of knowledge of this still relatively young sub-branch of marketing research.
2. The overall research's model with its causal relationships between variables is very generic, while part of the measurement items were developed or adapted to suit the specifics of the railway industry. Other researchers are advised to revalidate and, if necessary, refine the measurement items to suit other industries. The scientific community would subsequently be able to develop more precise, yet more generic measures.

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APPENDIX I: Content and structure of dissertation

Content and structure of dissertation

Chapter	Content and structure	Main objectives
<p>Chapter 1. Theoretical part (34 pages)</p> <p>“Theoretical foundations of branding in B2B context and organizational purchasing theory”</p>	<p>Theories on:</p> <ul style="list-style-type: none"> • Branding and its development (1.1.). • Brands and image theory (1.1.). • Classifications of B2B markets (1.2.). • S-O-R paradigm of purchasing behavior (1.3.). • Organization purchasing theory (1.3.). • Rationality vs. emotionality of B2B purchasing (1.4.). 	<ul style="list-style-type: none"> • Setting the theoretical foundations. • Elaborating on all relevant concepts employed in the dissertation.
<p>Chapter 2. Analytic part (35 pages)</p> <p>“Review of existing branding frameworks and literature on B2B branding”</p>	<p>Experience regarding:</p> <ul style="list-style-type: none"> • Importance of B2B branding (2.1.). • Introduction of the chosen industry context (2.2.). • Empirical research on main contextual variables (2.3.). • Empirical research on intervening variables (2.3.). • Existing branding frameworks (2.4.). • Appraisal of frameworks and transfer to B2B conceptualization (2.4.). 	<ul style="list-style-type: none"> • Provision of research context. • Review of previous experience based on conceptual and empirical research and current data.
<p>Chapter 3. Empirical part (31 pages)</p> <p>“Model development and research methodology for the evaluation of the impact of brand images on the purchasing behavior of B2B market participants”</p>	<p>Own development, focused on:</p> <ul style="list-style-type: none"> • Research questions and derivation of hypotheses (3.1.). • Construction of a causal model (3.2.). • Methodology of measuring brand image (3.3.). • Operationalization of the variables (3.3.). • Sampling considerations (3.4.). • Planning and preparing the empirical survey (3.4.). 	<ul style="list-style-type: none"> • Deeper probation and transfer of theory to own research model. • Development of own research model based on gaps identified in previous research.
<p>Chapter 4. Data analysis (31 pages)</p> <p>“Empirical results, conclusions and suggestions derived from the research findings”</p>	<p>Analysis of:</p> <ul style="list-style-type: none"> • Explanation of the statistical analysis (4.1.). • Descriptive results (4.1.). • Measurement model (4.2.). • Structural model (4.2.). • Hypothesis testing (4.3.). • Interpretation of results and answers to research questions (4.3.). 	<ul style="list-style-type: none"> • Analysis and interpretation of results. • Answering of research questions.

Source: Author’s own construction

APPENDIX II: Survey measures

Brand performance measures

Code	Brand Performance	Source
A023_15	Compared with other brands in the category, how well does this brand meet the requirements of your technical specification?	Author's own development
A023_03	To what extent do products of this brand have special features that other brands do not have?	Keller, 2008
A023_09	Compared with other brands in the category, how favorable are this brand's prices generally?	Keller, 2008
A023_10	Compared with other brands in the category, how favorable are this brand's life-cycle costs generally?	Author's own development
A023_11	Compared with other brands in the category, how favorable are this brand's contractual conditions generally?	Author's own development
A023_16	How favorable are this brand's lead times and delivery reliability?	Author's own development
A030_07	How easily installed is this brand in your company's product (e.g. locomotive, railcar or system)?	Author's own development
A030_03	How reliable are products of this brand?	Adapted from Keller, 2008
A030_04	How satisfactory is this brand's sales and service network?	Author's own development
A030_05	How easily serviced are products of this brand?	Adapted from Keller, 2008
A030_06	How efficient is this brand's after-sales service in terms of speed, responsiveness and problem-solving capability?	Adapted from Keller, 2008
A030_08	To what extent does this brand fully satisfy your product needs?	Keller, 2008
7-point intensity scale: 1= Not at all, 2= very slightly, 3=slightly, 4=Moderately, 5=Somewhat, 6=Strongly, 7=Completely		

Source: Author's own construction

Brand credibility measures

Code	Brand credibility	Source
A024_01	How much do you like this brand?	Keller, 2008
A024_03	How much do you respect this brand?	Keller, 2008
A024_04	To what extent do the representatives of this brand have your interests in mind?	Adapted from Keller, 2008
A024_06	How competent are the representatives of this brand?	Adapted from Keller, 2008
A024_07	How flexible are the representatives of this brand towards your specific needs?	Adapted from Keller, 2008
7-point Likert scale: 1 = Not at all, 2 = Very little, 3 = Little, 4 = Moderately, 5 = Somewhat, 6 = Strongly, 7 = Very strongly		

Source: Author's own construction

Brand trust measures

Code	Brand trust	Source
A025_01	I feel that I can trust this brand completely.	Keller, 2008
A025_02	The representatives of this brand are truly sincere in their promises.	Adapted from Keller, 2008
A025_05	I feel that this brand can be counted on to help me when I need it.	Keller, 2008
A025_06	I feel that the representatives of this brand do not show me enough consideration. (reversed)	Adapted from Keller, 2008
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree 5 = Somewhat, 6 = Strongly, 7 = Very strongly		

Source: Author's own construction

Brand feelings measures

Code	Brand feelings-related measures	Source
A028_01	Does this brand give you a feeling of warmth?	Keller, 2008
A028_02	Does this brand give you a feeling of fun?	
A028_03	Does this brand give you a feeling of excitement?	
A028_04	Does this brand give you a feeling of security?	
A028_05	Does this brand give you a feeling of management or peer group approval?	
A028_06	Does this brand give you a feeling of self-respect?	
7-point intensity scale: 1= Not at all, 2= very little, 3=little, 4=Neutral, 5=Somewhat, 6=Strongly, 7=Very strongly		

Source: Author's own construction

Company reputation measures

Code	Company reputation-related measures	Source
A022_01	Offers high quality products and services.	Adapted from Walsh & Beatty, 2007
A022_02	Is a strong, reliable company.	Walsh & Beatty, 2007
A022_03	Stands behind the products that it offers.	Walsh & Beatty, 2007
A022_04	Develops innovative products and services.	Adapted from Walsh & Beatty, 2007
A022_05	Is easy to do business with.	Keller, 2008
A022_06	Is very concerned with its customers.	Keller, 2008
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree 5 = Somewhat, 6 = Strongly, 7 = Very strongly		

Source: Author's own construction

Switching costs measures

Code	Switching Costs	Source
A015_01	It would cost my company a lot of money to switch to another brand.	Lam et. al, 2004
A015_02	It would take my company a lot of time to switch to another brand.	
A015_03	It would take my company a lot of effort to switch to another brand.	
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree		

Source: Author's own construction

Customer satisfaction measures

Code	Customer satisfaction-related items	Source
A029_04	Considering our recent experience, we are satisfied.	Adapted from Keller, 2008
A029_05	We are fully satisfied with this brand.	Adapted from Keller, 2008
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree		

Source: Author's own construction

Brand attachment measures

Code	Brand attachment	Source
A025_08	I would really miss this brand if it went away.	Keller, 2008
A025_09	This brand is more than a product to me.	Keller, 2008
A025_10	This brand is special to me.	Keller, 2008
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree		

Source: Author's own construction

Purchasing behavior measures

Code	Purchasing Behavior	Source
A016_01	I consider myself loyal to this brand.	Keller, 2008
A016_07	Even if another brand has the same features, I would still prefer to purchase products from this brand.	Yoo & Donthu, 2001
A016_03	We are very likely to purchase from this brand at the next occasion.	Keller, 2008
A016_04	I would recommend the brand to other firms in the industry.	Adapted from Keller, 2008
A016_08	If there is another brand as good as this brand, I still prefer to purchase products of this brand.	Yoo & Donthu, 2001
A016_06	If this brand were not available, it would make little difference to me if my company had to utilize another brand. (reversed)	Adapted from Keller, 2008
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree		

Source: Author's own construction

Purchase complexity measures

Code	Complexity-related items	Source
A014_01	Standardized product / Differentiated product	McGabe, 1987
A014_02	Technically simple / Technically complex	
A014_03	Easy to install/use / Specialized installation/use	
A014_04	No after sales service / Technical after sales service	
A014_05	Little investment / High investment	
A014_06	Small order / Larger order	
A014_07	Short-term commitment / Long-term commitment	
A014_08	No consequential adjustment / Large consequential adjustment	
A014_09	Small potential effect on profitability / Large potential effect on profitability	
A014_10	Easy to forecast effect / Hard to forecast effect	
7-point polarity profile		

Source: Author's own construction based on McGabe, 1987

Purchase risk measures

Code	Risk-related items	Source
A002_06	Risk due to the performance / functionality of the product.	Mudambi, 2002
A002_07	Risk due to the potential financial loss or high costs.	
A002_08	Risk due to the potential that the product would not meet the approval of management or peer group.	
A002_09	Overall risk of the purchase.	
7-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree		

Source: Author's own construction

Conceptual B2B marketing studies on rational and emotive brand attributes

Author and year	Emotive brand (image) dimensions	Rational brand (image) dimensions
Gordon, 1993 ⁴⁰⁰		<ul style="list-style-type: none"> • Product quality • Price • Customer specification of certain brand • Distributor availability • Low interest credit lines • Guarantee shipments with specific lead times and assume blame and penalties for late shipments • Speed of order-entry systems
Mudambi, Doyle, Wong, 1997 ⁴⁰¹	<ul style="list-style-type: none"> • Ease of ordering • Emergency response • Fit for purpose • Global perspective (company)Reputation • Innovation • Over-engineered • Reliable delivery • Understands our needs/business • Troubleshooting • Technical leadership (company) • World class (company) 	<ul style="list-style-type: none"> • Physical quality • Precision • Dimensions • Stated availability • Stated lead times • EDI and JIT • Design advice • Product testing • Site support • Financial stability (company) • Years of experience (company) • Global coverage (company)
Mudambi, 2002 ⁴⁰²	<ul style="list-style-type: none"> • Ease of ordering • Delivery convenience • How well known is the supplier • Nature and quality of the working relationship • Reputation • Service 	<ul style="list-style-type: none"> • Discount • Financial support • Ordering and delivery services • Payment terms • Price • Tangible product attributes • Technical support service • Product quality

⁴⁰⁰ Gordon, G. L., Calantone, R. J., & Di Benedetto, C. A. (1993). Brand Equity in the Business-to-Business Sector. *Journal of Product & Brand Management*, 2(3), 4–16.

⁴⁰¹ Mudambi, S. M., Doyle, P., & Wong, V. (1997). An exploration of branding in industrial markets. *Industrial Marketing Management*, 26(5), 433–446.

⁴⁰² Mudambi, S. (2002). Branding importance in business-to-business markets. *Industrial Marketing Management*, 31(6), 525–533.

Conceptual B2B marketing studies on rational and emotive brand attributes (continued)

Bendixen et al., 2004 ⁴⁰³	<ul style="list-style-type: none"> • Supplier's reputation • Relationship with supplier's personnel 	<ul style="list-style-type: none"> • After-Sales Service • Ease of operation • Ease of maintenance • Performance • Price • Quality
De Chernatony, 2004 ⁴⁰⁴	<ul style="list-style-type: none"> • Reassurance • Reputation • Responsiveness • Trust 	<ul style="list-style-type: none"> • Customer service • Delivery quality • Price • Product Specification • Supplier reliability
Webster and Keller, 2004 ⁴⁰⁵	<ul style="list-style-type: none"> • Corporate image • Corporate Social Responsibility • Ethics • Likeability • Trust 	<ul style="list-style-type: none"> • Value Proposition • Promised benefits • Credibility
Persson, 2010 ⁴⁰⁶	<ul style="list-style-type: none"> • Familiarity • Relationship and • Company associations 	<ul style="list-style-type: none"> • Product solution • Service • Distribution

Source: Authors own construction based on literature review.

⁴⁰³ Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, 33(5), 371–380.

⁴⁰⁴ Lynch, J., & Chernatony, L. de. (2003). *The power of emotion: Brand communication in business-to-business markets. Working paper series / Birmingham Business School: 2003-28*. Birmingham: University of Birmingham, Birmingham Business School.

⁴⁰⁵ Keller, K. L., & Webster, F. E. (2004). *A roadmap for branding industrial markets* (Rev. February 2004). *Tuck School of Business working paper: 2004-06*. Hanover, NH: Tuck School of Business at Dartmouth.

⁴⁰⁶ Persson, N. (2010). An exploratory investigation of the elements of B2B brand image and its relationship to price premium. *Industrial Marketing Management*, 39(8), 1269–1277.

APPENDIX III: Survey questionnaire

Schematic overview

Overview of content areas of survey instrument

Related to _ stage of the causal model	Content area / Variable of interest	Content	Type of question / scale ⁴⁰⁷	
	Cover letter	<ul style="list-style-type: none"> • Statement of study objectives. • Definition of the product category of the research (rail drive systems). • Use of collected data and assurance of confidentiality and anonymity. • Setting the context of the questions. • Encouragement to answer spontaneously and honestly. • Statement of Gratitude for participation. 		
1 st stage: Stimulus-level	<u>Question 1.:</u> Screening question	Question on involvement in purchasing decision.	Single-indicator, 7-point polarity profile	
	<u>Question 2.:</u> Screening question	Measurement of self-perceived influence on the purchasing decision within the buying center.	5 items, 7-point intensity scale	
	<u>Question 3.:</u> Importance	Question on importance of the purchasing decision.	Single-indicator, 7-point polarity profile	
	<u>Question 4.:</u> Purchase complexity	Scale to indicate complexity of rail drive systems.	10-items, 7-point polarity profile	
	<u>Question 5.:</u> Purchase risk	Scale to indicate complexity of rail drive systems.	4-items, 7-point Likert-scale	
	<u>Questions 6. to 8.:</u> Consideration & relevance set		Selection of brands within the product category of the research.	Multiple choice
			Indication on number of brands purchased within the product category.	Multiple choice
		Indication on predominantly purchased brand.	Multiple choice	

⁴⁰⁷ For detailed information on the questions and scales, refer to Appendix II.

Overview of content areas of survey instrument (continued)

2 nd stage: Organism- level	<u>Questions 9.:</u> Rational brand image dimension: Brand performance	Evaluation of rational brand performance of predominantly purchased brand.	12 items, 7-point intensity scale
	<u>Questions 10. - 13.:</u> Emotional image dimensions: brand credibility, brand trust, brand feelings and company reputation	Evaluation of the emotional dimension company reputation of predominantly purchased brand.	6 items, 7-point Likert-scale
		Evaluation of the emotional dimension brand feelings of predominantly purchased brand.	6-items, 7-point intensity scale
		Evaluation of the emotional dimension brand trust and the intervening variable brand attachment to predominantly purchased brand.	7 items, 7-point Likert-scale
	<u>Questions 14.-16.:</u> Intervening variables: customer satisfaction, brand attachment and switching costs.	Evaluation of the intervening variable customer satisfaction.	2 items, Likert- scale
		Evaluation of the intervening variable brand attachment.	3 items, Likert- scale
		Evaluation of the intervening variable switching costs.	3 items, 7-point Likert -scale
3 rd stage: Response- level	<u>Question 17.:</u> Purchasing behavior	Measurement of purchasing behavior.	6 items, 7-point Likert-scale
	<u>Questions 18. to 20.:</u> Company-related question	Company information (e.g. number of employees, branch of the railway industry)	Multiple choice
	<u>Questions 21. to 26.:</u> Personal and demographic questions	Questions regarding purchasing experience , function and status etc. Demographic information (gender, age, education).	Multiple choice

Full questionnaire: English version

Dear Sir or Madam,

You are invited to complete an anonymous survey about the influence of brand images of rail drive systems on the purchasing behavior of rolling stock companies such as OEMs and rail operators.

For convenience, a rail drive system can either be a loose combustion engine which is integrated into a rail vehicle, or an engine plus additional system components such as traction alternators, cooling units etc., installed as a complete system.

The data collected in this survey will be used for a doctoral dissertation in the field of marketing management. It should take you approximately 15 minutes to complete. Your participation in this study is completely voluntary. Your responses and all data from this research will be evaluated only in the aggregate. All information will be coded and will remain strictly confidential.

While answering the questions, imagine yourself as a manager on a purchasing team or committee charged with recommending the purchase of rail drive systems.

Please answer the questions in the survey spontaneously and honestly. There are no right or wrong answers. All that matters is your personal perception and experience as an industry representative.

Thank you very much for your time and candidness.

Best regards,

Aaron Leander Haußmann
University of Latvia, Riga /
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+ 49 (0) 157 8188192

1. To what extent are you involved in purchasing rail drive systems for your company?

Please select the most relevant option.

Never involved	Almost never involved	Seldom involved	Sometimes involved	Frequently involved	Almost always involved	Always involved
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Please think about a recent and typical work situation where you were a member of a purchasing team or committee responsible for selecting or recommending a particular rail drive system for your company.

Please indicate the extent to which you agree with the following statements regarding your influence on the purchase decision.

	Very little	little	Somewhat little	Neither large nor little	Somewhat large	Large	Very large
How much weight did the committee members give your opinions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent did you influence the criteria used for making the final decision?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much effect did your involvement in the purchase committee have on how the various options were rated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent did your participation influence the decision eventually reached?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent did the final decision reflect your views?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Please indicate the importance of rail drive systems for your company.

Using the rating scale shown below, please indicate your opinion of where the purchase of rail drive systems falls on such a scale.

Unimportant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Important
Low priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	High priority

4. Purchase Complexity. Using the rating scale shown below, please indicate your opinion of where the purchase of rail drive systems falls on such a scale.

Standardized product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Differentiated Product
Technically simple	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technically complex
Easy to install/use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Specialized installation/use
No after-sales service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technical after-sales service
Little investment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	High investment
Small order	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Large order
Short-term commitment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Long-term commitment
No consequential adjustment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Large consequential adjustment
Small potential effect on profitability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Large potential effect on profitability
Easy to forecast effect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hard to forecast effect

5. Purchase Risk. Please indicate your perception of the potential risks involved in the purchase of rail drive systems.

	Very low	Low	Somewhat low	Neither high nor low	Somewhat high	High	Very high
Risk due to the performance / functionality of the product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk due to the potential financial loss or high costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk due to the potential that the product would not meet the	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

approval of management or your peer group.							
Overall risk of the purchase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. In a purchasing situation for rail drive systems, which of the following brands do you generally consider purchasing?

Please choose all applicable.

<input type="checkbox"/>	ABC
<input type="checkbox"/>	Caterpillar
<input type="checkbox"/>	Cummins
<input type="checkbox"/>	Deutz
<input type="checkbox"/>	EMD
<input type="checkbox"/>	General Electric
<input type="checkbox"/>	Iveco
<input type="checkbox"/>	John Deere
<input type="checkbox"/>	Kolomna
<input type="checkbox"/>	MAN
<input type="checkbox"/>	MTU
<input type="checkbox"/>	Voith
<input type="checkbox"/>	Volvo Penta
<input type="checkbox"/>	Wärtsilä
<input type="checkbox"/>	Other, please specify

7. From how many different brands has your company purchased rail drive systems in the last 5 years?

<input type="checkbox"/>	Not purchased any
<input type="checkbox"/>	1 brand
<input type="checkbox"/>	2 brands
<input type="checkbox"/>	3 brands
<input type="checkbox"/>	4 brands
<input type="checkbox"/>	More than 4 brands

8. Which of the following brands of rail drive system is predominantly purchased by your company?

If you are not sure, please estimate.

<input type="checkbox"/>	ABC
<input type="checkbox"/>	Caterpillar
<input type="checkbox"/>	Cummins
<input type="checkbox"/>	Deutz

<input type="checkbox"/>	EMD
<input type="checkbox"/>	General Electric
<input type="checkbox"/>	Iveco
<input type="checkbox"/>	John Deere
<input type="checkbox"/>	Kolomna
<input type="checkbox"/>	MAN
<input type="checkbox"/>	MTU
<input type="checkbox"/>	Voith
<input type="checkbox"/>	Volvo Penta
<input type="checkbox"/>	Wärtsilä
<input type="checkbox"/>	Other, please specify

9. Brand performance: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Please indicate your opinion on the following questions.

	Not at all	Very slightly	Slightly	Moderately	Somewhat	Strongly	Completely
Compared with other brands in the category, how well does this brand meet the requirements of your technical specification?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent do products of this brand have special features that other brands do not have?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compared with other brands in the category, how favorable are this brand's prices generally?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compared with other brands in the category, how favorable are this brand's life-cycle costs generally?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compared with other brands in the category, how favorable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

are this brand's contractual conditions generally?							
How favorable are this brand's lead times and delivery reliability?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How easily installed is this brand in your company's product (e.g. locomotive, railcar or system)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How reliable are products of this brand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How satisfactory is this brand's sales and service network?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How efficient is this brand's after-sales service in terms of speed, responsiveness and problem-solving capability?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent does this brand fully satisfy your product needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Company reputation: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Please indicate the extent to which you agree with the following statements about the company behind the brand.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Offers high quality products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a strong,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

reliable company.							
Stands behind the products that it offers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develops innovative products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is easy to do business with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is very concerned with its customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Brand credibility: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Please indicate your opinion on the following questions.

	Very little	little	Somewhat little	Moderately	Somewhat	Strongly	Very strongly
How much do you like this brand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much do you respect this brand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent do the representatives of this brand have your interests in mind?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How competent are the representatives of this brand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How flexible are the representatives of this brand towards your specific needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Brand feelings: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Some of the questions might seem unusual, but you may generally feel a certain way about the brand.

	Not at all	Very little	Little	Neutral	Somewhat	Strongly	Very strongly
Does this brand give you a feeling of warmth?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does this brand give you a feeling of fun?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does this brand give you a feeling of excitement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does this brand give you a feeling of	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

security?							
Does this brand give you a feeling of management or peer group approval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does this brand give you a feeling of self-respect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Brand trust: The following statements refer to the brand of rail drive system which is predominantly purchased by your company. Some of the statements might seem unusual, but you may generally feel a certain way about the brand.

Please indicate the extent to which you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I feel that I can trust this brand completely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The representatives of this brand are truly sincere in their promises.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that this brand can be counted on to help me when I need it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that the representatives of this brand do not show me enough consideration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Customer satisfaction: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Please indicate the extent to which you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Considering our recent experience, we are satisfied.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We are fully satisfied with this brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Brand Attachment: The following statements refer to the brand of rail drive system which is predominantly purchased by your company. Some of the statements might seem unusual, but you may generally feel a certain way about the brand.

Please indicate the extent to which you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I would really miss this brand if it went away.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This brand is special to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This brand is more than a product to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Switching cost: Please indicate your opinion about switching from the brand of rail drive system you are currently predominantly purchasing/utilizing to another.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It would cost my company a lot of money to switch to another brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would take my company a lot of time to switch to another brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would take my company a lot of effort to switch to another brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Purchasing behavior: The following questions refer to the brand of rail drive system which is predominantly purchased by your company.

Please indicate the extent to which you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I consider myself loyal to this brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Even if another brand has the same features, I would still prefer to purchase products from this brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We are very likely to purchase from this brand at the next occasion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would recommend the brand to other firms in the industry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If this brand were not available, it would make little difference to me if my company had to utilize another brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If there is another brand as good as this brand, I still prefer to purchase products of this brand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. How many persons at your company are involved in the purchasing process of rail drive systems? (Including all relevant departments)

Persons

19. How would you categorize your company's industry? (Optional question)

<input type="checkbox"/>	Original Equipment Manufacturer (OEM)
<input type="checkbox"/>	Operator
<input type="checkbox"/>	Distributor
<input type="checkbox"/>	Remanufacturer
<input type="checkbox"/>	Leasing Company
<input type="checkbox"/>	Service Provider
<input type="checkbox"/>	Other

20. How many employees does your company have in total? (Optional question)

<input type="checkbox"/>	Fewer than 100
<input type="checkbox"/>	100 – 499
<input type="checkbox"/>	500 – 999
<input type="checkbox"/>	1.000 – 4.999
<input type="checkbox"/>	5.000 – 10.000
<input type="checkbox"/>	More than 10.000

21. How many years of experience do you have as a member of purchasing committees for rail drive systems? (Optional question)

<input type="checkbox"/>	Less than 3 years
<input type="checkbox"/>	3 - 6 years
<input type="checkbox"/>	6 - 10 years
<input type="checkbox"/>	11 - 15 years
<input type="checkbox"/>	16 - 20 years
<input type="checkbox"/>	Over 20 years

22. Which of the following best describes your functional role? (Optional question)

<input type="checkbox"/>	Engineering
<input type="checkbox"/>	Purchasing
<input type="checkbox"/>	Product Management
<input type="checkbox"/>	Project Management
<input type="checkbox"/>	Quality
<input type="checkbox"/>	Marketing / Sales
<input type="checkbox"/>	Service
<input type="checkbox"/>	Other

23. Which of the following best describes your position in your company? (Optional question)

<input type="checkbox"/>	Upper management (e.g. Member of the Board, Vice President)
<input type="checkbox"/>	Middle management (e.g. Head of Department)
<input type="checkbox"/>	Lower Management (e.g. Team Leader)
<input type="checkbox"/>	Professional (e.g. purchasing, engineering, project management)
<input type="checkbox"/>	Consultant
<input type="checkbox"/>	Student/Intern
<input type="checkbox"/>	Other

24. What is your gender? (Optional question)

<input type="checkbox"/>	Female
<input type="checkbox"/>	Male

25. What is your age? (Optional question)

<input type="checkbox"/>	25 years or under
<input type="checkbox"/>	26 – 40 years
<input type="checkbox"/>	41 – 55 years
<input type="checkbox"/>	56 years or older

26. What is the highest level of education you have completed? (Optional question)

<input type="checkbox"/>	High school or equivalent
<input type="checkbox"/>	Vocational/technical school
<input type="checkbox"/>	Bachelor's degree
<input type="checkbox"/>	Master's degree
<input type="checkbox"/>	Doctoral degree
<input type="checkbox"/>	Other

Full questionnaire: German version

Sehr geehrte Dame, sehr geehrter Herr,

Sie sind eingeladen, an einer anonymen Umfrage bezüglich des Einflusses von Markenimages von Bahnantriebssystemen auf das Kaufverhalten von Eisenbahnunternehmen, wie beispielsweise OEMs und Betreibern, teilzunehmen.

Der Einfachheit halber kann ein Bahnantriebssystem entweder ein loser Verbrennungsmotor sein, der in ein Schienenfahrzeug installiert wird, oder ein Motor mit zusätzlichen Systemkomponenten wie beispielsweise Traktionsgeneratoren, Kühlanlagen usw., die als komplettes System eingebaut werden.

Die erhobenen Daten dieser Umfrage werden im Rahmen einer Dissertation auf dem Gebiet des Marketingmanagements genutzt. Das Ausfüllen nimmt etwa 15 Minuten in Anspruch. Ihre Teilnahme an dieser Umfrage ist völlig freiwillig. Ihre Rückmeldungen und alle Daten dieser Umfrage werden nur in aggregierter Form ausgewertet. Alle Informationen werden kodiert und streng vertraulich behandelt.

Während Sie die Fragen beantworten, versetzen Sie sich in die Lage eines Managers in einem Beschaffungsteam oder Komitee, das mit der Beschaffungsempfehlung für Bahnantriebssysteme beauftragt ist.

Bitte beantworten Sie die Fragen spontan und ehrlich. Es gibt keine richtigen oder falschen Antworten. Worauf es ausschließlich ankommt, ist Ihre persönliche Wahrnehmung und Erfahrung als Branchenvertreter/in.

Vielen Dank für Ihre Zeit und Offenheit.

Mit freundlichen Grüßen

Aaron Leander Haußmann
University of Latvia, Riga /
DIPLOMA Private Hochschulgesellschaft mbH

+ 49 (0) 157 8188192

1. In welchem Maße sind Sie an der Beschaffung von Bahnantriebssystemen für Ihr Unternehmen beteiligt?

Bitte wählen Sie die passendste Option.

Niemals beteiligt	Fast niemals beteiligt	Selten beteiligt	Manchmal beteiligt	Häufig beteiligt	Fast immer beteiligt	Immer beteiligt
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Bitte denken Sie an eine typische Arbeitssituation in der jüngeren Vergangenheit, in welcher Sie Mitglied eines Einkaufsteams oder Komitees waren, das für die Auswahl oder Empfehlung eines bestimmten Bahnantriebssystems für Ihr Unternehmen verantwortlich war.

Bitte geben Sie an, zu welchem Grad Sie mit den folgenden Aussagen bezüglich Ihres Einflusses auf die Kaufentscheidung zustimmen.

	Sehr gering	gering	Eher gering	Weder noch	Eher viel	Viel	Sehr viel
Wieviel Gewicht legten die anderen Komitee-Mitglieder auf Ihre Meinung?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zu welchem Grad beeinflussten Sie die Kriterien, die zur finalen Entscheidungsfindung herangezogen wurden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welchen Einfluss hatte Ihr Mitwirken im Einkaufsgremium auf die Bewertung der verschiedenen Optionen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zu welchem Grad beeinflusste Ihre Beteiligung die Entscheidung, die letztendlich getroffen wurde?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zu welchem Grad spiegelte die finale Entscheidung Ihre Ansichten wider?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Bitte geben Sie die Wichtigkeit von Bahnantriebssystemen für Ihr Unternehmen an.

Bitte geben Sie anhand der unten dargestellten Skala an, wo Bahnantriebssysteme auf einer solchen Skala Ihrer Meinung nach einzustufen sind.

Unwichtig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wichtig
Niedrige Priorität	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hohe priorität

4. Beschaffungs-Komplexität von Bahnantriebssystemen.

Bitte geben Sie anhand der unten dargestellten Skala an, wo Bahnantriebssysteme auf einer solchen Skala Ihrer Meinung nach einzustufen sind.

Standardisiertes Produkt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Differenziertes Produkt
Technisch einfach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technisch komplex
Einfach zu installieren/betreiben	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Schwierig zu installieren/betreiben
Kein After-Sales Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technischer After-Sales Service
Kleine Investition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Große Investition
Kleine Aufträge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Große Aufträge
Kurzfristige Verpflichtung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Langfristige Verpflichtung
Keine nachträglichen Anpassungen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Große nachträgliche Anpassungen
Kleine potentielle Auswirkungen auf die Profitabilität	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Große potentielle Auswirkungen auf die Profitabilität
Auswirkungen leicht vorherzusehen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auswirkungen schwer vorherzusehen

5. Beschaffungsrisiko. Bitte geben Sie Ihre Wahrnehmung bezüglich potentieller Risiken bei der Beschaffung von Bahnantriebssystemen an.

	Sehr gering	Gering	Eher gering	Weder noch	Eher hoch	Hoch	Sehr hoch
Das Risiko aufgrund der Performance / Funktionalität des Produktes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Das Risiko aufgrund potentieller finanzieller Verluste oder hoher Kosten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Das Risiko aufgrund der Möglichkeit, dass das Produkt nicht die Zustimmung des	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Managements oder Ihres Arbeitsumfeldes erhält.							
Das Gesamtrisiko der Beschaffung.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Welche der folgenden Marken kommen bei Ihnen in die generelle Auswahl in einer Beschaffungssituation von Bahnantriebssystemen? (Mehrfachnennungen sind möglich).

<input type="checkbox"/>	ABC
<input type="checkbox"/>	Caterpillar
<input type="checkbox"/>	Cummins
<input type="checkbox"/>	Deutz
<input type="checkbox"/>	EMD
<input type="checkbox"/>	General Electric
<input type="checkbox"/>	Iveco
<input type="checkbox"/>	John Deere
<input type="checkbox"/>	Kolomna
<input type="checkbox"/>	MAN
<input type="checkbox"/>	MTU
<input type="checkbox"/>	Voith
<input type="checkbox"/>	Volvo Penta
<input type="checkbox"/>	Wärtsilä
<input type="checkbox"/>	Sonstige, und zwar:

7. Von wievielen verschiedenen Marken hat Ihr Unternehmen in den vergangenen 5 Jahren Bahnantriebssysteme beschafft? Wenn Sie nicht sicher sind, schätzen Sie bitte.

<input type="checkbox"/>	Keine Beschaffung
<input type="checkbox"/>	1 Marke
<input type="checkbox"/>	2 Marken
<input type="checkbox"/>	3 Marken
<input type="checkbox"/>	4 Marken
<input type="checkbox"/>	Mehr als 4 Marken

8. Welche der folgenden Marken von Bahnantriebssystemen wird überwiegend von Ihrem Unternehmen beschafft?

Wenn Sie nicht sicher sind, schätzen Sie bitte.

<input type="checkbox"/>	ABC
<input type="checkbox"/>	Caterpillar
<input type="checkbox"/>	Cummins
<input type="checkbox"/>	Deutz
<input type="checkbox"/>	EMD
<input type="checkbox"/>	General Electric
<input type="checkbox"/>	Iveco
<input type="checkbox"/>	John Deere
<input type="checkbox"/>	Kolomna
<input type="checkbox"/>	MAN
<input type="checkbox"/>	MTU
<input type="checkbox"/>	Voith
<input type="checkbox"/>	Volvo Penta
<input type="checkbox"/>	Wärtsilä
<input type="checkbox"/>	Sonstige, und zwar:

9. Markenperformance: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Bitte geben Sie Ihre Meinung zu den folgenden Fragen an.

	Gar nicht	Eher nicht	Kaum	Mittelmäßig	Etwas	Ziemlich	Vollkommen
Verglichen mit anderen Marken der Produktkategorie, inwiefern erfüllt die Marke die Anforderungen Ihrer technischen Spezifikation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zu welchem Grad haben Produkte dieser Marke besondere Features, die andere Marken nicht bieten?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verglichen mit anderen Marken der Produktkategorie, wie vorteilhaft sind die Preise dieser Marke generell?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verglichen mit anderen Marken der Produktkategorie, wie vorteilhaft sind die Lebenszykluskosten (LCC) dieser Marke generell?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Verglichen mit anderen Marken der Produktkategorie, wie vorteilhaft sind die Vertragsbedingungen dieser Marke generell?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie vorteilhaft sind die Lieferzeiten und die Liefertreue dieser Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie einfach lassen sich Produkte dieser Marke in Ihr Endprodukt installieren (z.B. in eine Lokomotive, Triebwagen oder System)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie zuverlässig sind die Produkte dieser Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie zufriedenstellend ist das Vertriebs- und Servicenetzwerk dieser Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie einfach zu warten und instandzuhalten sind die Produkte dieser Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie effizient ist der Kundendienst (Service) dieser Marke im Sinne von Schnelligkeit, Reaktionszeiten und Problemlösungsfähigkeit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inwieweit erfüllt die Marke umfassend Ihre Produkthanforderungen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Unternehmensreputation: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Bitte geben Sie an, zu welchem Grad Sie den folgenden Aussagen über das Unternehmen, das hinter der Marke steht, zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Bietet qualitativ hochwertige Produkte und Dienstleistungen an.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ist ein starkes, verlässliches Unternehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Steht hinter den Produkten, die es anbietet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entwickelt innovative Produkte und Dienstleistungen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Es ist einfach, mit diesem Unternehmen Geschäfte zu machen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ist sehr auf seine Kunden bedacht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Markenglaubwürdigkeit: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Bitte geben Sie Ihre Meinung zu den folgenden Fragen an.

	Gar nicht	Eher nicht	Kaum	Mittelmäßig	Etwas	Stark	Sehr stark
Wie sehr mögen Sie die Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie sehr respektieren Sie die Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In welchem Maße haben die Vertreter dieser Marke Ihre Interessen im Sinn?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie kompetent sind die Vertreter dieser Marke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wie flexibel sind die Vertreter dieser Marke im Hinblick auf Ihre spezifischen Bedürfnisse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Markengefühle: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Einige der Fragen mögen ungewöhnlich erscheinen, aber möglicherweise hegen Sie generell gewisse Empfindungen gegenüber der Marke.

	Gar nicht	Eher nicht	Kaum	Neutral	Etwas	Stark	Sehr stark
Gibt Ihnen diese Marke ein Gefühl der Wärme?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gibt Ihnen diese Marke ein Gefühl von Spaß?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gibt Ihnen diese Marke ein Gefühl von Begeisterung?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gibt Ihnen diese Marke ein Gefühl von Sicherheit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gibt Ihnen diese Marke ein Gefühl von Akzeptanz durch Ihr Arbeitsumfeld / Ihr Management?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gibt Ihnen diese Marke ein Gefühl von Selbstachtung?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Markenvertrauen: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Einige der Aussagen mögen ungewöhnlich erscheinen, aber möglicherweise hegen Sie generell gewisse Empfindungen gegenüber der Marke. Bitte geben Sie an, zu welchem Grad Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich glaube, dass ich dieser Marke komplett vertrauen kann.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Die Vertreter dieser Marke sind wirklich aufrichtig in ihren Versprechen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich glaube, dass auf die Unterstützung dieser Marke Verlass ist, wenn ich sie brauche.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich glaube, dass mir die Vertreter dieser Marke nicht genügend Beachtung schenken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Kundenzufriedenheit. Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Bitte geben Sie an, zu welchem Grad Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
In Anbetracht unserer Erfahrung mit der Marke aus der letzten Zeit, sind wir zufrieden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wir sind vollkommen zufrieden mit dieser Marke.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Markenbindung: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Einige der Aussagen mögen ungewöhnlich erscheinen, aber möglicherweise hegen Sie generell gewisse Empfindungen gegenüber der Marke. Bitte geben Sie an, zu welchem Grad Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich würde diese Marke wirklich vermissen, wenn es sie nicht mehr gäbe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diese Marke ist etwas Besonderes für mich.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diese Marke ist mehr als ein Produkt für mich.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Bitte geben Sie Ihre Meinung bezüglich eines Wechsels der Marke von Bahnantriebssystemen, die Sie aktuell überwiegend beschaffen, zu einer anderen Marke an.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Es würde mein Unternehmen viel Geld kosten, zu einer anderen Marke zu wechseln.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Es würde mein Unternehmen viel Zeit kosten, zu einer anderen Marke zu wechseln.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Es würde für mein Unternehmen viel Aufwand bedeuten, zu einer anderen Marke zu wechseln.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Kaufverhalten: Die folgenden Fragen beziehen sich auf die Marke von Bahnantriebssystemen, die überwiegend von Ihrem Unternehmen beschafft wird.

Bitte geben Sie an, zu welchem Grad Sie den folgenden Aussagen zustimmen.

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Stimme weder zu noch lehne ich ab	Stimme eher zu	Stimme zu	Stimme voll und ganz zu
Ich betrachte mich dieser Marke gegenüber als loyal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Selbst wenn eine andere Marke die gleichen Eigenschaften hätte, würde ich es dennoch vorziehen, Produkte dieser Marke zu Beschaffen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wir werden uns in der nächsten Beschaffungssituation sehr wahrscheinlich wieder für diese Marke entscheiden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich würde diese Marke anderen Unternehmen in der Branche weiterempfehlen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wenn diese Marke nicht verfügbar wäre, würde es für mich kaum einen Unterschied machen, wenn mein Unternehmen eine andere Marke einsetzen müsste.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wenn es eine andere Marke gibt, die so gut ist wie diese, würde ich es dennoch vorziehen, Produkte dieser Marke zu beschaffen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Wie viele Personen sind in Ihrem Unternehmen am Beschaffungsprozess für Bahnantriebssysteme beteiligt? (Inklusive aller relevanten Abteilungen).

Bitte geben Sie die Anzahl an Personen an. Wenn Sie nicht sicher sind, schätzen Sie bitte.

<input type="checkbox"/> Personen

19. Wo würden Sie Ihr Unternehmen anhand der folgenden Wirtschaftszweige einordnen?
(Optionale Frage)

<input type="checkbox"/>	Original Equipment Manufacturer (OEM)
<input type="checkbox"/>	Betreiber
<input type="checkbox"/>	Distributor
<input type="checkbox"/>	Wiederaufarbeiter (Remanufacturer)
<input type="checkbox"/>	Leasingunternehmen
<input type="checkbox"/>	Service-Dienstleister
<input type="checkbox"/>	Lieferant
<input type="checkbox"/>	sonstige

20. Wie viele Mitarbeiter hat Ihr Unternehmen insgesamt? (Optionale Frage)

<input type="checkbox"/>	Weniger als 100
<input type="checkbox"/>	100 – 499
<input type="checkbox"/>	500 – 999
<input type="checkbox"/>	1.000 – 4.999
<input type="checkbox"/>	5.000 – 10.000
<input type="checkbox"/>	Mehr als 10.000

21. Wie viele Jahre Erfahrung als Mitglied von Beschaffungsgremien für Bahnantriebssysteme haben Sie? (Optionale Frage)

<input type="checkbox"/>	Weniger als 3 Jahre
<input type="checkbox"/>	3 – 6 Jahre
<input type="checkbox"/>	6 – 10 Jahre
<input type="checkbox"/>	11 – 15 Jahre
<input type="checkbox"/>	16 – 20 Jahre
<input type="checkbox"/>	Über 20 Jahre

22. Welche der folgenden Optionen beschreibt am ehesten Ihre Funktion im Unternehmen?
(Optionale Frage)

<input type="checkbox"/>	Engineering, Entwicklung
<input type="checkbox"/>	Einkauf / Beschaffung
<input type="checkbox"/>	Produktmanagement
<input type="checkbox"/>	Projektmanagement
<input type="checkbox"/>	Qualität
<input type="checkbox"/>	Marketing / Vertrieb

<input type="checkbox"/>	Service
<input type="checkbox"/>	sonstige

23. Welche der folgenden Optionen beschreibt am ehesten Ihre Position im Unternehmen?
(Optionale Frage)

<input type="checkbox"/>	Oberes Management (z.B. Mitglied der Geschäftsführung, Hauptabteilungsleiter/in)
<input type="checkbox"/>	Mittleres Management (z.B. Abteilungsleiter/in)
<input type="checkbox"/>	Unteres Management (z.B. Teamleiter/in)
<input type="checkbox"/>	Sachbearbeiter/in (z.B. Einkauf, Engineering, Produktmanagement)
<input type="checkbox"/>	Berater/in
<input type="checkbox"/>	Student/in / Praktikant/in
<input type="checkbox"/>	sonstige

24. Was ist Ihr Geschlecht (Optionale Frage).

<input type="checkbox"/>	Weiblich
<input type="checkbox"/>	Männlich

25. Welcher Altersgruppe gehören Sie an? (Optionale Frage).

<input type="checkbox"/>	25 oder jünger
<input type="checkbox"/>	26-40
<input type="checkbox"/>	41-55
<input type="checkbox"/>	56 oder Älter

26. Was ist Ihr höchster Bildungsabschluss?

<input type="checkbox"/>	Schulabschluss
<input type="checkbox"/>	Berufsausbildung / Fachschule
<input type="checkbox"/>	Hochschulabschluss eines Programmes bis zu 4 Jahren (z.B. FH-Diplom, Bachelor)
<input type="checkbox"/>	Hochschulabschluss eines Programmes bis zu 5 Jahren (z.B. Universitätsdiplom, Master)
<input type="checkbox"/>	Promotion
<input type="checkbox"/>	sonstige

APPENDIX IV: Statistical analyses of the research results

Multi-Dimensional Scaling (MDS) instructions of pre-survey (1/2)

Ähnlichkeit von Motoren-Marken in der Bahnbranche

Seite 1/4

0%

Sehr geehrte Teilnehmerin, sehr geehrter Teilnehmer,

in dieser Befragung der Fachhochschule Kufstein, Tirol, wird die Ähnlichkeit bzw. Unähnlichkeit verschiedener Marken von in der Bahnindustrie eingesetzten Motoren untersucht. Als Marken betrachten wir Unternehmen oder auch Produkte, die mit ihrem Namen und Logo einen hohen Bekanntheitsgrad bei den Kunden erreicht haben und mit denen eine gewissen Vorstellung verbunden wird (z.B. gutes Image, hohe Qualität, neueste Technologien).

Es werden Ihnen eine Reihe von verschiedenen Markennamen in paarweiser Anordnung angezeigt. Rechts neben den Markenpaaren ist jeweils eine Skala angeordnet. Diese umfasst einen Wertebereich von 1: das Markenpaar ist sich vollkommen ähnlich bis zu 9: das Markenpaar ist sich vollkommen unähnlich. Ihre Bewertung geben Sie durch anklicken des nach Ihrer Wahrnehmung am passendsten Buttons ab.

Es geht bei Ihrer Bewertung ausschließlich um Ihre persönliche Wahrnehmung hinsichtlich der Ähnlichkeit bzw. Unähnlichkeit zwischen den Marken. Entscheiden Sie bitte spontan und ehrlich, es gibt keine richtigen oder falschen Antworten. Bitte geben Sie auch dann eine Bewertung ab, wenn Sie eine oder mehrere Marken nicht kennen.

Die erhobenen Daten werden im Rahmen einer Dissertation im Bereich Marketing genutzt. Die Dauer der Befragung beträgt etwa 10 bis 15 Minuten.

Selbstverständlich werden Ihre Angaben streng vertraulich behandelt. Die Daten werden in anonymisierter Form erhoben und ausgewertet.

Vielen Dank für Ihre Teilnahme!

Zurück

Umfrage erstellt mit Hilfe von '2ask'



Weiter

Veranstalter der Umfrage: Aaron Haußmann, Emil-Higelin-Str. 15, 88048 Friedrichshafen, Deutschland, info@aaron-haussmann.com

Diese Umfrage wird von 2ask im Rahmen des Förderprogramms für [Forschung & Lehre](#) unterstützt.

Multi-Dimensional Scaling (MDS) instructions of pre-survey (2/2)

1. Beurteilen Sie bitte folgende Marken bezüglich ihrer Ähnlichkeit zueinander (1/3). *

	vollkommen ähnlich 1	2	3	4	5	6	7	8	vollkommen unähnlich 9
Caterpillar / ABC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cummins / Caterpillar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deutz / Cummins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMD / Deutz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GE / EMD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
John Deere / GE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kolomna / John Deere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MAN / Kolomna	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MTU / MAN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voith / MTU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volvo Penta / Voith	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wärtsilä / Volvo Penta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cummins / ABC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deutz / Caterpillar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMD / Cummins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GE / Deutz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
John Deere / EMD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kolomna / GE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MAN / John Deere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MTU / Kolomna	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voith / MAN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volvo Penta / MTU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wärtsilä / Voith	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deutz / ABC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EMD / Caterpillar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GE / Cummins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
John Deere / Deutz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kolomna / EMD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MAN / GE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MTU / John Deere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voith / Kolomna	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volvo Penta / MAN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wärtsilä / MTU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Zurück

Umfrage erstellt mit Hilfe von **2ask**

Weiter

Veranstalter der Umfrage: Aaron Hausmann, Emil-Higelin-Str. 15, 68048 Friedrichshafen, Deutschland, info@aaaron-hausmann.com

Diese Umfrage wird von [2ask](#) im Rahmen des Förderprogramms für [Forschung & Lehre](#) unterstützt.

SPSS result of Multi-Dimensional Scaling (MDS)

	11	12	13
11	,000		
12	5,927	,000	
13	6,732	6,317	,000

Iteration history for the 2 dimensional solution (in squared distances)

Young's S-stress formula 1 is used.

Iteration	S-stress	Improvement
1	,29709	
2	,21000	,08709
3	,19487	,01513
4	,19032	,00455
5	,18656	,00376
6	,18250	,00406
7	,17998	,00252
8	,17922	,00076

Iterations stopped because
S-stress improvement is less than ,001000

Stress and squared correlation (RSQ) in distances

RSQ values are the proportion of variance of the scaled data (disparities)
in the partition (row, matrix, or entire data) which
is accounted for by their corresponding distances.
Stress values are Kruskal's stress formula 1.

For matrix
Stress = ,16522 RSQ = ,85182

Configuration derived in 2 dimensions

Invitation to Focus Group discussion

An...	
Senden	
Betreff:	Invitation: Focus Group Discussion
Ort:	Skype-Online Conference
Beginnt:	Mo 22.02.2016 11:00 <input type="checkbox"/> Ganztägiges Ereignis
Endet:	Mo 22.02.2016 12:30

Dear Sir / Madam,

You have been invited to participate in a focus group in the frame of a doctoral research of the University of Latvia, Riga. The purpose of the focus group is to deepen our understanding of the impact of brand images on B2B purchasing behavior through interpretation of an empirical survey to which you have contributed last year. The feedback obtained through your valued comments on this topic will be used for the interpretation of empirical data previously collected.

During the online session you will not be identified by name. Instead, you will be provided with an alias name in which you will log into the online discussion. No identifiable information will be released in any report associated with this study. However, for purpose of analysis of group discussion, your written comments will be recorded for a research report.

In the focus group session, all comments are regarded as being of value, there are no right or wrong answers. We appreciate hearing of many different viewpoints. Given the anonymity of the session, we encourage all participants to feel free to express honestly their views, whether or not they agree with most other participants.

Best regards,
Aaron Haußmann

→ [An Skype-Besprechung teilnehmen](#)

Dies ist eine Online-Besprechung für Skype for Business, die Anwendung für Besprechungen und Kommunikation in Unternehmen, ehemals Lync.

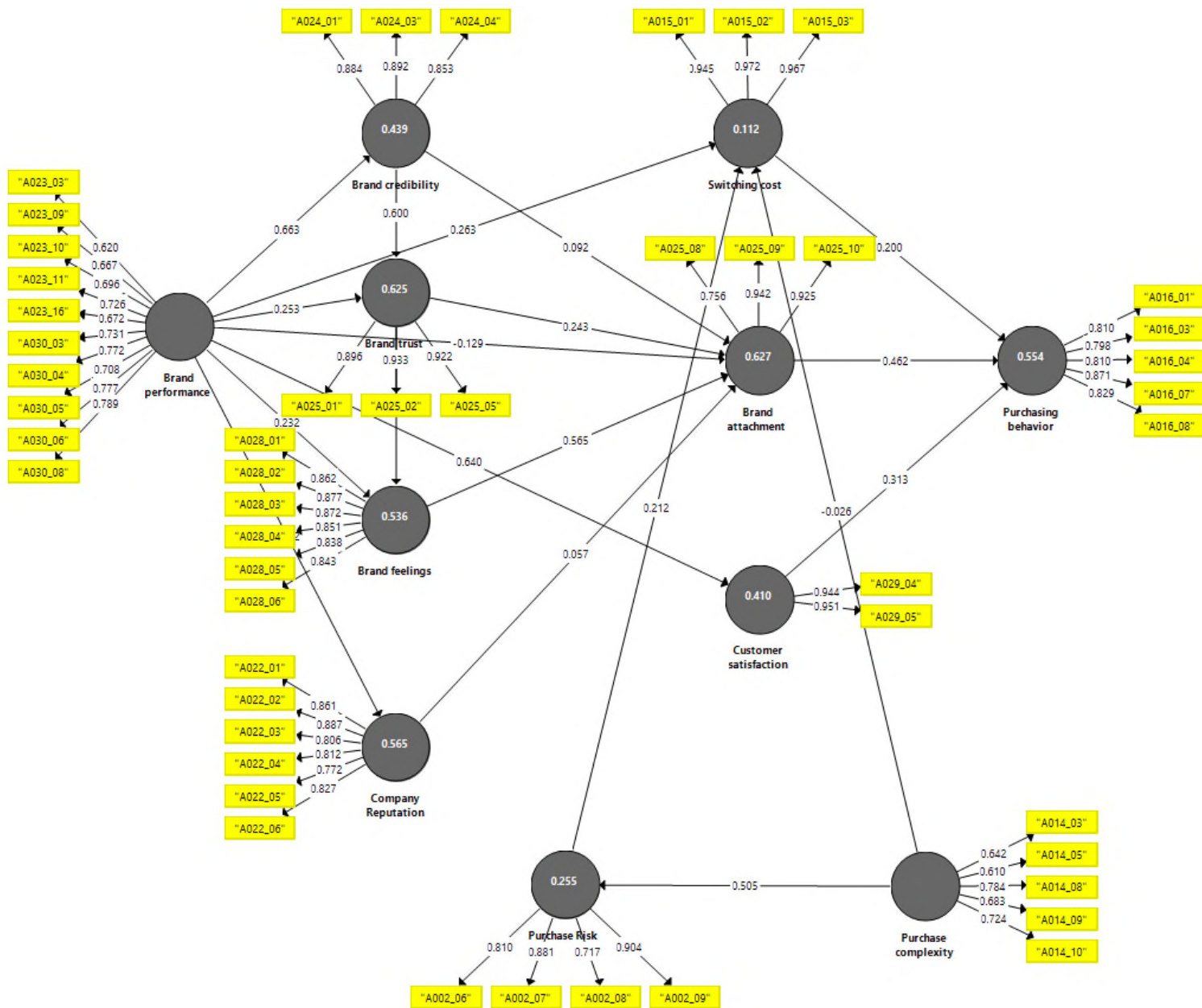
Per Telefon teilnehmen

+49 7541 9057900 (Deutschland) Deutsch (Deutschland)

[Lokale Rufnummer suchen](#)

Konferenzkennung: 401672
[PIN für Einwahl vergessen?](#) [Hilfe](#)

The final Structural Equation Model including path coefficients, R² values and factor loadings



The final SEM

Source: Author's own construction based on research results analyzed with SmartPLS

Factor loadings of the final measuring instrument

Factor loadings of the final measuring instrument

Construct	Indicator (code)	Factor loading
Purchase risk	A002_06	0.810
	A002_07	0.881
	A002_08	0.717
	A002_09	0.904
Purchase complexity	A014_03	0.642
	A014_05	0.610
	A014_08	0.784
	A014_09	0.683
	A014_10	0.724
Switching costs	A015_01	0.945
	A015_02	0.972
	A015_03	0.967
Purchasing behavior	A016_01	0.810
	A016_03	0.798
	A016_04	0.810
	A016_07	0.871
	A016_08	0.829
Company reputation	A022_01	0.861
	A022_02	0.887
	A022_03	0.806
	A022_04	0.812
	A022_05	0.772
	A022_06	0.827
Brand performance	A023_03	0.620
	A023_09	0.667
	A023_10	0.696
	A023_11	0.726
	A023_16	0.672
	A030_03	0.731
	A030_04	0.772
	A030_05	0.708
	A030_06	0.777
	A030_08	0.789
Brand credibility	A024_01	0.884
	A024_03	0.892
	A024_04	0.853
Brand trust	A025_01	0.896
	A025_02	0.933
	A025_05	0.922
Brand attachment	A025_08	0.756
	A025_09	0.942
	A025_10	0.925

Factor loadings of the final measuring instrument (continued)

Construct	Indicator (code)	Factor loading
Brand feelings	A028_01	0.862
	A028_02	0.877
	A028_03	0.872
	A028_04	0.851
	A028_05	0.838
	A028_06	0.843
Customer satisfaction	A029_04	0.944
	A029_05	0.951
Individual influence ⁴⁰⁸	A004_01	0.923
	A004_02	0.962
	A004_03	0.962
	A004_04	0.951
	A004_05	0.945

Source: Author's own construction

⁴⁰⁸ Note: Individual influence was a screening question to test respondent's eligibility for the survey, but it was not included in the research's SEM.

APPENDIX V: List of Experts

List of Experts

Name	Institution / Function	Type of Input	Selection criterion for experts
Scientific expert			
Prof. Dr. Ronald Pörner	Hochschule für Technik und Wirtschaft Berlin	<ul style="list-style-type: none"> • Discussion about image dimensions relevant for the railway industry. • Review of survey methodology. 	<ul style="list-style-type: none"> • President of the German Railway Association (VDB) between 2007-2015. • Industry experience within the Railway industry. • Scientific specialization in investment goods marketing
Industry experts			
Michael Blank	Rolls Royce Power Systems Sales Manager Scandinavia	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Anthony Clack	Penske Power Systems Australia	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Rainer Don	Alstom Transport Director Products and Platforms	Input on image dimensions.	> 10 years of experience in purchasing within the railway industry.
Gunnar Dunker	Alstom Transport Project Manager	Input on image dimensions.	> 10 years of experience in purchasing within the railway industry.
Jochen Fehrenbach	Rolls Royce Power Systems Sales Manager Rail Middle East and Africa	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Manfred Martin Gößler	Rolls Royce Power Systems Sales Manager Rail Eastern Europe	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Yvonne Ibele	Rolls Royce Power Systems Sales Manager Rail UK	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Eike Krapf	Rolls Royce Power Systems Sales Manager Rail Germany, Austria, Switzerland and Benelux	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.

List of experts (continued)

Daniel Moosherr	Rolls Royce Power Systems Sales Manager Rail Italy, Portugal and Spain	<ul style="list-style-type: none"> • Access to customer directory. • Input on image dimensions. 	Customer and market access.
Stephan Neumann	Vossloh Locomotives Vice President Strategic Sourcing	Input on image dimensions.	> 10 years of experience in purchasing within the railway industry.
Martina Weigelt	Siemens AG Category Manager Sourcing	Input on image dimensions.	> 10 years of experience in purchasing within the railway industry.
Language experts			
Shane Williams	MTU UK Sales Engineer	English language review of survey instrument.	<ul style="list-style-type: none"> • Native speaker of English. • Experience in the railway industry.
Bruce Wolff	MTU America Sales Engineer	English language review of survey instrument.	<ul style="list-style-type: none"> • Native speaker of English. • Experience in the railway industry.

Source: Author's own construction